
Immersive Design Fiction for Experiential Futures in the Classroom

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Abstract

Immersive design fictions (IDFs) extend methods of VR prototyping by placing speculative interfaces and experiences within a virtual world. In particular, IDFs position participants as characters in a fictional storyworld with interactive elements. With this approach, researchers and practitioners can reach beyond the diegetic object to explore a richer palette of experiential phenomena—such as embodied interactions with objects, environments, and other agents. In this way, IDFs enable participants and creators to *think speculatively with the body*. Likewise, IDFs are particularly fruitful as vehicles for critical discussion in the design classroom, unlocking new kinds of inferential activity and new pathways for unpacking the social implications of a design fiction scenario. These points are demonstrated through a range of

examples from recent student work, including: climate futures, COVID-19 sanitization rituals, speculative automation services, familial relationships with robots, and modular housing technologies.

Author Keywords

design fiction; immersive design fiction; virtual reality; speculative design; experiential futures.

Introduction

Julian Bleecker's canonical essay argued that any story designers tell about a new technology or interface is also a story about the interaction rituals¹—the protocols, routines, and social meanings—that we imagine accompanying and evolving alongside an emerging technology or novel interface [2].

Immersive design fictions (IDFs) use virtual reality (VR) to place speculative interaction rituals within an immersive storyworld [17]. By situating design fiction within VR, IDFs present a “slice of life” in a fictional world and offer a more embodied lens for grappling with the implications of design fiction scenarios.

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¹ Bleecker borrows the concept of the ‘interaction ritual’ somewhat obliquely from Erving Goffman’s book of the same name.



Figure 1: An immersive design fiction scenario exploring the future of creative collaboration in industrial design [12]. Sponsored by Steelcase Workspace Futures, the project was developed by Max Kreminski, Michael Kozlowski, and Keshav Prasad, and directed by Joshua McVeigh-Schultz and Scott Fisher of the Mobile and Environmental Media Lab at the University of Southern California.



Figure 2: Simtainer VR exhibit was created by the Emerging Media Lab of the Institute for the Future. The project uses shipping container as a motif and physical anchor to explore modular futures of housing, health, and agriculture. Developed by Alexander Goldman, directed by Toshi Hoo and Dylan Hendricks.

Beyond the Diegetic Object

IDFs expand the purview of design fiction beyond the diegetic object² to include broader experiential phenomena.

As I have previously argued [13,14,17], the prototypical ‘diegetic object’ of design fiction has typically prioritized discursivity over embodied experience by treating the latter as an epiphenomenon of the designed object—as something to be provoked in the *imagination* rather than something to be experienced directly. Some have characterized this distinction as the “experiential gulf” between our ability to imagine the future and our ability to experience it [4,5].

Bridging the Experiential Gulf

However, increasingly, designers and researchers have found creative ways to bridge this gulf by integrating speculative and embodied approaches. This work includes: experiential futures [4,5], speculative ritual design [13,14,19,20] speculative enactments [9], games as speculative design [6], tangible envisioning in public space [22], and speculative civics [1,8]. Immersive design fiction (IDF) builds on these approaches, and in particular has drawn from speculative ritual design [13,14] and design fiction worldbuilding [21].

² Bruce Sterling, responding to Bleecker’s essay, crafted the oft-quoted working definition of design fiction as the “deliberate use of **diegetic prototypes** to suspend disbelief about change.” Note: ‘Diegetic’ here comes from the film-term diegesis (shorthand for “the imagined storyworld of a filmic work”).

Previous Work in Immersive Design Fiction

Existing work in immersive design fiction includes two projects, I have led: (1) a case study exploring speculative interfaces for creative collaboration [17] [Fig. 1], and (2) a pedagogical approach to IDFs as experiential futures [15], which will be elaborated further below. Related creative work also includes, a VR exhibit for the United Nations called Simtainer that explores the future of modular health, agriculture, and housing [11].

