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I Just Can't Believe These are not Fictitious: Vivifying design examples through narratives populated by existing artefacts

Robb Mitchell
robb@sdu.dk
University of Southern Denmark
Denmark

Ben Kirman
Digital Creativity Labs, University of
York
UK
ben.kirman@york.ac.uk

Kin Encinas Lio
Oslo School of Architecture and
Design
Norway
kin.encinas.lio@aho.no

ABSTRACT

You are reading an abstract. We carefully designed it to summarise the content, to tempt you to read further. This is a part of the narrative of all papers, which tell stories about research. Telling stories and tales purposefully, via tools like design fiction, has become a valuable way to explore and understand complex ideas. It situates work in human experiences and contexts and avoid the "trap of objectivity". If you read on, you will discover an example of how narratives deploying existing designs can be used for synthesising and reviewing literature and exploring design spaces, using 28 designs around interpersonal interaction as a case study. This exploration demonstrates how readers can navigate a large body of related work, understand tensions between its elements, and recognise the interpretative and situational aspects of such a review. Or you can skip straight to the conclusions, where this story might end with a cliffhanger.

CCS CONCEPTS

• **Human-centered computing** → **Interaction design; Interaction design process and methods;**

KEYWORDS

design fiction, literature review, design space, scenarios, narratives

1 INTRODUCTION

In their work "Yesterday's tomorrows" [3] Bell and Dourish note how the future is often conceptualised in the ubicomp scientific literature as almost there but not quite. Narrative in ubicomp papers commonly uses rhetorical strategies to reinforce the probability of certain events happening. By using formulas such as "New technologies are emerging that..." authors present the context of their work as inevitable. Bell and Dourish focus their analysis on Mark Weiser's seminal Sal scenario [39] because of its influence in the ubicomp research landscape: it not only led to the acceptance of his vision but also to the widespread adoption of its rhetorical tone within a large array of papers written afterwards. It is mainly this rhetorical adoption that Bell and Dourish find so problematic, because by embracing the "proximate future" ubiquitous computing research work "continually places its achievements out of reach, while simultaneously blinding us to current practice."

1.1 Trap of Objectivity

Although "Yesterday's tomorrows" has become part of the foundational literature of HCI, the use of rhetorical figures substantiating inevitable contexts is still commonplace in publications. Bell and

Dourish's "proximate futures" are particularly easy to spot within the first lines addressing collections of relevant work, in sections such as Background, Related Work or Literature Review. This brief but compelling mixture of common sense and inevitability is usually followed by a description of influential work from others in the same field. This is different from systematic approaches to reviewing literature, which use clearly defined methods to outline how they are constructed and analysed. The typical HCI brief review as context is much more loose and storylike. In this paper, we focus on the rather obvious fact that the literature review, especially when used to describe a particular area of contribution, has a narrative purpose that extends beyond that of an objective representation of the work of others. We call this "the trap of objectivity".

Our argument is that each element of design work populating a review of relevant work loses its argumentative particularity and instead works towards substantiating the narrative of the literature review where it is present. In line with Bell and Dourish, there is a risk of "blinding us to current practice" by presenting a literature review devoid of evident rhetorical artifice.

1.2 Design fiction for Design examples

An alternative for exploring a design idea through a collection of disconnected examples of previous work would be to make the narrative that connects the different elements more explicit. We take inspiration from the way design fiction has often challenged the argumentation, formats and narrative conventions of HCI papers. The functioning of abstracts [4], full papers [21], conferences [20] and, of relevance for this paper, technological scenarios such as Weiser's, have all been critically explored with design fiction [4, 22]. Very influential in design fiction discourse has been Bruce Sterling's picking up of Kirby's proposal of "diegetic prototype" [19] as technologies that work within fictional context and Sterling's definition of design fiction as "the deliberate use of diegetic prototypes to suspend disbelief about change" [6]. Tanenbaum et al. highlighted how narrative plays a key role in design fictions since "design fiction uses narrative elements to envision and explain possible futures for design" [34]. Analogue to Kirby we are aware of how diegetic prototypes demonstrate "a technology's need, benevolence and viability" [19] and we agree with Blythe's critique of how technology described through narratives in scenario formats such as Weiser's too frequently conceal social struggle and conflict [4]. Our aim with this paper is to present an example of design fiction's ability to foreground the artificial and goal oriented attitude of a narrative. This, hopefully, avoids the "trap of objectivity" when describing previous work for the purpose of contextualising research. A narrative similar to the one we present below was published,

framed as a collection of design examples, as a contribution to the field of Computer Supported Cooperative Work [26]. However, the contribution of the current paper is to describe the potential value of a novel way to combine reviews of existing design work through narrative.

