

DESIGNING SPECULATIVE RITUALS:  
TANGIBLE IMAGINARIES AND FICTIVE PRACTICES  
FROM THE (INTER)PERSONAL TO THE POLITICAL

by

Joshua McVeigh-Schultz

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## **Abstract**

This dissertation makes the case for treating rituals and other structured categories of practice as objects of designerly attention. As scholars from ritual studies will tell us, humans have a long history of designing rituals, but this phenomenon is rarely explored within design theory and practice. Arguing for the recuperation of the ‘interaction ritual’ in design fiction and speculative design, this dissertation represents an attempt to take seriously the mechanics of both human-to-human and human-to-machine interaction as a kind of material available to manipulation, not only through the explicit decisions about interfaces but also through speculation about tacit rules of engagement. In order to make this case, I focus in particular on four project areas: (1) a fictional lifelogging platform that becomes deeply embedded within a couple’s rituals of romance and conflict, (2) a series of designs that support rituals of relationship building between humans and objects, (3) a crowdsourced vox pop ritual, in which online audiences drive question-formation for a live on-the-street interview, and (4) a performative ritual involving an audience-driven telerobotic microphone that modulates its mood based on real-time feedback about the audience’s feelings towards a speaker. I use these projects to illustrate two categories of prototyping that I refer to respectively as ‘tangible imaginaries’ and ‘fictive practices.’ Fictive practices utilize the logic of a story world as a thinking tool for exploring embodied interaction within situated narrative contexts. And tangible imaginaries explore embodied interaction to speculate about imagined worlds. Using these prototyping techniques, I argue that designers can begin to tinker with mechanics of embodied interaction and carve out an imagination space for rituals that don’t exist (yet) but could.

## **Chapter 1: Introduction**

The concept of the ‘interaction ritual’ figured strongly in Julian Bleecker’s (2009) essay on design fiction. But since then, in discussions of design fiction and speculative design this attention to ritual, and embodied experience in general, has largely taken a back seat to accounts of design fiction that focus on discursive objects as diegetic props. While such props can provoke their beholders to imagine novel interaction rituals, designers often treat these psychological “effects” of imagination as epiphenomena of the designed object rather than as structured experiences which themselves might be available to speculative manipulation. While material objects, environments, and interfaces can serve as a valuable scaffolding, I worry that by focusing exclusively on discursive objects, we miss opportunities to prototype rituals themselves. Rituals and other structured categories of practice are just as available to speculation for the designer as they are to the filmmaker and author. And as scholars from ritual studies will tell us, humans have a long history of designing rituals (C. Bell 1992; Grimes 1995; Hobsbawm and Ranger 1992; Tambiah 1985). Indeed, some of the most important cultural transformations in human history have involved the invention, or creative reimagining, of rituals, situations, and routines.

This dissertation is an attempt to take seriously the mechanics of human-to-human and human-to-machine interaction as a kind of material available to designerly manipulation, not only through the explicit decisions about material interfaces but also through speculation about tacit rules of engagement and new kinds of imagination spaces that can help us to envision alternate worlds. Rituals, routines, situations, encounters, etc. are all embodied and spatiotemporally bound performances, but I have chosen to situate this range of embodied

activity under the rubric of ritual as a nod to the work the term does to defamiliarize everyday experience.

In the following chapter, I will unpack a bit more about how I am framing the term ritual. For now, I will note that my use of the concept of ritual is not limited to the prototypical ecclesiastic ritual or any other variant of the classic Durkheimian (1915) model (where focus is placed on the separation between sacred and profane). Instead, my terminology draws more from the micro-sociology of Goffman's interaction ritual (1967) or Garfinkel's notion of situated action (1967) in which rituals of the everyday serve to reproduce the social order. In thinking about ritual as a field of design, however, I am not opposed to the more traditional notion of ritual as a bridge to transcendent values and experiences, but my work locates these transcendent linkages in rituals of the everyday.

### **1.1 From Science Fiction to Ritual Design**

Science fiction and design share a constitutive relationship with technological innovation as both draw inspiration from, as well as shape, the other. Fantasies of the future from science fiction film and speculative literature often draw inspiration from breakthroughs in technological research. And conversely, fictional accounts can also serve as inspiration for design and technological innovation (Kirby 2010; Shedroff and Noessel 2012; B. Johnson 2011).

Moreover, technological innovators are often storytellers in their own right, as they frame their work within a particular vision of a near future, always conspicuously just around the corner (Genevieve Bell and Dourish 2006). This relationship between science fiction and design-oriented research has typically remained an implicit—albeit potent—backdrop for

technological innovation (Dourish and Bell 2013). But some, like Julian Bleecker, have more reflexively embraced this connection through the concept of ‘design fiction’ (Bleecker 2009).

Bleecker advocates for design fiction prototypes that provoke speculation about the ‘interaction rituals’ invited by particular interfaces. This theme of the ritual is one that Bleecker’s colleague Nicolas Nova has explored through an illustrated analysis of what he calls ‘curious rituals,’ which explores how people domesticate technology through particular kinds of embodied interactions (Nova et al. 2012). Building on these insights, Nova developed a series of speculative rituals in a short design fiction film inspired by the insights derived from his fieldwork (Nova 2015).

Outside of these key examples set by Bleecker and Nova, however, broadly speaking, speculative designers tend to treat rituals (and other categories of practice) as mere epiphenomena of the designed object rather than as experiences which can, themselves, be prototyped—in other words, for speculative designers ritual too often remains *that which is conjured up in the mind* rather than *that which is prototyped in the hand and felt in the body*.

Instead, this dissertation approaches rituals and other forms of embodied action as phenomena which can *themselves* be prototyped. Rituals can be more than imagined outcomes or contextual backdrops for the prototypes designers construct. I make the case that rituals and other forms of embodied action can, themselves, be approached as objects of speculative design.

But what does it mean to design a ritual? In colloquial definitions of ‘ritual,’ the concept carries the weight of tradition—something “passed down” from time immemorial. So at first glance, it may seem counter intuitive to entertain the idea that rituals could be designed. But as scholars from ritual studies observe, humans have a track record of

inventing new rituals (C. Bell 1997) or adapting stale rituals to fit new contexts (Tambiah 1985) or devising new (apocryphal) traditions (Hobsbawm and Ranger 1992). We can also look to more recent history to identify moments of ritual innovation such as the inclusive conversation rituals of feminist Consciousness Raising groups or the Human Mic rituals of Occupy.

It is important to note that ritual design is not inherently liberatory, and as Stephen Duncombe (2007) points out, there is also a long history of rituals designed for nefarious ends—from the Nazi Nuremberg Rallies to the more mundane pacification instruments of everyday media spectacle critiqued by Guy Debord (1983). A key aspect of the methodology of ritual design that I am proposing, however, involves expanding opportunities for reflection and critical thinking about existing rituals through techniques of defamiliarization—a topic I will cover in more depth in chapter 2.

Often the emergence of new rituals and practices are accompanied by, or a response to, changes in our material culture. Elaborating on this theme, Katherine Hayles makes the point that material artifacts—and the patterns of use they invite—provide us with new embodied metaphors to think with. In this sense, the relationship between technological affordances of interfaces and the rituals they support cuts to the core of how we reinvent ourselves as humans.

A central claim of the dissertation is that enacted units of practice can be a key part of the transformative potential of speculative work. Whether we call these units rituals, routines, situations, or actions is less crucial at this stage of the argument, than the broader claim that units of action exist as a kind of material form available for designerly manipulation. (Later I will elaborate on how my preference for the term ‘ritual,’ over related

concepts like ‘routine,’ derives in part from the way that this framing helps us to see familiar practices with fresh eyes, as if we were alien anthropologists visiting earth for the first time.)

The form that these enacted units of practice take can include examples in: literature, film, instructional scores or “recipes” for action, prototype experiments in the studio, or interventions in real world contexts. What these different forms and domains share is an opportunity to test out the productive collision of particular embodied subjects, actions, material objects, and spatiotemporally bounded contexts.

In order to make the case for speculative rituals as a worthy subject of designerly attention, I focus in particular on four design research projects: (1) a speculative lifelogging platform that I explore through a design fiction rendering of a couple’s rituals of romance and conflict, (2) a series of projects that position objects and environments as themselves deserving of lifelogs, (3) a series of vox pop experiments that shuffle the agencies of the interview by allocating question-formation to a live audience online, and (4) an audience-driven telerobotic microphone that modulates its mood based on real-time feedback about the audience’s feelings towards a speaker. As part of these case studies, I will point to the presence of particular embodied metaphors or schemes operating through rituals. I will also unpack the ways that designed rituals leverage particular spatiotemporal geometries of attention. I will argue that this approach can provoke critical questions about taken-for-granted practices in political, mediated, and interpersonal contexts.

To describe the tangible explorations of ritual in prospective or prototype form, I have chosen to use the term ‘tangible imaginaries.’ Demonstrating a dual status as both embodied experience and imagination space, tangible imaginaries can include short films, performances of enacted rituals, and other sorts of experiential prototypes that underscore

embodied activity. I also use the term ‘fictive practices’ to describe representations of embodied actions that, while not tangible, use the logic of an imaginary story world as a mode of prototyping exploration (for example, descriptions of embodied action in literature). In this dissertation, I will showcase several strategies for designing speculative rituals through prototypes of tangible imaginaries and fictive practice.

## 1.2 Strangeness-within-reach

The social transformations that have accompanied technological change in the 21<sup>st</sup> century sometimes outpace the imaginations of even our most imaginative storytellers. In an interview by *Mother Jones*, William Gibson reflected upon how despite his status as a science fiction author, nothing could have prepared him for the kind of live intimacy-at-a-distance and participatory culture that is now folded into everyday life through social media practices.

**Mother Jones:** In the early days of mass access to the internet, you said you suspected we were seeing a phenomenon as significant as the birth of cities. Do you still feel that way?

**William Gibson:** Yeah, I do! Something really changed between then and now in the geography of existence, in the way in which we can have these startlingly intimate and nonhierarchical, unfiltered experiences of things at a distance. Following disturbances like Ferguson on Twitter would have been fantastically weird in 1994. (Gibson, 2014 – interviewed by Tasneen Raja for *Mother Jones* podcast *Inquiring Minds*)

Gibson refers here to Twitter users’ role in mediating the unrest in Ferguson, Missouri, following the killing of Michael Brown by police officer Darren Wilson. In the days that followed, activists used social media deftly to coordinate, fund raise, and share live events as they were unfolding on the ground. What Gibson describes as unfiltered, nonhierarchical intimacy of these protests mediated through Twitter reflects a shifting landscape of citizen activism and underscores how significantly social media has reshaped the ways we consume media spectacles and participate in cultural politics. What would have seemed “fantastically weird”—even to an esteemed cyberpunk novelist—is now part of a media landscape that many take for granted.

But why do we experience such blind spots in our ability to imagine this kind of strangeness “just around the corner”? I don’t mean to ask the less interesting question about why authors of science fiction and speculative literature can’t always predict the future. Instead, my interest is more in posing questions about what *other* kinds of strangeness-within-reach we may be blind to. And how can we strengthen our imaginative capacities to help us envision the future and explore alternative configurations of the present? The discursive power that is activated through speculations about technology and sociotechnical change—what Anne Balsamo calls the ‘technological imagination’ (Balsamo 2011)—is not *merely* prospective in nature. Such discourse plays a very real role in shaping aspects of research, investment, and material culture. This influence can be problematic, for example in the ways that culturally narrow visions of the future tend to emanate from the elite research centers like Silicon Valley, recapitulating a colonial framework of cultural export to the periphery (Dourish and Mainwaring 2012). As Balsamo (2011) reminds us, however, there are also opportunities to shape the technological imagination through more reflexive and critical modes of practice.

### **1.3 Metaphors of Interaction**

Sometimes the most transformational aspects of technological change are not driven by engineering solutions, but rather, involve opening up to an unfamiliar model of use and adapting to new genres, new rituals, and new contexts of interaction. Part of the challenge rests in escaping the gravitational attraction of dominant metaphors that shape how we think about what it means to interact with machines.

Indeed a number of theorists have explored this relationship between technological metaphors and discourse. Building on the framework of Thomas Kuhn, for example, Phil Agre has demonstrated how core metaphors have shaped paradigms of knowledge

production in the field of artificial intelligence. In particular, the paradigm of cognitivism—based upon metaphors of the clockwork mind—drove research models and shaped what kinds of questions could be asked in the field (Agre 1997). Others have adapted this kind of analysis to the field of Human Computer Interaction (HCI), pointing how particular metaphors of interaction have characterized dominant paradigms within the field at particular moments in its history (Harrison, Tatar, and Sengers 2007). These include: an industrial metaphor that privileges man-machine optimization, a cognitivist metaphor that approaches minds and computers as symmetric information processors, and a third emerging paradigm that focuses on embodied actors in a physical and social world.