Research on IDFs has argued that immersive design fictions are particularly well suited for prototyping embodied, social, and contextually rich aspects of speculative experiences and storyworlds [15,17]. Specifically, IDFs enable users to explore new kinds embodied actions, interaction rituals, inhabitable/navigable environments, all placed in the context of a coherent storyworld.

Experiencing Prototyping in VR

Virtual Reality (VR) is a well-documented medium of experience design [42,50] as well as a site of accelerated user experience innovation [2]. Research has identified perceptual cues of presence and qualities of immersion as key aspects of VR [75]. Immersion includes spatial immersion and immersion through participant agency. IDFs also incorporate diegetic immersion—which includes immersion with other characters, objectives, constraints, and logic within the narrative world.

Immersive Design Fiction in the Classroom

The following section illustrates IDFs as vehicles for exploring experiential futures in a pedagogical context.

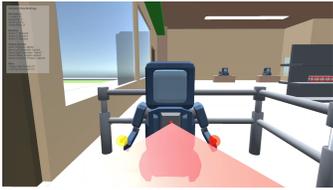


Figure 3: An interactive VR experience depicting a robot-driven temperature-check and sanitization ritual that occurs before a participant can enter into a supermarket.



Figure 4: An interactive VR experience depicting automated package delivery by drones.



Figure 5: An interactive VR experience depicting an automated driving service.

For the past two years, I have been teaching students to create immersive design fictions in VR as part of an advanced interactive media class for upper division design undergraduates. The course focuses on VR design as a medium for prototyping spaces, interfaces, and experiences. Drawing from [16,18], students examine the ways that environmental architecture and context cues shape interactions in social VR applications.

Subsequently, students are introduced to methods of worldbuilding—a system of collaborative authoring developed by production designer Alex McDowell [12]. A key to effective worldbuilding is anchoring the exploration of an imagined world by starting with a very clear “what if” scenario (for example, “what the pandemic persisted for a decade?”—such a provocation might open up a series of cascading implications involving, for example: urban landscape and architecture, social rituals of consumption, etc.).

Next, students hone in on a particular slice of experience in the world they’ve developed and explore it using methods of speculative ritual design [13], beginning with a “puppet show” improvisation with small figurines and overhead sketches, in order to flesh out the spatiotemporal beats and structure of a potential ritual or social routine. This method invites participants to attend to the particular ways that partitions of social space map onto social roles, movement of bodies, and symbolic transformation of the objects and participants involved.

Students then translate this “puppet show” scenario into an embodied improvisation using methods of body storming and Wizard-of-Ozzing in VR. For this phase, students create a prototype environment in VR, utilizing Mozilla Spoke and Mozilla Hubs to interact with one another in headset. Lastly, students build their final VR experience prototypes in Unity using a VR interaction

library and deploying their experience to the HTC Vive or Oculus Quest.

Student immersive design fiction work

Student IDF projects have covered a range of topics including: climate futures, COVID-19 sanitization rituals, speculative automation services, a revolutionary speakeasy, familial relationships with robots, and modular housing. Climate futures in particular, has proven to be a common exploration topic, with students often depicting urban coastlines submerged in floodwaters [Fig. 3].

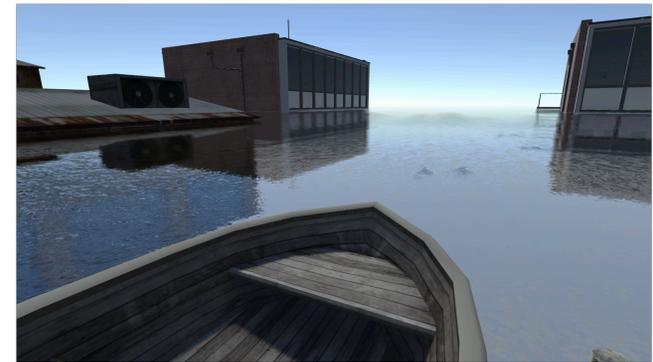


Figure 6: An interactive VR experience exploring rituals of local transportation in flooded urban coastal environments.