1.3 A review of the design space of social interaction technology

In our design fiction we playfully appropriate Weiser's scenario [39] to present a vision of a world in which nearly all objects in a domestic, workplace, urban and leisure environments appear to have been designed in order to address an interpersonal priority that may differ from most actual real design products. These concepts are drawn from a review of design and design research work concerned with how objects and environments mediate interpersonal interaction. Each individual element is "real" in that it has not been invented for the purpose of this review, however the overarching story uses a fictional frame to place all this work in the same story world.

1.4 This is all about you

In line with criticisms of Sal's scenario, our main character is not given an identity. Instead, the "flatness" of design is "broken" through the narrative being conveyed in the second-person form so that you, the reader, are the protagonist. Although the story does put the reader into the role of an able-bodied character with an office job, it intentionally leaves other characteristics such as gender, nationality etc. entirely open. The empowered individuality depicted in Weiser's vision is deliberately challenged. Instead of the "disappearing computer" in his vision, we have a faceless, nameless character whose individuality disappears into their relationship with other individuals.

Our intention with this vision is neutral regarding whether it is utopian or dystopian. We also offer no comment as to whether this vision is achievable, desirable, or what might be the obstacles to its adoption. Rather we hope that through engaging with the vision, readers may gather practical design inspiration concerning the theme of the presented examples, have a useful and actionable overview of a design space and be provoked into a critical examination of values and philosophies that underpin design activities. Furthermore, we aim to provide a methodological platform to reflect upon how insights and values can never truly be separated when reviewing a design landscape.

2 SOCIAL ICEBREAKERS EVERYWHERE: A DAY IN THE LIFE

This section presents a short excerpt of example of creating a narrative for a literature review of design examples, abridged from [26]. Names and creators of the design examples are listed in footnotes in order to avoid interrupting the narrative flow. It is designed to be read out loud.

2.1 The Day Begins

The day begins like every other day with you lying down with your eyes closed. You are awoken by your alarm clock. You jump up

quickly, because you know that your clock has taken control of your mobile telephone. Instead of a snooze button, if you don't get up within 3 minutes your alarm clock tells your telephone to call a random number in your telephone's contact list [38].

Although it is a bit risky, you much prefer this prospect of real life interaction compared to how your previous clock functioned. Your previous device woke you with an audio message from a random social media contact, but this message was pre-recorded, so was lacking any sense of live connection [?].

NOW YOU ARE AWAKE! Great! Because today like every other day, is not about telephone conversations or other remote communication. No! It is about same place, same time, social experiences. So you stumble to your bathroom... you are so happy that your social toilets are classic in design. They are just an identical pair of standard sit down western-style flush toilets half an arms length apart - with no barrier or screen separating them.

These are a wonderful improvement on your previous twin toilets. Although these consisted of one female and one male urinal, they were mounted on either side of a wall, so the main social aspect was seeing the bodily fluids mixing as they dribbled down a shared drain [32].

And after going to the toilet, that is the best time to weigh yourself isn't it? So you step onto the bathroom scale and ask for assistance to read the numbers. The load measured by your weighing machine is displayed on a panel inset into a sidewall of the device. This (almost) face-to-face design is a great upgrade on the earlier version which sent your weight to someone else via SMS [38].

Making best use of your large electric toothbrush also requires a co-pilot. The handle is so heavy and the controls for the brush are so far away that a companion is needed to operate the device for you [32].

As normal, you enjoy a quick simple breakfast, you and your companion feed each other with one-metre-long spoons [?].

2.2 Getting Dressed

Then it is time to deal with what you have been worrying about ever since your alarm clock sounded. WHAT ARE YOU GOING TO WEAR TODAY? You take a look in your cupboard... It is not easy is it? Your eye catches your silversmith designed armature that provides elbow supports angled so as to encourage the wearer's arms to continuously adopt an open and approachable posture. But you grew up wearing things like this, so for you to appear friendly, you need little help from this kind of aluminum prosthetic-like apparatus [42].

Nevertheless, signaling that you are listening closely to someone also has its advantages, so you pause to consider whether to put on your headset of silicone cast hands. Held in place by a band over the top of the head, the life size silicon hands are cupped around the ears so that the wearer can hear better in the direction that they are facing [5].

But in regards to fashion today your mood is classic and minimal. So you opt for wearing powerful magnets underneath your everyday clothing. When you get quite close to another person wearing the same thing, these super strong magnets will pull you towards

them. But you need to be careful because depending on the poles, magnets also repel [30].