Such observations about the significance of metaphor also echo the history of computation itself. Babbage's Difference Engine (and later the Analytical Engine) were initially understood primarily as machines for accomplishing numerical calculations. Such a model updated familiar practices of arithmetical manipulation for a world of industrial automation. It was not until Ada Lovelace, inspired by the metaphor of the Jacquard loom, envisioned a machine capable of inscribing and manipulating *any* kind of information—including instructions for the creation of art and music—that the implications of computation started to emerge (Isaacson 2014). Such leaps can be elusive, however.

Often, when cultures are coming to grips with a new media opportunity, they draw from familiar metaphors and practices, sometimes awkwardly grafting old assumptions onto new contexts. This pattern of misrecognition is a familiar feature of technological change. Intel missed the rise of mobile computing (and its reliance on low-power processors) in part because its leadership failed to understand the significance of new mobile practices that

didn't fit within more familiar contexts of desktop computing.<sup>1</sup> In the early days of film history, Nickelodeon exhibitors drew from familiar rituals of vaudeville performance as they adapted the new medium to the expectations of audiences more accustomed to sing-alongs, bawdy humor, and variety show. Similarly today, a renewed interest in virtual reality is nevertheless propelled by—what in retrospect may prove to be—a narrow focus on VR as a medium for filmmaking or gaming. In each case, the weight of a dominant metaphor from a familiar media practice makes it more difficult to fully reimagine the opportunity offered by a new technology or medium.

Part of the reason it may be so difficult to envision broad changes in sociotechnical practices is because we tend to have difficulty being reflexive about the very aspects of experience in which we are most enveloped. Indeed, this argument has been raised by a range of social theorists—from Bourdieu who conceptualized “habitus” as embodied below consciousness (1977), to Giddens’s arguments about the “blindness of agency” (1984), Debord’s obfuscation by the “spectacle” (1983), Althusser’s “oversight” (1969), and Bell’s “misrecognition” (1992). In *How We Became Posthuman*, Katherine Hayles describes this phenomenon in terms of the ways that bodily practices “sediment into habitual actions and movements” (2008, 202), and she argues that “incorporated knowledge is partly screened from conscious view because it is habitual” (Hayles 2008). This incorporated knowledge inscribes dominant metaphors and cultural schemes onto familiar embodied practices in ways that naturalize and obscure the sedimentation of habit.

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<sup>1</sup> During my own professional experience as a designer with Intel Labs, I witnessed the aftermath of a missed opportunity to capitalize on the rise of mobile computing. Intel’s leadership had undervalued the importance of low-power processors used in mobile devices, in part because they had failed to anticipate the emergence and significance of new practices associated with mobile computation. Such practices were only beginning to emerge and were easy to ignore, because they didn’t fit the narrow contexts of stationary desktop computing where Intel had built its success. Indeed, my presence as an experience design intern at a company known for designing microchips, speaks to the importance that the company would later come to place on anticipating, understanding, and shaping new experience.

### *1.3.1 Thinking Through Embodied Materiality*

If humans are sometimes blind to the ways that our communication practices can evolve and reshape in response to new forms of media, we are nevertheless quite adept at thinking through, and with, material artifacts. Drawing upon Mark Johnson's (1987) model of embodied cognition, Katherine Hayles (2008) makes the argument that new kinds of materiality—in particular new “technologies that affect how people use their bodies and experience space and time” (*ibid.*, 205)—also endow us with new embodied metaphors to think with.

For Hayles, particular artifacts and interfaces invite or inscribe particular models of use through their affordances, constraining certain actions and enabling others. So, despite the ways that dominant interaction metaphors can blind us through habituation, new artifacts in the hand—accompanied by new affordances and modalities of interaction—can likewise open up new modes of thinking. Making a similar point, Bruno Latour argues design plays a crucial role in shaping the kinds of embodied actions that we are able to think with (Latour 2008). The entanglement of embodied subjects with material objects and environments produces sociomaterial logic that the reflexive capacities of design practice are particularly well positioned to engage creatively. In this way, design, as a prospective medium, also provides the context for rituals, situations, practices, and other ways of being in the world that don't exist yet, but could.

## **1.4 The Experiential Turn**

In the last few decades, design as a field has expanded from its roots in graphic and industrial sectors to address a range of new problem areas. For Victor Margolin, this

expansion has brought urgency to design's role as the intervening gateway between the past, present, and a range of possible futures:

As creators of models, prototypes, and propositions, designers occupy a dialectical space between the world that is and the world that could be. Informed by the past and the present, their activity is oriented towards the future. They operate in situations that call for interventions, and they have the unique ability to turn these interventions in material and immaterial forms. (Margolin 2007, 4)

Margolin's call demands agile movement across domain categories and reflects an increasing need for designers to apply their methods to a diverse set of domains.

This call to expand the purview of design is also rooted historically in tension with disciplines of scientific research. Debates in the 60s and 70s pitted positioned designers as either approximating—or defining themselves in opposition to—methodologies of science. Rittel and Webber claimed that design is particularly good at dealing with “wicked problems” (1973), problems unnamable by science and engineering (which tend to focus on “tame problems,” amenable to more systematic inquiry). On this point Christopher Alexander has argued that “scientists try to identify the components of existing structures, [while] designers try to shape the components of new structures” (quoted in Cross, 2007).

One of the reasons that designers tend to operate well in these underdetermined contexts has to do with the flexibility of their reflective practice. Donald Schön has described design as a “reflective conversation with the situation” (1983). Elaborating on this point he describes the iterative cycles of speculation and discovery:

At some point, he must move from a “what if?” to a decision which then becomes a design node with binding implications for further moves.

....

In the designer's conversation with the materials of his design, he can never make a move which has only the effects intended for it. His materials are continually talking back to him, causing him to apprehend unanticipated problems and potentials. As he appreciates such new and unexpected phenomena, he also evaluates the moves that have created them. (*ibid.*, 1983, 100-101)

Schön frames design as a conversation with the “grain” of the material as a designer poses “what if” propositions to which the material responds. Through this iterative process of engagement, the designer begins to converge on an embodied understanding of this “grain” as well as an intuitive grasp of their own agency when working with or against the grain.

Adapting Schön’s metaphor, this notion of the “grain” of a material actually resonates well with other less “traditional” design fields including: interaction design, experience design, and game design. In these fields, prototypes must be evaluated and understood in relation to the feedback of prospective users or playtesters. Designers in these fields typically talk about making unexpected discoveries or learning from failed expectations as their prototypes collide with the lived experiences of those who try them out. In this way, experiential prototypes speak back to their designers; they can surprise and are more than the sum of their parts and not reducible to an intended meaning or outcome.

This aspect of design as iterative conversation with an experiential medium is central to the approaches of design thinking, user-centered design, and reflective practices in HCI. Scholarship in HCI has also increasingly reflected the emerging paradigm of embodied interaction perhaps best characterized by Paul Dourish’s *Where the Action Is* (2004) and the phenomenological stance that “the way in which we come to understand the world, ourselves, and interaction derives crucially from our location in a physical and social world as embodied actors” (*ibid.*, p6). Taken as a whole, these developments in both academic and professional contexts represent what might be understood as an “experiential turn” in design as a field.

In the last two decades, a turn toward embodied interaction has been reflected of a range of design techniques that loosely fall under the umbrella of performativity. Marion

Buchenau and Jane Fulton Suri's 'experience prototyping' (2000) is a technique inspired by work at Interval Research, which used informed performance ("informance") along with physically situated, full body brainstorming ("bodystorming") to tinker with the contextual parameters of a familiar setting by acting out roles. Often these approaches include aspects of a technique known as Wizard of Ozting, where a human operator drives the responses of an interactive system. Building on this work, Esko Kurvinen and others developed a technique for prototyping social interactions (Kurvinen, Koskinen, and Battarbee 2008). Dissatisfied with the way HCI and Human Factors research tends to focus on the individual as a unit, they chose to concentrate on developing methods for prototyping multi-actor interactions that Battarbee has called "co-experiences" (Battarbee, 2005). Other related methods focus on embodiment in the ideation phase of the design process. For example, Ken Anderson and Jane McGonigal's technique of "place storming" (2004) employs playful strategies borrowed from improvisational theater and street games to facilitate site-specific brainstorming sessions.

The design projects explored in this dissertation draw from a variety of these experiential prototyping techniques. However, my approach also distinguishes itself by combining these techniques with aspects of speculative design, which I will elaborate on further in Chapter 2.

### **1.5 The Speculative Turn**

Within the last decade, a number of design practitioners have expanded the purview of design to address prospective, imaginative, and critical speculation. Whether exploring possible futures, counter-historical pasts, alternative presents, or entirely fictional universes,

the opportunity that speculative design offers is a way of opening up imagined worlds and scenarios as laboratories for thinking beyond the familiar. While this kind of approaches has been inflected by various design subfields and adjacent disciplinary frameworks, overall these developments reflect what some have referred to as a “speculative turn” (Hales 2013).

Within the larger constellation of design as speculative practice, so-called ‘design fiction’ has emerged as a key term that has been variously deployed as a methodology, an approach, a loose set of techniques, a critical stance, or a philosophical position.

Practitioners that engage with the concept of design fiction have employed a variety of approaches including, the creation of diegetic props (Bleecker 2010) speculative works as discursive objects (Auger 2013; Dunne and Raby 2013) media studies and media archaeology research on imaginary and fantastical media (Kluitenberg 2006). Some have more specifically addressed the ways that design fiction can provoke social change (Wakkary et al. 2013). And social scientists with expertise in design have also utilized speculative frameworks in ethnographic contexts as a way of defamiliarizing sociotechnical practices (Nova et al. 2012; Forlano 2013). Others have expanded the scope of design fiction to the alternate history movement of Steampunk (Tanenbaum, Tanenbaum, and Wakkary 2012). Parallel concepts that predate the frameworks of Sterling and Bleecker include Krzysztof Wodiczko’s ‘interrogative design’ and Dunne and Raby’s ‘critical design,’ and ‘speculative design.’

Design theorists have also researched the ways that fantasies of the future from mainstream media like science fiction films and speculative fiction can serve as inspiration for design and technological innovation (Kirby 2010; Shedroff and Noessel 2012; B. Johnson 2011). Frequently these observations about science fiction in mainstream media are packaged without a critical engagement with the role that media industries play in shaping

the ways that visions of technology get embedded within particular ideological narratives, or what Anne Balsamo has referred to as the ‘technological imagination’ (Balsamo 2011).

Encompassing a broad range of approaches and at times opposing perspectives, the move towards the speculative still rests on unsettled ground, as theorists and practitioners alike are still figuring out how to categorize the set of interrelated techniques, problems, and frameworks clustered within the rubric of speculative design and design fiction. In Chapter 2, I enter into this conversation to argue for the recuperation of Bleecker’s trope of the ‘interaction ritual’—with its emphasis on embodied interaction—as a core component of design fiction.

### *1.5.1 A Note on Critiques of Speculative and Critical Design:*

Despite the ways that speculative practitioners often frame their work as critical or reflexive, other scholars have problematized some of the underlying assumptions behind these claims of criticality (Bardzell and Bardzell 2013; Prado and Oliveira 2015). DiSalvo (2012) has called attention to uncertainty behind the assumptions about provoking change behind many speculative projects. Others have sharpened this critique by singling out speculative works that are framed in exhibition contexts as elitist and unengaged with actual contexts of use (Tonkinwise 2014). Prado and Oliveira’s writing takes speculative designers to task for their reification of ideologies of consumption and a perceived lack of critical reflection on the race and identity politics in their work (Prado and Oliveira 2015).

I share many of the concerns raised by these critiques, but like Prado and Oliveira, I also think there is something worth recuperating in the kind of disruptive frame that speculation enables; there is potential for a more radical politics of speculation. And while I sympathize with Tonkinwise’s call to make speculative design more relevant to lived

contexts of use—since this position resonates with my own interest in embodied action—at the same time, the kind of defamiliarizing approach I am advocating for may not always be legible in more familiar contexts of use.

In these debates I also align my own approach with that of ‘critical making’ (Ratto 2011a; Ratto 2011b; Hertz 2012). Matt Ratto’s notion of critical making focuses attention on the process of design (as opposed to the product) and emphasizes the ways that processes of making open up opportunities for critical reflection (Ratto 2011). He situates critical making in workshops and pedagogical contexts where participants can critically engage familiar artifacts and technical systems. In these encounters, Ratto uses exercises focused on DIY making to unpack the cultural assumptions and values embedded in familiar objects. Like critical making, my own work also treats material forms of engagement as opportunities for critical reflection but rather than focusing on the act of making itself, I expand the notion of “making” to include the invention of novel ritual structures.