This past semester, students also explored possible COVID-19 futures, examining how architecture, urban design, and social rituals of consumption might be reshaped by an extended pandemic. For example, [Fig. 4] depicts rituals of temperature-check and sanitization that would occur at the thresholds of public buildings like supermarkets.

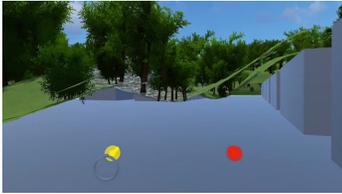


Figure 7: In interactive VR experience depicting a wearable bracelet interface that enables the wearer to turn on and off an AR overlay, transforming an otherwise bleak and monotonous housing environment into a lush hillside.



Figure 8: Two VR projects, side-by-side, both existing in the same storyworld. On the left is a luxurious floating housing scenario for elites. On the right is where lower income workers wait post-shift while their modular houses queue for “pick up.”

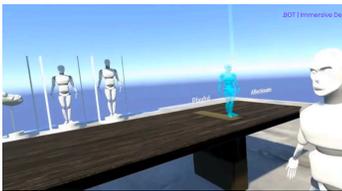


Figure 9: In interactive VR experience depicting a showroom where participants can purchase a robot family member.

Student projects have also covered various forms of technological innovation, including an exploration of an urban landscape transformed by an automated driving service [Fig. 5]. In another automation example, a student explored rituals of delivery and package receipt [Fig. 4], which opened up a broader conversation about theft as shooting down packages from the sky. A number of students explored augmented reality (AR) futures, for example, examining how AR might radically destabilize the economics and aesthetics of living environments [Fig. 7]. This project prompted a broader classroom conversation about how such a technology might disrupt how space communicates status and shared social expectations. Other students explored the housing crisis in the San Francisco bay area and posed a “what if” involving a new levitational technology utilized for floating housing [Fig. 8.]. Their VR experiences explored ways that such a technological innovation might ultimately be influenced by new forms of social stratification.

Reflections

Science fiction writers like Samuel R. Delany have long described the ways that effective sci-fi literature invites the reader to read between the lines in order to make inferences from incomplete information [7]. “Sentences such as ‘The door dilated’... allude to the complexity of a world that must be constructed through inference” [3]. IDFs offers a different avenue of inferential activity and a different vantage point from which to unpack the social implications of a particular what if. In particular, the inferential activity demanded by IDFs seems to be driven by aspects of embodiment, geometry of space, and cultural cues of place as the primary modes of engagement through which readers must “read between the lines.” Specifically, engaging with speculative rituals, routines, and other situations in VR enables creators and participants alike to consider the way an experience might actually *feel* in the body

through specific sequences and combinations of action-in-context. In the classroom, this engagement opened up nuanced discussions about the micro-interactional beats of an experience, or the subtle ways that choices and agency are embedded in the architecture of space and the context cues of place [10]. This different mode of inferential activity, also represented an alternative lens for examining and unpacking social implications of a “what if?” scenario, as students grappled with the specificity of a particular slice of an experiential world.

Unlike traditional design fiction “artifacts,” immersive design fictions foreground the relationship between an experience and its surrounding context. For example, in one project, students created a glass showroom where participants could purchase a robot family member [Fig 9.]. Despite elaborate visual branding, the surrounding landscape of the showroom had been left empty, prompting questions about how the urban landscape might evolve in the context of a nuclear family destabilized by robot family members. Consequently, even though the students didn’t design this aspect of the urban landscape, the empty environment nevertheless prompted a rich and conversation about this feature as a missing element.

Likewise, as an embodied medium, IDFs demand specificity in terms of the ways that embodied actions are primed, sequenced, and spatiotemporally contextualized. By foregrounding embodied action and environmental context, IDFs invite creators and participants to engage with embodied forms of knowledge, “thinking speculatively” with-and-through the body as they unpack potential social implications of a design fiction scenario.