Since you are not the tallest person in the world, you wear your usual footwear - your smartphone controlled, adjustable level platform shoes. This mechatronic footwear means you can be eye-to-eye with anyone taller than you [24].

2.3 Into the World

You are the kind of person who appreciates the healing power of human-to-human touch, but sometimes you feel a bit too shy to ask for it. So as you leave your apartment you are really relieved to see that the anonymous hugging wall in your street is fully operational. A pair of shoulder-length gloves is incorporated into vertical fabric surface. This means a person on one side of the wall can wear the gloves and thus give mutually unsighted hugs through the textile membrane [12, 27].

At the bus stop, you have these lovely repositional seats. The seats rest on a bed of marbles so after you start talking to other passengers, you can easily glide a bit closer to them without standing up and changing seats [14, 31].

Getting on the bus, of course you rush for the new seats that are clearly marked as reserved for strangers who wish to become acquainted. Even though you are not the kind of a person who needs help with deciding what to do talk about, you appreciate that these seats come with a reliable supply of post-it notes suggesting conversation starters [43].

After getting off the bus, you take a shortcut down an alleyway towards your workplace. You find it really easy to meet and greet new people here because of the stretched fabric that funnels pedestrians together [9].

2.4 At Work

As you enter your office you take a moment to look at the floor projection of recent footsteps. These projected white footprints provide a useful way to estimate who might be in the building and which office is occupied [29].

Your company has recently been taken over by a rival multinational, so there is a bit of tension at your workplace. These days a powerful way to help starting to heal conflicts is still performing the ritual of handshaking. However not everyone is ready to actually squeeze each other's flesh. In such instances, a glass vitrine containing a pair of thick stiffened gloves plays a useful role. At opposite ends of the glass case, is an opening that allows insertion of a hand into one glove. The fingers and fists of both gloves are interlocked in a handshake position so that the gesture of handshaking can be performed without direct physical contact [40].

During meetings, you and your colleagues choose carefully where to sit, in order to achieve the right balance between assertiveness and humbleness. The main options are between chairs largely similar in appearance. However one design has a seat that is rather too narrow, and through tightly squashing its user's legs together, makes its users more likely to adopt a meek or subservient looking posture. By contrast the other chair has a very generously wide front that fosters more relaxed, or confident, dominant looking poses. This chair has a slightly broader backrest, but the arms of

the chair are angled, opening away from the backrest so that the seat cushion is an isosceles trapezoid shape [35].

Your office vending machine is the same as vending machines everywhere. It sells bottles of drink that can only be opened by using another the bottle of another person to unscrew the lid [30].

But you prefer a hot drink. Intertwined colorful ribbons are tied between pairs of cups around a circular table. The short length of the interconnected ribbons means that drinkers perform a bowing like gesture to the people opposite them [25]. Although a particularly intense collaboration is required with the drinker at the opposite end of your ribbon, all the hot drinks are loosely connected so you are very happy to get spend your coffee break entangled with a few colleagues from other departments.

2.5 Lunch

But anyway, soon it is lunchtime. YAY! One of your favourite cafés, features tables cut in half. So that half the table is in the cafe. And the other half is on the other side of the glass, actually inside the cafe. This means that is really comfortable to share a table with a stranger, because although you are very close, you are not really in the same place [16].

But you actually really fancy going to that nice sushi place. Here, like in all takeaways nowadays, in order to open the food box, several people need to pull a string each, in different directions, but at the same time [8].

Soya sauce makes you a bit thirsty, so you join another collaborative string pulling activity. This room-filling contraption is much larger than the sushi-boxes, but despite the size, it dispenses refreshment much more slowly, and is designed for use by two people, taking it in turns to moisten each other's palette. So you alternate between imbibing and dribbling drink into another person's mouth. This is much more hygienic than it might sound. With your mouth open, you stand, facing up beneath a ring of pipettes. Each pipette is connected to a different hanging rope that you cannot reach. Thus you are dependent on an ally to pull a rope and release some drops of drink into your mouth [36].

2.6 A Walk in the Park

It's a nice day, and you have time for a short walk in the park. You enjoy seeing two different kinds of benches that encourage people to sit closer together. Both are of a similar material and scale to classic timber park benches from the 20th century. One provides encouragement to increase interpersonal proximity via interactive lighting. This furniture has the form of a classic park bench, but features embedded sensors and various shapes of LED lamps discretely mounted in the backrest. The sensors detect where people sit on the bench. When two people are seated far apart, arrows shaped lights pointing on the backrest are turned on. These arrows point towards the other person. When two people are sitting close together in the centre of the bench, red heart shaped lighting appears either side of them on the backrest [11, 28].