Another key aspect where my approach distinguishes itself is in marrying the reflective prototyping techniques of experiential design with the defamiliarizing tactics of speculative design and design fiction. Again, what is particularly valuable for me about the techniques of experiential prototyping is how they enable prototypes to “speak back” to their creators, enabling designers to make discoveries, to be surprised by unexpected outcomes, and to in effect converse with the “grain” of an interactive system. By contrast, as I will argue in Chapter 2, much of contemporary speculative design practice is comparatively inert and limits designed artifacts to what I call the ‘discursive object model’ while deemphasizing embodied experience.

## 1.6 Why ritual?

An important piece of this theoretical conversation has thus far been left unexamined, this being the question of why ‘ritual’ as opposed to some other related term. For example, theorists like William James have studied the psychology of *habit* (James 1914). In economics and organizational management fields, sequences of actions are typically understood as *routines* (Winter and Nelson 1982). The Situationists deployed the concept of the *situation* to describe interventions like the *dérive* (Debord 1983). And for the past few decades, theoretical concerns in variety of social science fields have reflected what Sherry Ortner has described as a turn to *practice* (Ortner 1984).

In comparison to these alternatives, the concept of ritual carries its own associations, including—regrettably—connotations of conservatism, social control, as well as expectations that rituals typically have fixed or foregone outcomes. Admittedly, none of these connotations would be particularly attractive in a design context, where value is typically placed on upending norms and discovering novel solutions rather than on maintenance of tradition. Compounding these problematic associations, the concept of ritual also carries the baggage of colonialism embedded in early scholarship in anthropology and religious studies—an issue I address further below.

Moreover, by adapting the term to apply to more quotidian rituals of the everyday, I also risk drawing criticism from ritual theorists, many of whom criticize promiscuous application of the term outside the context of the sacred (Grimes 2006). So given these risks, why have I chosen to use the term ritual? In response, I offer the following reasons:

(1) The work that ‘ritual’ as a concept does within a design context—in contrast to a term like ‘practice’—is connected to its ability to defamiliarize. The term ritual—especially when applied to more mundane practices that rarely get this designation tends to place us in the perspective of an alien anthropologist visiting earth. The key here is that ritual is an *etic* term, an analytical category likely to be deployed by an outsider to describe the culture of an Other. By contrast, terms like habits or routines are more likely to be *emic*, terms utilized by insiders to describe their own culture.

It is important to acknowledge that ritual’s etic function emerges out of a particular history of European colonization and played a role in anthropology’s origins as a field with problematic connections to colonial ideology. Early scholars of ritual typically reproduced the asymmetric power dynamics of colonial subjugation through the lens of hermeneutic interpretation—insofar as the concept of ritual represented a conceptual tool that accounted for, and analytically segregated, the cultural practices and belief systems of the colonial Other.

This colonial context also dovetails with the emergence of science fiction as a genre. Ethnographic writing and science fiction both rely on techniques that defamiliarize, in effect, enabling the reader to see with new eyes—a phenomenon John Rieder has described as “the disturbance of ethnocentrism.” Illustrating this connection to science fiction Rieder writes:

The disturbance of ethnocentrism, i.e. the achievement of a perspective from which one’s own culture is only one of a number of possible cultures, is as important a part of the history of science fiction, as much a condition of possibility for the genre’s coming to be, as developments in the physical sciences. (Rieder, 2008, p.2)

The disturbance of ethnocentrism is a phenomenon science fiction frequently leverages, for example, through tropes of alien encounters that have as their backdrop broader cultural anxieties around race and other forms of difference (Lavender 2011).

Turning the lens of anthropological analysis back on oneself can also be a powerfully defamiliarizing move. Using an etic term to describe *ourselves*, we shift our frame of reference and defamiliarize the everyday. Paul Gross (1959) aims for precisely this effect in his fictionalized ethnography, describing the bizarre ablutions and magical hygiene rites which comprise the body rituals of the Nacirema—a revealing name which the perspicacious reader may discover to be ‘American’ spelled backwards. Similarly, whether I approach rituals as grand rites of transformation or as a more prosaic routines, such as telephone calls and sharing a meal, my use of the term ‘ritual’ is nevertheless a rhetorical frame that aims to evoke an etic perspective on practice.

(2) Like designers, ritual theorists tend to approach their object of study with a high degree of granularity and attention to detail. This detail includes an attention to the details of embodiment and form. They attend to the body’s relationship to the boundaries of space and time and to the roles of props and other objects. Ritual theory also offers a model for interpreting how these ritual actions and configurations map onto, or activate, particular imaginaries (cosmologies, ideologies, categories of group identity, etc.). Moreover, rituals tend to translate the logic of these categories into physical form, a phenomenon Catherine Bell has described as ‘metaphorical slippage.’ Ritual theory offers a framework for unpacking this relationship between metaphor onto embodied action. And these interpretive strategies, a legacy of hermeneutics, make ritual theory attractive as a model for understanding embodied action in a design context.

By contrast, practice theory tends to approach its subject with a wider scope, for example, focusing on assemblages, infrastructures, and circulations that connect contexts of practice to one another. Practice theory may be better equipped to account for how practices

change in relation to broad historical contingencies (such as the emergence of particular technologies or media)<sup>2</sup> but for my purposes, the framework of ritual offers me greater granularity in addressing the specificities of particular embodied situations.

### 1.7 Tangible Imaginaries and Fictive Practices

New technological forms, especially media, are always partially imaginary, they speak to, and in turn ignite, desires, fantasies, and alternative ways of thinking about the world. Eric Kluitenberg, a theorist who writes on the archaeology of imaginary media, invokes Benedict Anderson's concept of imagined communities, in which communities are always partly imaginary, constructed, as it were, through particular media forms such as the newspaper and state instruments such as the census (B. Anderson 1993). Kluitenberg adapts this approach to address the ways that media are also always partly imaginary, arguing that:

Like communities, all media are partly real and partly imagined. Without either actual or imaginary characteristics, media cannot function. (Kluitenberg, 2006, p.9)

He also extends this concept beyond particular machines or media forms to include “human aspirations that more often than not are left unresolved by the machines they produce” (*ibid.*)

Important for this discussion is his insistence that this context of fantasy also extends beyond the “merely” metaphorical domain of signification.

Imaginary media are... more than a metaphor. They speak to and weave in and out of the lineages of actual media. Media imaginations may give rise (or birth) to actual media, even when their final realization falls short of initial expectations. Media that were once imaginary may at some point become true. Imaginary media may also be sources of inspiration, in which case, their effects might very well be felt and made manifest outside the field of media itself. Imaginary media in their pure state are pataphysical constructs, belonging to the realm

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<sup>2</sup> While there is nothing wrong with this broader perspective that practice theory offers, this scope makes the framework of practice less useful for me in addressing questions of embodied action within a design context. An exception that may prove the rule is an essay by Wakkary et al. (2013) that argues for the role of design fiction in shaping broad changes in practices of sustainability. In many ways, their approach to design fiction exemplifies the discursive object model that I described earlier, though, and this emphasis reflects their interest in applying insights gleaned from *The Dynamics of Social Practice: Everyday Life and how it Changes* (Shove, Pantzar, and Watson 2012).

of imaginary solutions. They can, however, at times also be embodied objects to which all kinds of imaginary qualities are ascribed. In either case they are more than metaphors, more than mere transporters of signification. (*ibid.*, 10-11)

Similar to Balsamo's concept of the technological imagination, this notion of imaginary media underscores how aspirations or fantasies about media not only play a part in how they operate as constructs, but can also give rise to new kinds of "true" media lineages. By sparking desires, opening new discursive spaces, and structuring mental models that ultimately shape how people think about, and design, future media forms.

Kluitenberg's insistence that imaginary media are more than mere metaphors, however, resonates with my own interest in bridging aspects of experiential and speculative design. Speculative rituals offer a window to an imagined world but they also serve as an embodied prototype with its own set of affordances, an interactional "grain" in conversation with the expectations of a designer.

Rituals, routines, situations, encounters, etc. are all embodied and spatiotemporally bound performances with their own sort of "grain." In their prospective or prototype form, I have chosen to call these phenomena 'tangible imaginaries' as a nod to their dual status as both embodied experience and imagination space.

### ***1.7.1 Tangible Imaginaries***

Taking cues from Kluitenberg's concept of imaginary media, I consider 'tangible imaginaries' as occupying a nexus between: (1) the material qualities and affordances of an artifact or media form, (2) the range of embodied action sequences that such affordances support, and (3) the imagined worlds, subjects, and perspectival experiences that the relationship between (1) and (2) open up.

Tangible imaginaries can include the prototypes from a range of techniques including: speculative

design, discursive design, imaginary media, critical making, world building, situation design, and—of course my own topic of—speculative ritual design. In each case, the prototype includes a tangible element, something you can hold, experience, or understand as having qualities of an artifact or experience. And in each case there is a mediation between a structure (whether social rule set or system of technical affordances), on the one hand, and a vision of some kind of inhabited world or context of experience on the other.

In addition to prototypes, tangible imaginaries can also be performances or happenings, they can be maps, or built space, situationist experiments like the *dérive*, and certain kinds of tactical media. They can be social “scores” (templates for interaction), or they can be props (as in the diegetic props of design fiction). The concept is deliberately open so as to include alternative pathways of resonance between tangible form and the spaces of imagination they activate.

Each of these approaches share a kind of conceptual in-between-ness that connects an imagination space of a lived world (or a kernel of a world-that-*could-be*) with some kind of material or embodied reality. Like Kluitenberg’s imaginary media, tangible imaginaries also invoke the sociological work that the concept of ‘imaginary’ performs—pointing to the relationship between a technological artifact and the imagined social world that accompanies it.

This concept of the ‘tangible imaginary’ in this way serves as an umbrella concept to speak across a variety of speculative, fictional, and critical practices in design and related fields. Given this context, the aim is to lay the groundwork for a meta-conversation that takes into account both distinctions as well as areas of commonality across these various conceptual and methodological boundaries. So my goal with the concept of ‘tangible

imaginaries' is less to carve out independent rhetorical territory than to be broadly inclusive in identifying productive resonance across existing categories. Given this framing, we can ask for example, what kinds of tangible imaginaries does speculative ritual design produce? How do they compare to those of design fiction or critical making? What are the areas of strength and weakness of these various approaches and what different sorts of work are they doing in their corresponding sub-fields?

Counter intuitively, despite the crowded morass of competing design terms, my sense is that our notions of what count as tangible imaginaries are actually far too *sparse*. And in particular, it's important to me that we start to identify existing social practices that perform similar sorts of functions. What is the relationship, for example, between design fiction and children's make believe? How are new kinds of rituals, interactions, and other sorts of embodied action invented in everyday contexts? And how do these sorts of everyday interventions relate the tangible imaginaries created by media practitioners and designers? And finally, what can designers learn from, as well as offer, these vernacular practices that happen "in the wild" as it were? While such questions are outside the scope of this dissertation, the implications implied by this kind of expansive perspective are at the heart of this notion of the tangible imaginary as a concept and methodological framework.

### ***1.7.2 Fictive Practices***

Beyond the contexts of material prototyping, practices in fictional worlds can also at times be representational without necessarily being tangible. In such cases, exploration of a narrative context can serve as a kind of thinking tool—what Kluitenberg describes as a pataphysical construct—with its own logic that becomes partially external to the mind of any particular author. Design fiction prototypes, as diegetic props, similarly offer windows onto

storyworlds, but as I will argue in Chapter 2, they often leave aspects of embodied experience up to the mind of the beholder, as an epiphenomena of the designed object, or what Bleecker describes as a conversation provoked by a prototype in the hand (Bleecker 2010). By contrast, other theorists have insisted that design fiction should be more faithful to its status as a fiction and in so doing, leverage the logic of narrative as a design tool (Tanenbaum 2014).

With the concept of ‘fictive practices’ I am similarly interested in using the logic of a story world as a prototyping tool, in particular to speculate about embodied action. Fictive practices are representations of embodiment that are not necessarily working prototypes but nevertheless do more than leave interaction up to the imagination. They can include representations of practice in literature, film, comics, video games, television, etc. We also typically see them appear as marketing for new devices or software, for example, in the first advertisements for Apple’s Facetime, which demonstrated the communication practices that Apple hoped to inspire. Indeed, as discursive vehicles, fictive practices are frequently deployed as tools of capitalism, it should not be surprising that fictive practices are such a widely utilized technique in marketing, as well as in contexts of repressive political control. As technique fictive practices are politically neutral; they can offer both tactics of resistance as well as strategies of control. However, my goal is to position this concept as a tool of critical making, defamiliarization, and provocation.

As representational forms, fictive practices ask us to imagine we have a passing familiarity with completely fictional constructions. In speculative literature, this effect is achieved by demanding inferential activity from the reader, forcing them to make sense of the unfamiliar by presupposing such elements to be sensible features of a fictional world.