References

1. Karl Baumann, Benjamin Stokes, François Bar, and Ben Caldwell. 2017. Infrastructures of the Imagination. *Proceedings of the 8th International Conference on Communities and Technologies - C&T '17*: 266–269.
2. Julian Bleecker. 2009. *Design Fiction: A short essay on design, science, fact and fiction*. Near Future Laboratory.
3. Scott Bukatman. 1993. *Terminal identity: the virtual subject in postmodern science fiction*. Duke University Press, Durham.
4. Stuart Candy and Jake Dunagan. 2016. Designing an experiential scenario: The People Who Vanished. *Futures* June.
5. Stuart Candy, Jake Franklin Dunagan, Stuart Candy, and Jake Dunagan. 2016. The Experiential Turn. *Human Futures* December: 26–28.
6. Paul Coulton, Dan Burnett, and Adrian Gradinar. 2016. Games as Speculative Design: Allowing Players to Consider Alternate Presents and Plausible Futures. *Design Research Society*.
7. Samuel R Delany. 1984. *Starboard wine: more notes on the language of science fiction*. Dragon Press, Pleasantville, N.Y.
8. Carl Disalvo, Tom Jenkins, and Thomas Lodato. 2016. Designing Speculative Civics. *CHI '16, Proceedings of the SIGCHI conference on Human factors in computing systems*.
9. Chris Elsdén, David Chatting, Abigail C. Durrant, et al. 2017. On Speculative Enactments. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17*, ACM Press, 5386–5399.
10. Steve Harrison and Paul Dourish. 1996. Re-placing Space: The Roles of Place and Space in Collaborative Systems. *Proceedings of the 1996 ACM Conference on Computer Supported Cooperative Work*, ACM, 67–76.
11. Toshi Hoo and Dylan Hendricks. *Simtainer*. .
12. Alex McDowell. 2019. Storytelling Shapes the Future. *Journal of Futures Studies* 23, 3: 105–112.
13. Joshua McVeigh-Schultz. 2016. Designing Speculative Rituals: Tangible Imaginaries and Fictive Practices from the (Inter)personal to the Political. Dissertation for University of Southern California.
14. Joshua McVeigh-Schultz. 2018. Designing Speculative Rituals and other Tangible Imaginaries. In *Unfrozen - A Design Research Reader By The Swiss Design Network*. Triest Verlag, Zürich.
15. Joshua McVeigh-Schultz. 2020. Immersive Design Fiction for Urban Experiential Futures. Architecture, Media, Politics, Society (AMPS).
16. Joshua McVeigh-Schultz, Anya Kolesnichenko, and Katherine Isbister. 2019. Shaping Pro-Social Interaction in VR: An Emerging Design Framework.

2019 CHI Conference on Human Factors in Computing Systems Proceedings, ACM Press.

17. Joshua McVeigh-Schultz, Max Kreminski, Keshav Prasad, Perry Hoberman, and Scott S. Fisher. 2018. Immersive Design Fiction: Using VR to Prototype Speculative Interfaces and Interaction Rituals within a Virtual Storyworld. *Proceedings of the 2018 on Designing Interactive Systems Conference 2018 - DIS '18*, ACM Press, 817–829.
18. Joshua McVeigh-Schultz, Elena Márquez Segura, Nick Merrill, and Katherine Isbister. 2018. What's It Mean to "Be Social" in VR?: Mapping the Social VR Design Ecology. *Proceedings of the 19th International ACM SIGACCESS Conference on Computers and Accessibility - DIS '18*, ACM Press, 289–294.
19. Nicolas Nova. 2015. Design ethnography? Towards a designerly approach to field research. In *Empowering Users through Design: Interdisciplinary Studies and Combined Approaches for Technological Products and Services*. Springer, 119–128.
20. Nicolas Nova, Katherine Miyake, Walton Chiu, and Nancy Kwon. 2012. *Curious Rituals: Gestural Interaction in the Digital Everyday Life*. .
21. RTD Conference, Paul Coulton, Joseph Lindley, Miriam Sturdee, and Mike Stead. 2019. Design Fiction as World Building. 4230036 Bytes.
22. Michael Smyth and Ingi Helgason. 2013. Tangible possibilities—envisioning interactions in public space. *Digital Creativity* 24, 1: 75–87.