The other kind is more low-tech. The legs and backrest of this bench also resembles that of a classic bench. However, when viewed face on, the seating surface resembles the curve of a smile, sloping inwards from each end so that people sitting on the bench find themselves gently sliding together into the dip [16].

Other picnicking folk prefer to sit on the grass facing each other. Nevertheless, they enjoy similar reliance on their dining partner as the users of the seesaw benches. Here the two people form the legs of a table with the bodies, so that they suspend a lightweight, but potentially unsteady surface by draping each end around their shoulders [7].

The inscription on a low stone plinth offers amusing photo opportunities that brings some strangers together. This knee high truncated rectangular pyramid displays on one side the text: ‘We don’t know each other, we’re just hugging for the picture. When we’re done, I’ll walk away quickly’. This provides a caption for anyone or anything that chooses to stand on this platform. This text thus indirectly and humorously provides the suggestion for people unacquainted with each other to share a hug on the platform [17].

3 DISCUSSION AND REFLECTION

In most HCI papers, literature reviews or explorations of design examples naturally attempt to accomplish a comprehensive portrayal of particularly relevant work that preceded and influenced the work being presented. The narrative of such texts leave little for the author to critically analyze how the works are brought together and the implications that this imposes on the overall contribution of the paper. Interestingly, most works of design fiction that have tried to challenge the conventions of published research also include collections of relevant actual work that mimics the rhetorical structures and devices used by traditional papers. The genre demands of the “relevant work” section seem to impose a constraint that not even fiction is capable of undermining.

With this paper, we are not questioning the need to situate research work within a broader context of practice. Our focus is on interrogating the narratives that are created when arranging works into a coherent story that justifies the rest of the paper. Similarly, we reflect on how these stories often attempt to present a neutral and objective view on a topic. It often feels as if the context in which a piece of work exists is “out there” and not constructed by the researcher in the act of writing the paper. Our attempt here is to both highlight the fictive aspects of these sections, but also to give an attempt at embracing and centring this fictional frame through a story.

In this paper, we take this idea to an extreme by identifying “constructed” with “made up”. Although the examples that are in our literature review exist (they were not invented for the purpose of the fiction) the thread that connects them is boldly speculative. Most, if not all of the presented design examples are difficult to imagine as being commonplace in our current societies. At the same time, we chose the everyday as the particular framing for this exploration of a design space in order to highlight that most design examples in literature reviews are isolated from each other in place and time.

Our proposal is that presenting an extensive collection of unusual social icebreakers as everyday things, within a story, allows the reader to compare, identify implications, critique and play with these design examples within that story world. In our narrative, we describe encounters with multiple unusual designs from multiple different creators. This may offer some additional potential benefits in comparison to practices where it is more typical to describe

artefacts and systems created by a single designer or a close-knit group of designers. On reflection, the frictions between designs in the story shows us edges that are smoothed over when we might otherwise cleanly define both the solution and the problem.

Although the story presents one detailed day in the life, your response to different situations may vary greatly from another reader, based on your own preferences, or the preferences of the character you imagine the “you” to be in the story. We found this aspect interesting as it prompts comparisons and reflection within the narrative (e.g. “I prefer the bus stop seats to the toothbrush because”) and thus offers a route to comparing insights and mindsets from a wide range of different creators across a variety of disciplines. By contrast, if these design examples and situations were presented in isolation, then responses made by readers may draw heavily upon comparisons of design examples and situations to both their own everyday experience and history (e.g. their use or non-use of an alarm clock), their common sense understanding of what is typical (e.g. what they know about how other people use alarm clocks), and perhaps some specialist knowledge in relation to the situation or kind of artefact described.

In our everyday narrative we have made an effort to leave certain spaces unexplored. The contents of the working day, for example, are deliberately not described. The intention is that readers are left to imagine what kind of collaborative work practices and technologies might exist and thrive in a world where designs to promote interpersonal relating permeate every other aspect of their waking lives.