Science fiction, when practiced by writers as diverse as Heinlein, Disch, Gibson or Rush, encourages—demands—a tremendous inferential activity from the reader. Sentences such

as, “The door dilated,” or “Daddy married, a man this time, and much more happily,” constantly allude to the complexity of a world which must be constructed through inference.... The distance between the world of the reader and the diegetic construct is always an issue, the text therefore enacts a continual defamiliarization. (Bukatman, 1993, 12)

This distance between the known (lived) world and the diegetic construct—a key tool in the arsenal of speculative narratives—sets up opportunities for defamiliarization when unfamiliar aspects of the story world are framed by the storyteller as unremarkable. When applying the literary techniques of defamiliarization to the unfamiliar, the goal is not to make the strange stranger but rather to take that which is otherworldly and make it feel disconcertingly familiar—a point I will elaborate in Chapter 2. Indeed, this is why I emphasize ‘fictive *practice*’ as the umbrella term for the embodied actions of fictional story worlds (as opposed to ‘fictive rituals’). As I discuss in Chapter 3, for many theorists the category of practice subsumes that of ritual. But here my choice to use the term practice represents a rhetorical choice as opposed to an analytical distinction. In effect, ‘practice’ is better equipped than ‘ritual,’ to perform the work of familiarizing the fictive, taking what is strange and framing it as unremarkable or even uncannily banal.

### **1.8 Methodology and Inspiration:**

For me, writing about methodology often demands aspects of necessary distortion, as I translate the more organic and intuitive aspects of a creative process into something that accommodates the insights that I have only now arrived at to account for my work. Indeed my use of the terms speculative ritual design, tangible imaginaries, and fictive practices have emerged gradually as outgrowths of my practice, rather than as a priori analytical frameworks to simply apply or test. I share then William Gaver’s misgivings about aligning design research with more positivist practices and epistemologies of knowledge production (2012). That said, there is indeed value in this kind of

post facto accounting for methods as they relate to findings—what Gaver describes as annotation (*ibid.*)—and so I consider my self-imposed straightjackets of categorization to be a necessary conceit.

Whether prototyping tangible imaginaries or fictive practices, much of my approach to ritual design begins as ritual *re*design. My first step in the process has typically involved examining a familiar interaction ritual and deconstructing its embedded cultural schemes, sequences of embodied action, and situated geometries of space and time. Once these elements are identified we can begin to playfully reimagine them, for example, by swapping the interaction ritual’s core metaphors, recasting its actors, shuffling sequences of actions, redefining aspects of space or time, placing it into new contexts, or reframing its purpose. This process can integrate props for conceptual tinkering—for example card-based ideation tools—or it can rely on embodied ideation techniques such as body storming or place storming. The aim is to explore the ways in which an interaction ritual might be transformed through some new and unexpected form or context. For me, I have found this process of reimagining typically hinges on the introduction of alternative action metaphors as vehicles that cross-fertilize and lead to unexpected discoveries.

In addition, as I have stated, this dissertation describes two broad categories of prototyping that can intersect with, and compliment, the goals of speculative ritual design, namely that of: tangible imaginaries and fictive practices. And I will cover each in turn below.

**Tangible imaginaries** rely on a combination of speculative artifacts, experiential prototyping techniques, and an attention to the opening up of new imagination spaces. While my specific methods for constructing tangible imaginaries can vary, they usually involve pairing some aspect of speculative object crafting (whether artifact, interface, system, or contextual rule set) with some form of experiential prototyping (body storming, informance, Wizard of Ozding, etc.).

**Fictive practices** on the other hand constitute fictional representations of embodied action located in story worlds and other imaginary universes. Methods for deriving fictive practices utilize the logic of a story world as a prototyping tool and typically involve techniques of defamiliarization. By situating fictive practices within a story world, we can often arrive at unexpected discoveries, new ways of thinking about embodied interaction that side step the low hanging fruit of common sense.

### *1.8.3 Inspiration and Eclecticism*

I came to the world of design, and interaction design in particular, through the pathways of media arts, social sciences, and visual storytelling, and my methods tend to reflect that eclecticism. Projects discussed in this dissertation draw from hybrid range of methods that integrate approaches from design research, media arts, participatory art practice, media studies, and the social sciences. I have adapted approaches from a number of existing techniques including: Ronald Grimes’s Ritual Lab pedagogy (1995), the breaching experiments of ethnomethodology (Garfinkel 1967), as well as bodystorming (Oulasvirta et al. 2003) and experience prototyping (Buchenau & Suri 2000). I also draw on practical techniques of digital and electronic prototyping, data visualization, filmmaking, and comic illustration.

My design work also falls under the rubric of design research, as a strategy of intervention and discovery. In terms of Fallman’s (2007) distinction between design-oriented research and research-oriented design, I place my work on the side of former, emphasizing design as a process of knowledge formation. I also consider my design work as aligned with Schön description of design as “problem setting”—i.e. prototyping is a way of reframing and questioning the existing paradigms that frame a design problem (Schön 1983).

My approach to design has also been strongly influenced by my relationship to USC's Interactive Media & Games division, where I took classes, conducted design research, found like-minded collaborators, and developed an appreciation for the connections between games and rituals. One of the unique aspects of this design program is its pedagogical emphasis on analysis and modification of board games (and other analog games) as a way of understanding the mechanics of complex systems. Board games, like their digital counterparts, feature a calibrated balance of objectives, resources, obstacles, and constraints. When these features work successfully in concert, game play involves meaningful choice, opportunities for feedback about progress, and a graduated ramping of challenges. But unlike digital games, board games—and other forms of embodied play—rely on the shared understanding and maintenance of rules. These rules do not exist within a computational algorithm, but rather, as part of a social contract within the magic circle of gameplay.

Through designing board games I became familiar with the ways that the social contract (of play) gets established as simultaneously a negotiated and materially embedded structure. The social contract is both inscribed in written rules and game materials that regulated bodies, space, and props in particular ways as well as emergent in social interactions that mediate this material context. Inspired by this approach to game design, I began to think about analogous social situations outside of game contexts as having a similar kind of material structure available for creative tinkering. As tangible objects and sites of contested interest, game rules help to construct what Latour might describe as 'matters of concern' (Latour 2008), a concept he contrasts with uncontested material configurations that he calls 'matters of fact.' Ratto unpacks this concept in relation to critical making:

[Latour] details design's role in helping us move from considering material things as given, natural, and uncontested objects, e.g. 'matters of fact', to thinking of them as

being intrinsically political, contentious, and open to discussion and debate. (Ratto 2011)

For Latour, this notion of matters of concern provides a way of understanding design's potential role in unmasking taken-for-granted aspects of material culture. Similarly, in my own writing on game design, I have described this kind of transformation in terms of the differences between overt and covert mechanics (Neff et al. 2012). The rules of a board game make explicit the material arrangements of a particular social contract of play, and thus, force these structures into the open, recasting them as opportunities for discussion, contested meaning, and negotiation in ways that digital games are less likely to afford. Drawing upon this experience with board games helped shape my design sensibilities in other domains and, in particular, informed how I approach turning rituals and other categories of embodied practice into matters of concern.

## 1.9 Chapter Previews

In the following chapters I will further elaborate on the framework of speculative ritual design and discuss a range of projects within my portfolio, all of which resonate with the categories of tangible imaginaries or fictive practices. **Chapter 2** will examine the genesis of design fiction as a concept and argue for the recuperation of embodiment (and the theme of the 'interaction ritual') as a core aspect of design fiction. **Chapter 3** will focus on the way that the concept of ritual has been framed by various theorists in ritual studies and related disciplines and argues for what I call a 'materiality of action.' It concludes by examining the ritual design methodology of Ronald Grimes. **Chapter 4** presents two case studies both of which address emerging opportunities of lifelogging. The first centers on a short film I wrote and directed about a couple who wear augmented reality glasses and record every moment of

their relationship. I was interested here in how opportunities of memory augmentation might reshape familiar rituals of romance and romantic conflict. The second case study follows a series of projects that I worked on as part of the Mobile and Environmental Media Lab. This work position objects, vehicles, and environments as beings with their own lifelogs who “see” and record the world through particular configurations of sensors. **Chapter 4** will situate my work within the history of telepresence research and telematic art. I discuss a reimagining of the ritual of the vox pop that uses a mobile app to transform the on-the-street interview into a live encounter between an interviewee and an online audience. I also describe a project involving an audience-driven microphone that alters its “mood” based upon an audience’s affective orientation to a speaker. I will situate this work in relation to emerging themes of audience agency in speculative literature. **Chapter 5** provides a brief summation of my argument and presents general reflections across the various projects in my portfolio. I will also propose next steps for my work and in particular describe opportunities for creating tools that enable non-designers to invent and modify their own rituals in everyday contexts.

## **Chapter 2: Design Fiction and Interaction Ritual**

In this chapter I will offer a more detailed account of the various theoretical contexts surrounding the concept of design fiction. I will trace its genesis through various threads of scholarship and then shift to identify where I believe the current conversation around design fiction has led. In particular, I will identify the emergence of what I call ‘the discursive object model of design fiction’ and critique the way this model risks deemphasizing the relationship between design fiction and embodied experience. I argue that this connection to embodiment is a significant feature of earlier incarnations of design fiction, in particular through the trope of the interaction ritual. In an effort to recuperate this theme of ritual, I will reexamine Bleecker’s use of this term and unpack the rhetorical work that I think it performs.

### **2.1 Design Fiction: Genesis of a Concept**

Within the larger constellation of design as speculative practice, so-called ‘design fiction’ (Bleecker 2009a; Sterling 2009) has emerged as key concept.

Bruce Sterling first used the term, in passing, as a description of his literary practice (2005). But the concept of design fiction later acquired new valence through the writings of Julian Bleecker, who developed the concept as a way of talking about the relationship between speculative fiction and design practice. The years between 2009 and 2012 were particularly significant in marking a period when the concept gained purchase in design and adjacent fields, in particular through circulation of an influential essay by Julian Bleecker (2009).

There are a number of ways to trace the genesis of this concept, but I have chosen to underscore a few landmarks in order to situate design fiction within a broader constellation of techniques and perspectives. The design fiction concept is particularly slippery since, on the one hand, it has been connected to the ways that *all* design represents a fictive orientation by framing and privileging a particular vision of the future (Bleecker, 2009; Dourish & Bell, 2013), while on the other hand, it also refers to particular design techniques that emphasize deliberate reflexivity about this process of envisioning. It is my hope that this contextualization of the recent history of design fiction will lead us towards a snapshot of where the current conversation surrounding this concept lies, as well as help me to situate my own position vis-à-vis design fiction and within the evolving subfield of speculative practice as a whole.

### ***2.1.1 Design Fiction and Julian Bleecker***

Julian Bleecker's framing of the concept 'design fiction' emerged—by his own account (Bleecker 2009b)—from group discussions with Paul Dourish in 2005 and 2006, where he read an early draft of an essay Dourish wrote with Genevieve Bell titled *Resistance is Futile: Reading Science Fiction Alongside Ubiquitous Computing* (eventually published in 2014). This paper built on a critique the two had raised in an earlier essay, *Yesterday's Tomorrows* (2006), about the ways that genres of research in ubiquitous computing tend to borrow rhetorical tactics from fiction. The story they tell typically presents design research in the context of a seamless proximate future divorced from the messiness of lived cultural reality. Framed in this way, Bell and Dourish's observations about the relationship between science fiction and ubiquitous computing are sharply critical. But in *Resistance is Futile*, they turn this lens upon

science fiction television and film, contrasting the pristine world of *Star Trek* to the morass of administrative and bureaucratic obstacles that populate the world of *Hitchhiker's Guide to the Galaxy* and the bumbling everydayness of technological breakdown in *Doctor Who*. They argue that, of these examples, ubiquitous computing research shares problematic ground with *Star Trek* in the ways that both elide the messiness of cultural infrastructure—such that less glossy phenomena like administrative bureaucracy and mundane technological maintenance are swept under the rug.

Technological problems... are problems for today, and problems of cultural context are ones that come into play later, once our technological infrastructure rolls out into the world. However, what we have tried to show here is that these questions are ones that arise not in the deployment of technologies but in the imagining of them – an imagining that arises before design. Wittgenstein argued that to imagine a language is to imagine a form of life; we might make the same observation about imagining technologies. Cultural questions, then, are prior to, not consequent to, design practice. (Dourish & Bell, 2013, 777)

Bleecker's response is to reframe this critique as an opportunity to embrace the porousness of the boundaries between design and science fiction. By moving towards, rather than away, from the muddiness of these distinctions, he advocates for a more reflexive approach to the ways that designers “imagine new forms of life.” And rather than blinding us to the messiness of the present, he suggests that the rhetorical frame of science fiction should be used to help us understand how technological opportunities can be folded into our everyday lives.

Starting in October of 2008, Bleecker first presented this approach to ‘design fiction’ in a series of talks which laid the groundwork for his influential essay ‘Design Fiction: a short essay on design, science, fact and fiction’ (2009). Bleecker aimed this 97-page “short” essay—filled with unexpected turns and inventive juxtapositions—at a broad audience of design professionals, technologists, and academics alike. In it he defines design fiction as a

mode of design that looks to science fiction film and literature as models for how designers can situate their prototypes as provocations. Emphasizing the entanglement between technological innovation and fields of science fiction, Bleecker argues that the story or framing behind design prototypes often matters more than the particular features or functionalities themselves. Expanding on this point at Mobile Art & Code in 2013, he draws on David Kirby's (2010) notion of the 'diegetic prototype' to argue that...

stories matter when designing the future. Maybe even more than the 'real thing' in terms of their ability to flash-bang the imagination of real people... [No one will understand why your idea matters to their life] unless there is a story around it, unless there is a way in which you can make it legible, so that they can [understand how to] bring it into their world in a comprehensive way. (2013)

Notably, here, his definition of story is deliberately loose, underscoring the importance of a diegesis as opposed to a fully developed narrative as the key rhetorical frame which invites us to situate design fictions within the context of an imagined every-day. Significantly for my own argument, he underscores the theme of ritual as a key feature of the imaginations space that design fiction prototypes activate:

Like science fiction, design fiction creates imaginative conversations about possible future worlds. Like some forms of science fiction, it speculates about a near future tomorrow, extrapolating from today. In the speculation, design fiction casts a critical eye on current object forms and the *interaction rituals* they allow and disallow [emphasis mine]. (*ibid.*, 8)

This concept of the 'interaction ritual' is one that Bleecker repeatedly refers to throughout his essay to describe how patterns of behavior exist symbiotically in relation to particular affordances of an interface.

Simply put, for Bleecker, the interaction ritual is a reminder that any story we tell about technology is also a speculation about the kinds of practices that may come to grow up around it. Illustrating this concept Bleecker points to the gestural interface in *Minority*

*Report* as a canonical example of the way that an ‘interaction ritual’ designed for science fiction filmmaking can cross fertilize with design research happening in the real world—which in this case was in John Underkoffler’s lab at MIT where analogues for the gestural system were being developed.

This theme of the ritual is one that Bleecker’s colleague Nicolas Nova also extended through an illustrated analysis of what he calls ‘curious rituals,’ which emerge out of everyday interactions with technological devices (Nova et al. 2012). Nicolas Nova created the project ‘Curious Rituals’ as a way of exploring rituals that emerge in and through interactions with technological artifacts and infrastructures. Often the rituals he describes are those unintended by designers of technical systems, such as the “Meeting Room Wake-Up Call” in which occurs when a serious workplace meeting is interrupted by a timer driven light fixture and the attendees suddenly start waiving their arms around in the dark, attempting to trigger the motion detector. As a follow up to this fieldwork component, Nova also created a short design fiction film that speculates about interaction rituals of the future involving augmented reality or gestural interfaces. Extrapolating from his fieldwork, he posits that interaction rituals in the future will still involve ‘presentation of self’ or ‘repair strategies,’ etc.

This emphasis on embodied practices through the lens of ritual is one that I will return to later. In particular, I will argue that experiential aspects of embodied interaction becomes de-emphasized as focus in the field shifts to what I call the discursive object model of design fiction.

### *2.1.2 Design Fiction and Bruce Sterling*

Another way to understand the emergence and popularization of ‘design fiction’ is through Bruce Sterling’s writings and talks between 2005 and 2009 and through an article he wrote for *Interactions Magazine* published in June of 2009 (Sterling 2009). At this time, his use of the term design fiction framed the concept as a literary technique, or rather as a technique that brought some of the design skills to bear on writers’ capacities to stretch the “limits of the imaginable.” But he was also beginning to think about ‘design fiction’ as something that exceeded the specificities of literature.

When science fiction thinking opens itself to design thinking, larger problems appear. These have to do with speculative culture generally, the way that our society imagines itself through its forward-looking disciplines. Many problems I once considered strictly literary are better understood as interaction-design issues.

Embracing Bleecker’s reframing of ‘design fiction’ as a design technique, he would eventually formulate a formal definition of design fiction as: “the deliberate use of diegetic prototypes to suspend disbelief about change” (Sterling 2013). Sterling borrows the cinematic term ‘diegetic’ here, which designates the surrounding story world of a film—including that which is imagined or assumed in the mind of a spectator. “Diegetic prototypes” are thus prototypes that invoke an imagined story world. Like Bleecker, he borrows the term ‘diegetic prototypes’ from David Kirby who deployed this concept to address how science fiction props in Hollywood films communicate opportunities for technological and scientific innovation to the general public. The key point about diegetic prototypes is that they are “normalized in their representation as practical objects. Characters treat these technologies as a ‘natural’ part of their landscape and interact with these prototypes as if they are everyday parts of their world” (Kirby 2010).

### 2.1.3 Defamiliarization as a Technique

Sterling places particular emphasis on the capacity of design fiction to achieve a kind of rhetorical stunt by making the strange familiar and the familiar strange. For instance, he appreciates the ways that the juxtapositions of temporality and context can open our eyes to the strangeness all around us:

A fork exists so that aristocrats could avoid staining their fingers with gravy. The fork is a tool for class distinction. We use forks today not because forks are "practical", but because we're a feudal society that became democratic. Dad's boring tie was originally a Croatian "cravat" -- a colored war scarf around the neck of a Balkan cavalryman. Ties are said to have been imported into Britain by Charles II when he returned from his exile in France, having picked up the fashion from Croatian mercenaries in the service of Louis XIII. That story is quite exotic, far-fetched and amazing -- but who cares? Ties are still boring, even despite the rhetorical stunt I just pulled where I made them seem amazing for a while. Design fiction plays games with these transitions of the amazing and the boring, the transitions of the believable and the incredible. (Sterling 2013)

Victor Shklovsky first described this technique in the early 20<sup>th</sup> century as a way of accounting for literary techniques that disrupt the habituation of perception by making the familiar seem strange (Shklovsky, 1986 [1917]). Shklovsky used the term to describe an example from Tolstoy's work "Shame" in which an act of flogging is framed in a way that makes us see it with fresh eyes. Narrated through a horse's perspective, the story turns human behavior into the actions of an alien species requiring special explanation. "Tolstoy 'defamiliarizes' the idea of flogging" (*ibid.*) by substituting the following alternative description:

"to strip people who have broken the law, to hurl them to the floor, and "to rap on their bottoms with switches," and, after a few lines, "to lash about on the naked buttocks." (*ibid.*)

Tolstoy's narrator then asks why this particular means of punishment is chosen as opposed to, say, pricking the shoulder with needles or squeezing hands in a vice. Pointing to these strange substitutions, Shklovsky demonstrates how Tolstoy makes the "the familiar act of flogging... unfamiliar[,] both by the description and by the proposal to change its form without changing its nature" (*ibid.*).

In the hands of ethnographers, defamiliarization often reverses this trajectory; i.e. rather than taking the familiar and making it strange, they take the strange and try to make it familiar. R. J. Anderson (1994) points out that the writing of ethnography has traditionally amounted to a translational act, one that transforms "the otherness" of the field site into a familiar subject.

...once we have begun to do that, the unfamiliarity, strangeness, and quaintness of the native's way of life soon evaporate. We find ourselves engaging in forms of life that are all too familiar. Then what can we say both about them but also about ourselves? (R. J. Anderson 1994, 12)

Paradoxically, through exposure to a fully synthesized, yet unfamiliar, conceptual world, one's perspective on one's own limited horizon of experience starts to feel strange.

#### ***2.1.4 Defamiliarization in Narratives of Ubiquitous Computing***

We can also witness strategies of defamiliarization show up prominently in ubiquitous computing's founding document and circulating in various forms through the design research and ethnographic methods of the field's core theorists and practitioners (Genevieve Bell, Blythe, and Sengers 2005). Marc Weiser's seminal essay *The Computer for the 21st Century* (Weiser 1991) reflected a renewed emphasis on, and sensitivity to, lived context. Drawing on phenomenology as a psychological phenomenon and borrowing Gibson's notion of "visual invariants" (Gibson 1979) and Martin Heidegger's notion of the "read-to-hand" (Heidegger

1962), Weiser argued for a seamless integration of computation into everyday life that he refers to as ubiquitous computing. Weiser uses this approach to describe a day in the life of his imagined “ethnographic other,” Sal, as she navigates intelligent environments and utilizes the ready-to-hand features of her everyday life.

Weiser situates Sal as a comfortable native in her Smart Home and Smart Workplace environments. Experiences that would otherwise be familiar to Weiser’s readers—getting the mail, reading the newspaper, recovering lost manuals, communicating with co-workers, and retrieving data on professional contacts—all become strange as he recasts them in Sal’s world of the proximate future. Weiser frames each of these everyday activities as routine—and indeed, Sal herself treats them as unremarkable. But by doing so, he foregrounds differences that his readers in 1991 would have been quick to spot (electronic mail, telematics workstations, computationally augmented memory, etc.). Through this fictional scenario, Sal willingly plays out the role of an ethnographic ‘other’ forcing readers to rethink the common sense assumptions behind their own domestic and professional routines and to re-apprehend familiar artifacts and experiences as historically contingent. In this way, Weiser introduced what would become a common strategy in ubiquitous computing (and later design fiction): crafting a vision of a proximate future as a way of provoking the imagination to consider alternative “nows”.<sup>3</sup>

As described earlier, observations about this rhetorical tactic helped inspire Bleecker’s thinking on design fiction. Like Bleecker, Weiser’s user of this tactic is explicitly self-aware in its use of fiction as a device. By setting up an imagined story world he can use the logic of that narrative universe as a kind of quasi-prototyping tool that sheds light on

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<sup>3</sup> See Bell & Dourish (2006) for an extended discussion of the ways that the field of ubiquitous computing tends to frame its research in terms of a proximate future, always just out of reach.

Sal's embodied interactions and situated identity in various contexts of work and daily life. The story of Sal, in this sense, demonstrates what I described in Chapter 1 as fictive practices.

### *2.1.5 Critical and Speculative Design*

Working within an industrial design context, Dunne and Raby popularized the concept of 'critical design' as an approach that seeks to undermine normative commercial expectations for industrial products. While not explicitly calling their work 'design fiction' much of their work prefigured the framing of Sterling and Bleecker's writing. In their influential book *Hertzian Tales*, they detail examples of critical design artifacts that demonstrate an uncanny subversion of the logic of consumption. Notably, these artifacts were intended to be experienced within a gallery exhibition context rather than as prototypes to deploy in everyday life.

In their follow up book, *Design Noir*, however, they showcased a series of experiments called the Placebo Project which aimed to reposition conceptual design outside the gallery into everyday life, as a way of exploring how actual people might engage with designs in their home. For example, the cover of this book includes an image of a person cowering behind one of a placebo objects which they call the Electro-draught excluder. They told their participants that this device would deflect stray electromagnetic fields. Again, the examples here draw heavily upon the themes of embodied interaction, this time through an engagement with the real world contexts of peoples' situated domestic experiences.

## 2.2 My Response to the Current Landscape of Design Fiction

As design fiction has proliferated it has also become harder to pin down as its meaning diversifies. Design fiction and related approaches like speculative design, rather than being a unified philosophical and methodological approach, represent instead what Derek Hales has described as a multidimensional “cluster of problems.” Despite this lack of homogeneity in the field, however, I will argue that much of the conversation around design fiction and speculative design has begun to congeal a bit too narrowly around a particular framing of design fiction that I’ll refer to here as the ‘discursive object model.’

In the discursive object model, design fiction’s purpose is framed as leveraging prototype-objects to provoke imaginative conversations that circulate among discursive networks (in both design circles and popular media). Introducing a special issue of *Digital Creativity* on design fiction, Derek Hales voices this emphasis on discursive activity arguing that: “Design Fictions create a discursive space within which new forms of cultural artefact (futures) might emerge [sic]” (2013, 1).

Elaborating upon this notion of design fiction’s articulation of discursive space, Hales references Bruce and Stephanie Tharp’s category of ‘discursive design’ (2008), which they contrast with ‘commercial,’ ‘responsible,’ and ‘experimental’ approaches to design. Tharp & Tharp characterize discursive design largely in terms of work emerging from RCA’s Design Interactions program, in particular Dunne & Raby’s work in *Hertzian Tales* and *Design Noir*.