Also, we have written the narrative in the second person form with the intention of inviting the reader to navigate the examples with the context of her own experience. This allows for the character to emerge within the story in the act of reading. The second form is form of empowered individuality very different from that present in the original Weiser scenario because it encourage a critical reading of the design artefacts within the context of “you”. The second person form of our narrative in which readers are not only told what they do, but also what they think and feel, makes abundantly clear to the reader that this is fiction and thus this kind of narrative steers clear of any possible accusations of deception [10]. The intention of using the second-person point of view was to bring the reader closer to the tale, implicating and immersing them in the action, so that the narrative in a sense is surrounding them. As all readers are more or less different, the second person point of view is hoped to avoid the potential detachment that may come if readers cannot identify with a described first-person or third-person narrator. The second person point of view is very widespread in nonfictional texts, perhaps most frequently seen in invitations, advice or instructions. So the second-person perspective is quite fitting for the lines in our scenario that explains how a design should be interacted with. However, unlike many nonfiction texts, our narrative also describes the emotional response and motivations of the protagonists. Although in regular fiction second-person narration is very rare for novels, it is much less unusual in poetry and short stories.

3.1 Linking Portfolios, but Skipping Annotations and Colliding with Design

Assembling related design examples into an extended scenario also offers to combine some of the utility of annotated portfolios and collections/reviews of existing designs as means of communicating and working with designerly knowledge. An annotated portfolio presents a variety of interrelated design experiments (typically by a single creator or collective) accompanied by a commentary that highlights the most interesting common aspects of the visual content [15]. Likewise, our narrative presents a range of creative experimental work linked by a common thread of encouraging or requiring close interpersonal contact and collaboration. However, we extract our design examples from the practices of numerous different, diverse practices. Unlike a typical annotated portfolio, in our narrative, the highlighting of what we feel are the most interesting aspects of our presented examples takes the form of an imaginary description of the protagonist/reader's positive attitude towards, and experience of, the presented examples. This offers to make the insights presented by design examples accessible to designers who do not have the inclination or capability to engage with theory.

We contend that a benefit of linking design examples through a mundane narrative is it enables bringing together creative examples from a range of different disciplines, fields and media. Readers who are interested in the theme of a narrative like this are able to encounter more diverse examples than in a standard disciplinary or technology-based collection of design examples like an academic review paper. This seems valuable for provoking fresh thinking and defining and probing the boundaries and scope of a theme. Through immersion in the logic of this alternative world, a reader may temporarily take on the mindset of this world and so be add the perspectives it offers to their toolbox.

This benefit can also be explained by a comparison with the notion of collecting designs in literature reviews by the sense of a systematic mapping of a class of technologies [13, 23]. Although unlike the well-organised taxonomies and structuring of design instances and interaction techniques more customary in design space systematisation (e.g. [33, 41]) we offer no frameworks, labels, or other abstractions. Instead, we attempt to insert the design examples throughout the day to day existence of the reader. If we succeed even for a brief moment, the everyday artefacts and practices of the reader are brought to mind and thus the world of the narrative and that of the reader collide. Any subsequent structuring of the design examples is left to the reader. This is not because we are lazy, but because we recognise and respect the creativity of our readers to judge if, what, and how they might apply the knowledge generated from reading to their own professional (or personal) concerns.

Despite our many words extolling the possible value of this narrative approach, we would like to emphasise that we see these narratives as neither thriving nor valuable if they only exist in a relatively closed system. For example, in papers like this one, which talks about stories through stories. We see such narrative-based navigations of a design space as being an accessible yet time-efficient entry point or launch pad for further investigation of examples that catch the eye, capture the hearts, or invade the nightmares of readers. We also wish to emphasise that see this

approach is complementary rather than competitive concerning material and making based design experimentation approaches such as Research Through Design and Speculative Design [1, 37, 44]. We see our narrative approach as potentially enabling wider awareness of the outputs of experimental makers and also of value to the makers themselves to see the work held up against related work, and brought to life through story.

4 CONCLUSION

You are reading a conclusion. This paper is nearly over, and this kind of denouement typically serves to highlight the key contributions of the work, and perhaps present a pithy set of "take aways" that might be useful in your own work. Or, if you skipped to the last page to find out if the ending was happy or sad, to convince you to meet the characters, understand their motivations and witness the trials they have faced, now that you know the outcome. We might also tease "future work" at the very end, situating this work as part of a larger academic universe and inviting you to anticipate the sequel. In our design fiction, as with the broader paper, we tell a story about interpersonal technology. We argue for consideration of context in collective and connected lens, as a journey through a world containing design examples, rather than a list of isolated objects carefully curated to justify the rest of the paper.

Our fictional world, which is collectively proposed by the designs, generates insight through exposing connections and conflicts between these existing ideas by placing them in the same space, and revealing implications as constellations. This is particularly useful in avoiding the traps set by authors, who ask us consider implications of the artificial world changed by their work alone. This is the job of a literature review, and a demonstration of how analysis and synthesis are necessarily creative acts, that might embrace the wider potential of their nature as stories.

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