Sterling’s approach has similarly evolved from an emphasis on design fiction as a literary technique to one that primarily looks to design fiction as the creation of diegetic

props as discursive objects. For example, in his classes at the European Graduate School, Sterling talks about design fiction as ranging “from very simple descriptions of postulated objects and services, to elaborate hoaxes, which may include multiple media channels...” (quoted in Hales, 2013). Such objects can “live” in a variety of contexts including gallery exhibitions, lectures, blog posts, or embedded in another form of media—for example, within a fictional format such as that of film or literature. In each case, the design fiction object is framed as discursively charged, seductive, alluring, and intended to provoke imagination and creativity. But the works themselves are usually not experiential prototypes or even representations of experiences. Instead, the practices associated with such objects usually exist in the minds of the beholder or in the conversations they activate.

My concern with this way of framing design fiction risks weighting the rhetorical framing of diegetic props at the expense of exploring experiential forms of embodied interaction through the interaction rituals that these props activate. To be clear, I appreciate Hales’s description of the discursive work that design fiction does; my point is rather that this is not the *only* work it can do. Likewise, I have no problem with carving out a space for discursive design practice, as Tharp & Tharp do, or with underscoring the important discursive work that design fiction can do independent of any explicit context of embodied experience. My quibble is instead with the implication that this is *all* we should expect of design fiction.

Some of the more notable examples of this privileging of the discursive object over the embodied experience are showcased in Dunne and Raby’s latest book *Speculative Everything* (Dunne and Raby 2013). In a critical review of this book, Cameron Tonkinwise noted:

In contrast to *Design Noir*, the artefacts being promoted by *Speculative Everything* are not to be experienced in everyday life, but instead exist primarily within carefully curated exhibitions, alongside high- end photography and textual fragments from the scenario being exhibited or about the exhibition as a whole. Images of the artefacts as exhibited then circulate in the media. So why? In terms of aiding our capacity to vision and evaluate futures collectively, why design, why product design, why completed yet nonfunctional artefacts, and why exhibited (and photographed)? (Tonkinwise 2014).

His larger point here is that design fiction and other speculative work tends to divorce itself from the experiential, preferring instead to frame its objects within the exhibition spaces rather than within a lived context-of-use (*ibid.*).

For me what gets lost when design fiction is framed exclusively in the discursive model is the connection to embodied experience, to the messiness of lived reality, and to the aspects of interactivity and performativity that experiential prototyping is particularly well suited to address.

Granted, there is no reason to expect such priorities couldn't be also be accommodated by the discursive object model, and indeed, some of the projects Hales introduces in this special issue explore precisely this dimension of embodied experience (Smyth and Helgason 2013; Fritsch, Breinbjerg, and Basballe 2013; Morrison, Tronstad, and Martinussen 2013). And while experiential prototypes are, themselves, also frequently communicated through objects (video documentation, instructional kits, descriptions of embodied practice in literature/film/research, etc.) that circulate in discursive networks, there are nevertheless significant differences in experiential forms of prototyping when—as explained in Chapter 1—the “grain” of the designer’s work involves an iterative “conversation” with an experiential medium. My issue, then, is instead how framing design fiction as *merely* about discursivity risks undercutting the important threads of embodied

practice that undergird Bleecker's original framing of design fiction in relation to the theme of the interaction ritual.

### *2.2.1 Bleecker and the Discursive Object Model*

In more recent writing, Bleecker's own thinking about design fiction also seems to have evolved towards a greater emphasis on discursive objects over embodied prototypes. In his essay 'Design Fiction: from props to prototypes,' Bleecker celebrates Franz Joseph's *Star Trek Technical Manual* as a particularly successful design fiction prototype. Inspired by this example, Bleecker asks "[r]ather than the canonical engineering prototype that operates as a proof of technical feasibility, suppose we think about prototypes that are more like props? Material things, off the page and in the hand that help tell a story or start a conversation about how things could be different..." (Bleecker 2010). While this emphasis on diegetic props is entirely within character, Bleecker's references to interaction rituals are notably absent this time. Perhaps again, the assumption is that props generate conversations about imagined interaction rituals.

But my position, as articulated in Chapter 1 is that there are opportunities to bridge the speculative and the experiential. Before diegetic props jump from hand and mind to discursive circulation, there an opportunity for the material "grain" of these objects (as tangible imaginaries) to productively resist the narrative assumptions that we place on them and, in so doing, lead us to more interesting and unexpected places.

Or alternatively, embodied interaction can be explored through fictive practices as I described in Chapter 1. Using the fully realized logic of a story world itself as a prototyping structure with its own "grain" of sorts, we may be able to explore aspects of embodied

interaction which defy the common sense assumptions of more familiar interaction rituals closest at hand. And indeed Franz Joseph's technical manual benefits in all sorts of ways from the rich narrative world (of *Star Trek*) that it inhabits.

It is significant that Bleecker places emphasis here on the aesthetics of engineering polish and authority communicated by Joseph's expert technical draftsmanship. As a diegetic prop, the *Star Trek* Technical Manual reduces the infrastructure of the Enterprise to a technical schematic and elides the kinds of administrative and bureaucratic details that clutter daily life. While Joseph's approach is entirely consistent with *Star Trek's* treatment of Starfleet as a seamless human infrastructure, he is nevertheless deploying precisely the kinds of registers that Dourish and Bell target in their critique of ubiquitous computing research.

By contrast, Julian Bleecker's own project, the TBD Catalog (Near Future Laboratory 2014), sets up what I contend is a much richer imagination space. Coming across as something like a bespoke Skymall magazine from an uncannily familiar late capitalist near-future, the TBD Catalog presents an impressive range of diegetic props fashioned from a bricolage of stock photography, advertising copy, and exhaustive attention to detail. The framing of the catalog itself sets up an imagined ritual into which the reader themselves is invited to participate: "Welcome to your TBD Catalog, and thank you for picking up today's issue (Vol9 Issue24)... The TBD catalog has grown into a daily reading and browsing ritual for millions of people around the world, digested regularly on the Internet, excerpted and annotated in countless blogs, review sites and shared by a passionate network of affiliates and their algorithms globally."

Advertisements for an on-demand private security company called Call for Back Up®, sit alongside artisanal "non-synthesized" meats, a pheromone-based body spray called

SprayOn™ for an instant boost in authority or trust, a dental prosthetic called SafeWord that monitors your speech to prevent gaffes, a telerobotic child monitoring drone that enables grandparents to accompany a grandchild on their walk to school from the comfort of home, and countless other brilliant examples. While it is unlikely any of these objects or services were ever designed as testable prototypes, by framing them in this way, Bleecker manages to activate our imaginations to think about a world inhabited by this plethora of bizarrely quotidian consumption fantasies and practices. In this sense, while we might think of the TBD Catalog as a discursive object par excellence, it also presents a broad range of fictive practices situated in fully realized social worlds, revealed piece by piece through the banal, and at times crass, language of marketing.

Overall the TBD Catalog offers a great deal to the core theoretical concerns of this dissertation and provides a wealth of examples of fictive practices. What are not present in this example, however, are aspects of what I described in Chapter 1 as tangible imaginaries—prototypes that bridge experiential and speculative approaches to design. Design fiction such a framework would approach the interaction ritual as a kind of performative “grain” (*a la* Schön), as a conversation partner in the design process that can be tested out and iterated upon through embodied experience. Later in Chapter 3, I will detail the ritual design techniques of Ronald Grimes as a more experientially rooted approach to prototyping rituals.

### **2.3 Design Fiction and Recuperating the Interaction Ritual**

In response to what I described in the previous section as a move towards the discursive object model of design fiction, I offer a contrasting approach to design fiction that attempts

to recuperate the trope of the ‘interaction ritual’ as a key theme of embodied interaction. To help unpack what I think is an important opportunity that design fiction offers us to reframe embodied experience, I want to return to Bleecker’s use of the term ‘ritual’ in his 2009 essay, which I worry has been gradually de-emphasized in the discussion of design fiction and



**Figure 1.** Bleecker’s photo of a microcontroller placed on Goffman’s *Interaction Ritual*

speculative practice. Bleecker borrows the term “interaction ritual” from Erving Goffman who used this concept as a way of framing social interaction as a ritual or game between social actors. By contrast, for Bleecker, this concept applies primarily to our embodied interactions with objects and environments, which prime, foreclose, or

invite particular interaction rituals.

Bleecker’s essay includes a photo of Goffman’s *Interaction Ritual* (1967) with a microcontroller sitting on top [Fig. 1]. I take his omission of any reference to Goffman as an acknowledgment that the concept is doing a somewhat different kind of work for Bleecker. Indeed, the placement of a microcontroller already signals a kind of bricolage.

Through this articulation, the book+microcontroller mashup becomes a diegetic prop in its own right—an imaginary book about design fiction interaction rituals, perhaps with Bleecker as the imaginary author as opposed to Goffman. Or perhaps it is a different Goffman, a fantasy version of this sociologist brought back to life and living fully immersed in our contemporary techno-social milieu. To get a sense of this alternative version of Goffman, we can look to scholars who have adapted his micro-sociology of the encounter to

address technological change. These sorts of scholars include: Joshua Meyrowitz (1986), Lucy Suchman (1987), Phil Agre (1997), Mimi Ito & Daisuke Okabe (2005), and Dourish (Dourish 2004) to name just a few.<sup>4</sup> Notably, some do underscore an explicit connection to Goffman's situationist approach to interpersonal communication. For instance, Meyrowitz updates Goffman by considering how social interactions are reshaped when old spatial partitions get disrupted by new kinds of spaces and new sorts of information flows. And Ito & Okabe refocus Meyrowitz's approach to space by considering the role that mobile devices play in what they dub the techno-social situation.

Here I would like to return to the question of why Bleecker chose the term 'interaction ritual.' Why did reposition this concept in an interaction design context? And what rhetorical work is it accomplishing? My perspective is that adding the word 'ritual' provides Bleecker with a way of pointing to what *humans* bring to interactions and relations with objects, interfaces, environments, systems, etc. Interaction ritual is the human companion to technical affordances, a concept Don Norman adapted from James Gibson's theory of ecological physics (Gibson 1977) in order to describe how interfaces invite or constrain particular modes of use. Affordances and interaction rituals are two sides of the same coin, embedded within the call-and-response of embodied interaction between humans and machines.

But the concept of ritual, enables us to see this relationship as more dynamic and alive than it is in Norman's model. Instead affordances and interaction rituals are like the orchid and the wasp of Deleuze and Guattari (1987) embraced in a mutual state of "becoming"—or what Karen Barad has described as 'intra-action.' 'Ritual' is a way of

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<sup>4</sup> I should acknowledge here that few social theorists have explicitly adopted Goffman's terminology of the 'interaction ritual', although Goffman himself was not consistent about applying this term in his own writing.

pointing to where the embodied intersubjective dance with object-hood lives, reproduces, adapts, and reinvents itself. This site extends across mind and body, individual and collective, context and metaphor, but by naming it as ‘ritual,’ this dance acquires a conceptual site nonetheless.

Different theorists might characterize embodied action in various ways: as internal psychology filtered through the social (Goffman 1967); as unconscious repertoires (Bourdieu 1977; Giddens 1984; Althusser 1969); as situated imaginaries, embedded in discursive objects like the newspaper (B. Anderson 1993); or as collective physiological experience of affect (Thrift 2008). But all identify dynamic phenomena that exceed the specificities of particular artifacts and environments as they move from one context to another. In this sense, ritual exceeds the objects that it incorporates. It does not, however, exceed the bodies that reproduce it, or at least not in quite the same way. This is the work that I believe ritual is doing for Bleecker. It enables him to talk about new interaction rituals implying not only new kinds of object-affordances but also new ways of thinking about and acting in the world which then reshuffle the expectations people have for an entire ecology of object-body-interactions. Cars change the meaning of horses and so forth. The impact of new kinds of artifacts alters the action capacities of existing objects within a larger ecology. That is why he refers to the importance of imagining “new interaction rituals” as opposed to just “new interactions.”

### **Chapter 3: From Ritual Theory to Designing Rituals**

This chapter will explore ritual as a broader theme that intersects with several disciplines and has been characterized in a variety of ways by multiple generations of scholars. In particular, though, I will single out important theoretical contributions made by Catherine Bell as well as a pedagogical framework for ritual construction developed by Ronald L. Grimes. Drawing from these models, I will make the case for why I believe ritual to be a crucial theme for design fiction and also clarify why I use the term ritual instead of related concepts like practice or routine. With this context in place, I will argue that we should think about rituals as designable phenomena and that we can look to existing examples of ritual design already occurring in various arenas of civics, popular culture, and everyday life (even if these processes are not framed as ritual design by the individuals involved).

I will then shift to consider the role that ritual design may play in challenging what Hayles describes as the sedimentation of practice—the tendency that practitioners have to be blind to the actual processes and effects of practice itself. In particular, I will return to the central role that defamiliarization plays in design fiction to argue for a connection between design fiction and (1) the interventionist strategies of Garfinkel’s breaching experiments as well as (2) the more generative strategies of ritual design practiced in Grimes’s Ritual Lab. Here I will use my own work to illustrate and draw out the relationship between intervention, ritual design, and defamiliarization.

Finally, I will ask the question: if rituals represent a designable medium, what are the modular elements, opportunities, and constraints of this medium? This question will give me an opportunity to begin framing what I call a ‘materiality of action.’ And I will unpack this concept by revisiting the space vs. place issues raised by Dourish and Harrison with an eye

towards examining the ways that so-called “users” manipulate the geometries of space. Here I will unpack the ways that actors themselves manipulate constraints and affordances of particular embodied actions embedded within material interfaces. I will argue that ritual design as a methodology draws upon the materiality of action by reimagining various spatiotemporal geometries of attention.

### **3.1 A Brief Overview of Ritual Theory**

Admittedly, Goffman himself applies the term ‘ritual’ rather loosely and does little to situate his use of the concept in relation to ritual theorists of his day. In his characteristic fashion, he localizes the terms of his argument in each of his essay in the book *Interaction Ritual* (1967) and does little to make his terminology systematic across the piece as a whole, let alone across his entire oeuvre. He also shows little interest here in situating his theoretical discussion of ritual among those of his contemporaries—the lone exception in *Interaction Ritual* appears to be a reference to Radcliff Brown’s deference rituals, which Goffman remaps as human-to-human rather than human-to-idol. I make these points not to criticize Goffman—his brilliance relied on the sharpness of his focus and not on synthesis across contexts—but rather to point out his lack of interest in extending the trope of ritual outside of his preferred object of study: the microsociology of everyday face-to-face encounters.<sup>5</sup>

Since the time of Goffman’s writing on interaction ritual, decades of research in the interdisciplinary field of ritual studies have updated the theoretical frameworks of ritual considerably. So it is worthwhile to spend some time unpacking the ways that others have approached this concept.

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<sup>5</sup> For a more recent and systematic approach to the interaction ritual concept, see Randal Collins (2005), who updates Goffman by developing an elaborate theory of ‘interaction ritual chains’—which he situates within a microsociology of affect, emphasizing the resonance and transfer of emotional energy through co-present encounters.

The field of ritual studies crosses a number of disciplines including anthropology, religious studies, cultural studies, and sociology. During the 19<sup>th</sup> century, the concept of ritual gained prominence in the writings of religious scholars like William Robertson Smith (1889) as well as among anthropologists like Edward Tylor (1871). During the early part of the 20<sup>th</sup> century, when anthropology as a field was still rooted firmly within the context and power dynamic of colonialism, approaches to ritual were “caught up in the quest to find both the historical origins and the ahistorical or eternal essence of religion” (C. Bell 1997, 20). Later, attention in the field would turn towards accounts of ritual as functionalist in either the biological sense (Malinowski 1926) or in the structural-functionalist sense where ritual is seen as stabilizing or reproducing a particular social structure (Radcliffe-Brown 1945).<sup>6</sup> Sociologist Émile Durkheim (1915) was the first to turn this lens upon western society, by arguing that ritual operates to reinforce the social order, largely as a mechanism of control. Alongside this functionalist framework, rituals were largely understood as having particular formal characteristics such as stylized repetition and relative invariance across instances. And finally, rituals were largely framed as sites where cosmologies and other ways of understanding the world get instantiated through the figurative actions of bodies (Evans-Pritchard 1963; Lévi-Strauss 1955; Geertz 1973; B. K. Smith 1989). This process made ritual an important site where analysts could witness the reconciliation of mind and body. So, for example, Geertz prioritized the ritual as a key site for the hermeneutic decoding of culture—i.e. as a site where cultural meaning would offer itself up to interpretation by an analyst capable of reading the symbolic dimensions of ritual actions.

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<sup>6</sup> For a detailed account of the development of ritual within religious studies and anthropology, see C. Bell (1997).

A second wave of theorists would place greater emphasis on the performative context of ritual (Turner 1974; Tambiah 1985; Bauman 1984; Seligman et al. 2008; Schechner 1985; Schechner 1993; Grimes 1995). For example, Turner—with his twin concepts of the liminal and liminoid—made significant contributions to the understanding of ritual in terms of transformation, transgression, and passage through thresholds.

Like Goffman, a number of theorists also adapted the concept of ritual to serve as a general model for communication. Communication theorists, James Carey, argued that communication has a ritual dimension in addition to its more familiar information transmission dimension. Adapting a Durkheimian functionalist approach, he states that “[a] ritual view of communication is directed not towards the extension of messages in space but towards the maintenance of society in time; not the act of imparting information but the representation of shared beliefs” (Carey 1989, 18). Drawing even more directly from Goffman, sociologist Randall Collins (2005) elaborates on the concept of the interaction ritual and integrates a Goffmanian approach to social encounters with Durkheim’s notion of shared affect or ‘collective effervescence.’ In this framework, interaction rituals influence one another through cascading flows that he terms ‘interaction ritual chains’ (Collins 2005).

Among a range of theorists who focus on performativity in ritual and practice, divides still separate those who frame ritual as a controlling, or conservative, forces in society (Rappaport 1979; Bourdieu 1977; Foucault 1977; Althusser 1969; Giddens 1984; Carey 1989) vs. those who see performativity in ritual as a potential agent of change (Tambiah 1985; Schechner 1993; C. Bell 1992; Grimes 1995; Grimes 2014; Collins 2005). Despite this emphasis on performativity, up until the early 90s, many theorists treated ritual as a site where the separation between mind and body are fused or reconciled in some way. Catherine

Bell (1992) would later turn this approach on its head, and in the coming section, I will unpack her significant contribution to the field of ritual studies.

### *3.1.2 Ritualization Framework of Catherine Bell*

In a landmark theoretical text, Bell argued that it was theorists' preconceived separation between mind and body that created this binary in the first place (thus artificially necessitating its resolution through ritual, as well as—notably—through the interpretive work of the theorist). Bell, then, eschews the term 'ritual' as an analytically rigorous category, and instead frames her argument in terms of *ritualization*: the process whereby certain practices are demarcated from others and positioned as privileged or sacred sites of ritual action). For Bell, ritual, in contrast to ritualization, is a concept that only makes sense in local context. It would be silly, then, to ask what are the formal properties of rituals, outside of a specific cultural context, in the same way that it would be silly to ask what are the formal properties of a concept like 'norms'. Instead a better question is: What are the common ways that norms are constructed, maintained, policed, reproduced, distinguished from non-normative categories, as well as subverted, challenged, adapted, etc.? And we can ask the same of ritual. Ritual, she argues, is a particular and local category rather than a generalizable or analytical one. Her point here is that while characteristics of ritual—even formality or repetition—cannot be universally identified in across cultural contexts, the process and impact of *ritualization* nevertheless is what we can make general observations and arguments about.

Her critique of how ritual artificially unites mind and body can also be applied to practice theory. Andreas Reckwitz (2002), for example, synthesizing and situating practice

theory within a broad range of alternatives, argues that practice theory—in contrast to the mentalist approaches of both Levi-Strauss’s structuralism and Schütz’s phenomenology—places the social not in the mind, nor in discourse, nor within intersubjective interactions, but rather within the nexus of bodies and minds that he locates within practices. According to Reckwitz, a practice...

...is a routinized type of behavior which consists of several elements, interconnected to one another: forms of bodily activities, ‘things’ and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge. A practice – a way of cooking, of consuming, of working, of investigating, of taking care of oneself or of others, etc. – forms so to speak a ‘block’ whose existence necessarily depends on the existence and specific interconnectedness of these elements, and which cannot be reduced to any one of these single elements.... The single individual – as a bodily and mental agent – then acts as the ‘carrier’ (*Träger*) of practice... Thus, she or he is not only a carrier of patterns of bodily behavior, but also of certain routinized ways of understanding, knowing how and desiring. (Reckwitz 2002, 250)

If we apply Bell’s critique of ritual theory to Reckwitz position above, it becomes apparent that practice theory risks a similar kind of tautological reasoning, by setting up the very oppositions between mind and body which it purports to explain.

For Reckwitz, practices interconnect bodies, things, background knowledge, embodied know-how, emotions, and desires. By framing practices as sites where this interconnectedness happens, practice theory does the work of first separating out these constitutive elements and then reassembling them within a constitutive whole called ‘practice.’ But this notion of practice-as-nexus between mind and body is only necessary to account for when theorists start with a separation between the elements of mind and body in the first place.

For Bell, the process of solidifying a practice (turning it into a “block” with an imagined stability) is precisely what ritualization does. The only difference for her is that she

is interested in how some “blocks” become valorized (privileged with respect to others) through their differentiation as rituals. But, I contend, that the framing of practices as identifiable “blocks” which reconcile mind and body still nevertheless evinces the kind of tautological logic that she critiques.

So instead, it is more helpful for me to consider the ways that practices become demarcated and understood by actors *themselves*, who also construct practices to be stable blocks, but in ways that differ from those of theorists.

### **3.2 Relationships between Platforms and Practices**

Actors often use artifacts to stand-in for, define, and stabilize shared understandings of practice. Think for example of the role of the conch shell in William Golding’s *Lord of the Flies* plays in establishing a nascent ritual of hierarchical communication and turn-taking. Such translational moves (mapping practices onto objects) can serve as a shorthand for talking *about* practices by referencing objects and environments that invite particular kinds of embodied routines. Edward Hall, describes this sort of process using the term ‘extension transference,’ “...in which the extension is confused with or takes the places of the process extended” (Hall 1977, 28).

We can similarly think about how, in everyday engagement with communication media, actors’ choice to use one platform over another serves as a proxy language for making choices about particular communication rituals. Consider for example, the decision—perhaps familiar among academics—to migrate a conversation out of an email thread and into a shared Google Doc. Here the decision to switch to a Google Doc stands in as a proxy for a whole host of associated practices (including patterns of actions and

expectations for dividing labor, annotating, commenting, as well as shared norms such as deference to what others have written—despite the fact that the platform enables anyone to erase anything, etc.).

To reiterate my position, here, I am interested here in the ways that actors themselves construct, constrain, or activate particular kinds of embodied routines through the manipulation and invention of practices through ritualization. And, as I will argue in subsequent chapters, particular kinds of material interfaces can come to play a pivotal role in the ways that this process of ritualizing unfolds. Designers, then—and especially those interested in the speculative emergence of new embodied practices and rituals—have an important opportunity, not only to explore the designable features of an interfaces, but also to speculate about possible pathways of ritualization.

### **3.3 Ritual as Designable?**

Rituals often carry the flavor of well-worn tradition. Especially in their more classic sense as sacred rites, some rituals are passed down from generation to generation. They are “not to be tampered with,” as if their original source were divine. Given this framing, it might seem strange to think about rituals as phenomena that have been designed by human hand.

Indeed, particular periods of history have witnessed significant ritual innovation. During the three to four decades preceding WWI, for example, national leaders in Europe invented a wide variety of new ritual “traditions” involving participation in new public holidays, ceremonies, and symbolic gestures of allegiance (Hobsbawm and Ranger 1992 [1983], 263-264). In such cases, the aesthetics of antiquity were often the outcome of deliberate design rather than a genuine legacy inherited from the past.

Catherine Bell also points to the 19<sup>th</sup> and early 20<sup>th</sup> centuries as a period in the United States when rituals were invented in a whole host of scenarios, from the design of liturgical rites to the rituals of men's fraternal organizations (1997, 225) to the orchestration of television news in the 1950s (*ibid.*, 243). This period also saw the rise to fascist rituals among the Nazi party and Soviet state rituals devised by bureaucrats for the purpose of social control (*ibid.*, 225).

Bell also notes a contrasting period of ritual innovation in the U.S. beginning in the 1960s, which reflected a reflexive openness to the idea of remaking tradition.

Today there is a growing social legitimacy for many types of ritual improvisation as well as the unprecedented visibility of the very dynamics of ritual invention—from the highly idiosyncratic weddings that became popular in the 1960s to a whole spectrum of new private and public rites, such as divorce ceremonies or rites to mourn the felling of the rain forest. Women gather for a “women's Seder,” families and friends devise funeral rites to recognize the particular horrors of the AIDS epidemic, and therapists use ritual to address dysfunctional family interactions. In all of these activities, people are quite aware that they are constructing their worlds, the moral precepts they should live by, and even devotional images in which they decide to believe. (C. Bell 1997, 224)

This shift that Bell identifies coincides with the emergence, for example, of feminist Consciousness Raising (CR) groups, which sought to redesign the ritual of conversation to be more inclusive, regardless of class, gender, race (hooks 2000, 8).

Often rituals are adapted from existing sources. The Alcoholics Anonymous rituals of confessional turn-taking and the twelve-step path to redemption were adapted from Evangelical rituals by Bill Wilson and Dr. Robert Smith in the 1930s. And the Human Mic and General Assembly rituals of the Occupy movement borrowed anarchist practices of consensus formation (Williams 2012).

### 3.4 The Materiality of Action

Such processes of ritual invention and adaptation tend to leverage the affordances of bodies, objects, spaces, and situated contexts—a set of parameters I describe here as the ‘materiality of action.’ In order to understand the material logic of something as seemingly ephemeral as ritual action, it may be helpful to briefly review the ways that theories of materiality have been broadened through engagement with digital forms. A range of contemporary scholars have adapted the concept of materiality to the realm of the digital (Blanchette, 2011; Dourish & Mazmanian, 2011; Fuchsberger, Murer, & Tscheligi, 2013; Gross, Bardzell, & Bardzell, 2014; Leonardi, 2015). Such accounts often treat ‘digital abstractions’ (Agre, 1997) of interfaces as perceivably constraining or enabling action-capacities in the same way that James Gibson talk about the affordances of objects and environments (Gibson 1979). We can similarly, observe that embodied actions are not only shaped by the materiality of objects and environments but also manifest their own kind of materiality through the affordances of bodies themselves. The affordances of the body include: basic sensorial physiology (for example, eye-lines are directional while hearing is radial) geometric relationships to architecture (bodies can pass through doors but not windows) relationships of to time, space and movement (bodies are spatiotemporally situated but can transported in space), as well as to a whole host of mechanics tied to the cognitive constraints of communication (many forms of communication require turn-taking) and the limits of memory (which creates fuzzy partitions of attention between segments of time). Such aspects of embodied materiality can be transformed when the body is mediated through technological extensions.

But design researchers often attribute this transformation to the interfaces themselves rather than to the role of ritual in shaping the ways that technological extensions

are used. Take for example, the illustrative case of debates in HCI over the distinction between space and place.

In a much cited article in *Computer Supported Cooperative Work* titled “Re-place-ing Space: The Roles of Place and Space in Collaborative Systems,” Steve Harrison and Paul Dourish grapple with distinctions that had become apparent in the 1990s between the abilities of designers to structure collaborative spaces vs. the understood social reality of those spaces, which Harrison and Dourish refer to as “place” (Harrison and Dourish 1996). The tagline that emerged out of this essay was that “Space was the opportunity” and “while Place was the shared understanding.” More importantly for this discussion, they also pointed to limitations that they saw in designers’ abilities to determine place. In other words, they felt that designers could structure the geometric and mediated features of *space*, but they didn’t have complete control over the ways that lived practice laminated a shared sense of *place* onto that designed space.

Much of this position about the non-designability of place emerged from their work with Hybrid Media Spaces and Collaborative Virtual Environments. For both Collaborative Virtual Environments and Hybrid Media Spaces, there was a sense of discovery about the new forms of social practice facilitated by these systems, but it was coupled with a healthy dose of modesty about the limits of control that designers had over the sorts of emergent placeness that they were witnessing. In other words, lived practices within these systems evolved with a great deal of independence and were not entirely predictable based on choices the designers made about how to structure these new social environments. So while one of Harrison and Dourish’s initial questions for this research was: how do we make spaces into places? Their take-away from design research on Hybrid Media Spaces was that “Placeness is

created and sustained by patterns of use; it's not something we can design in" (*ibid.* 70).

What they meant is that "CSCW tools and technologies create *new* social places, based on the ways in which their users ascribe new social meanings to new technological features."

However, they also complicate this distinction between place and space and demonstrate some models for thinking about how place may in fact be designed, or at least reshaped by users.

In one particular example, they note a key decision by one of the users of a Hybrid Media Space platform to rotate their camera 180 degrees so that the live video feed and monitor faced outwards towards an open office door. This small shift in space altered the sense of place considerably. As visitors walked by the open office door, they felt compelled to greet the remote participant on the video feed. This kind of change in the geometry of attention (like opening or closing a door or window) represents a new configuration of social space, or what Ito and Okabe describe as a new 'technosocial situation' (Ito and Okabe 2005).

In this sense, I would argue that the movement of the camera should be considered a gesture of *design* insofar as it alters the materiality of action. The move changes the geometry of gaze and thus reshapes the potential attunement of remote bodies towards one another such that mutual attention can be recognized in a split second. This change in the materiality of action not only licenses, but also seemed to enforce an *obligation*, upon people passing in the hallway to engage in greeting rituals with a non-co-present person remote participant.

### 3.5 Ethnography and Intervention

Given the careful attention that social scientists pay to the intersections between media and practice, we might anticipate that they are particularly to shape design agendas in places like Xerox Parc where various technological interventions open up possibilities for new kinds of technosocial situations. But unlike designers, social scientists who work in design contexts are typically uncomfortable with taking on an interventionist stance. This resistance may have to do with something to do with ethnography's retrospective orientation. Caroline Gatt describes the "retrospective glance" of ethnography by contrasting it to what she calls an "anthropology of hope":

Implicit in the retrospective glance of ethnography is the notion of a completed world: what for the people are moments of hope, of opening up to a future that is 'not yet,' are converted in the process of ethnographic writing into moments of closure and finality, wrapping up what has already come to pass. (Gatt 2011, 119)

While anthropology as a discipline now typically resists the temptation to fix its subjects within an ethnographic present, the act of writing itself presumes an orientation of "accounting for" and "making sense of"—rhetorical stances which implicitly place the ethnographic subject in the past as "that which needs to be recounted and explained." By contrast, designers typically frame the domain of their work as moving from the present (the design problem) towards the future (the design solution). In this way, design can rely on leaps of judgment, decontextualized abstractions, or tenuous generalizations that make ethnographers uncomfortable.

Drawing on Suchman's work, Dourish points out that this is not enough to critique the tendency towards abstraction so familiar to information-systems design. Information is inherently an abstraction (always already an inadequate generalization), and so the question

for Dourish is how to create abstraction for interactive software and environments that can be more sensitive to lived context (Button & Dourish, 1996). In his book *Where The Action Is* (2004), Dourish extends this sensitivity to context (both social and perceptual) by developing an approach to design he calls embodied interaction.

However, for ethnomethodologically trained ethnographers, Dourish acknowledges that “design becomes an occasion for tacit theorizing in ways that may be inimical with their analytic perspective” (Dourish, 2006). Graham Button, writing with Dourish, frames this argument in terms of two paradoxes deriving from the interventionist role that design plays: (1) the *paradox of system design* (that by transforming large scale activities, designs can fundamentally undermine the small-scale working practices by which large-scale activity is actually accomplished), and (2) the *paradox of technomethodology*, which they describe in terms of the following explanation:

Given the concern with the particular, with detail, and with the moment-by-moment organisation of action, how can ethnomethodology be applied to the design of new technologies? Certainly, ethnomethodologists have urged that designers take into account the methods and practices through which social action, interaction and categories of work are organised; but in the face of the unavoidably transformational nature of technology and system design in working settings, it would seem that ethnomethodology becomes relatively powerless. Its tradition is in analysing practice, rather than "inventing the future".

Interestingly enough, while ethnomethodologists may be uncomfortable in the position of “inventing the future,” their practice embraces other modes of intervention.

Garfinkel encouraged his students to conduct “breaching experiments” as a way of witnessing or provoking the accounting strategies of others – called forth in an attempt to repair the social order that had been broken by a rupture in context. He characterized this defamiliarizing approach as “making trouble.”

Procedurally it is my preference to start with familiar scenes and ask what can be done to make trouble. The operations that one would have to perform in order to multiply the senseless features of perceived environments; to produce and sustain bewilderment, consternation, and confusion; to produce the socially structured affects of anxiety, shame, guilt, and indignation; and to produce disorganized interaction should tell us something about how the structures of everyday activities are ordinarily and routinely produced and maintained. (Garfinkel 1967, 37-38)

While breaching experiments are sometimes misunderstood as representing *the* methodology of ethnomethodology, Garfinkel actually found the tactic more successful as pedagogical tool — since it forced otherwise intractable students to awaken to the reality of how social order is routinely created, maintained, and struggled over. In this sense, accounting practices are most observable when settings are put under stress, and breaching experiments serve effectively to provoke this tension by defamiliarizing the normative roles of everyday encounters.

### **3.6 Ritual Creation Framework of Ronald Grimes**

Moving beyond the interventionist tactic of the breaching experiment, some social scientists also explore more generative techniques for ritual construction. Ritual scholar Ronald Grimes, teaches the design of rituals by having his students create them in a classroom laboratory (Grimes 1995; Grimes 2014; Grimes 2006). For Grimes, Bell's notion of the ritual agent is not merely an analytical category but rather a matter of practical pedagogy, and he situates his notion of *ritualizing* as something that can be accomplished reflexively with his students.<sup>7</sup> In his classes, through assignments that involve both the analysis of extant rituals,

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<sup>7</sup> Note that for the purposes of my own argument, I am deemphasizing C. Bell and Grimes's distinction between ritual and ritualization. However, I will be careful to incorporate Bell's concerns about the generalizability of the category across contexts. Grimes makes this distinction as well, calling attention not only to differences between ritual and ritualization but also between ritualization and ritualizing. The latter is a category that he reserves for the actual emergence of ritual in its nascent form. The creative construction of novel ritual forms happens through the process of ritualizing. Grimes, then, is particularly interested in ritual as a verb. Since my own focus on ritual design retains this notion of ritual as something

as well as the creation of novel rituals, he tries to engender in his students a literacy about the range of embodied repertoires that make up rituals as formal systems. This literacy involves a working knowledge of various components and decisions that comprise a ritual.

For example, Grimes notions of ‘Ritual Actions’ include phenomena such as:

- the ritual event, the whole rite, the “plot” of the action as it moves from beginning through middle to end
- constituent actions that make up the ritual, their phrasing, rhythm, and style, and the connections or disconnections among them, habitual vectors of bodily movement
- genres and styles of action, their form, medium, pacing, mood, tone
- facilitating, preparatory, or behind-the-scenes actions, clean-up, and take-down activities
- influences on the actions, precedents, causal forces, and covariants (actions that vary in tandem with other actions)
- reactions, or responses, to the ritual, consequential actions, functions of the ritual
- actions that change things, actions that keep things the same

....

(Grimes 2014, 237)

And sample questions that Grimes has his students address include things like:

Who enacts? Who witnesses? Of what does a person consist? Is the body valued, devalued, ignored? What parts of the body are emphasized? Which senses are emphasized? Deemphasized? Which senses are linked, the one activating the other? What kinds of movement are valued? Avoided? Which actors perform alone? Together? Who can change the ritual? Who resists change? How is agency understood? Is there a human/nonhuman divide? A natural/supernatural divide?...  
(*ibid.*)

Grimes goes on to systematically describe similar sets of features and questions related to additional categories including: ritual **roles**, ritual **places**, ritual **time**, ritual **objects**, ritual **language**, ritual **groups**, and ritual **structures** and **processes** (Grimes 2014; Grimes 1995).

Grimes approach here offers a twist on Bell’s claim that rituals should not *and cannot* be reduced to a generalizable set of component parts. Grimes, takes a more practical approach, claiming that by a combination of studying rituals and attempting to design them,

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available to creative formation, I have also opted not to make this distinction, but I share Grime’s concerns with ritual in the state of becoming.

one can come up with a heuristic set of categories with which to describes the constitutive components of rituals in general. This meta-knowledge enables his students to make informed decisions to choose one variation of a component over another as they develop their own rituals in class. Such a list of categories and components could never be exhaustive, nor could any particular way of slicing up ritual phenomena ever be definitive, but that is not the point for Grimes. He is interested instead in developing among his students an embodied literacy about ritual as a generative system.

The key point I draw from Grimes here is that certain kinds of ritual agents can develop the literacy to create ritual out of raw materials that are completely separate from an original ritual context. In other words, rituals aren't just redesigned or adapted (as Tambiah argues); instead, entirely new rituals can be invented out of the raw material of particular: actions, spatial and temporal configurations, props, participants/roles, and sound/language, all without any obvious extant antecedent to draw from. In this sense, rituals are not merely amenable to change (as many other ritual theorists have pointed out) but are also can be invented *ex materia* by those who develop a literacy about the generative recombination of various constitutive components and dimensions.

### **3.7 My Contribution**

If there is a contribution that I can make here, it is not to improve upon Grimes's decades of experience in the classroom developing his pedagogical framework for ritual creation.

Instead, it is to situate Grimes approach in relation to the techniques and theory of design, and in particular to place a generative approach to ritual design in dialogue with design fiction and speculative design. To do this, I will partly need to discard the emphasis that

Grimes places on ritual as a site of the sacred and expand the rubric of ritual to include everyday practices as well as grand spectacle. My hope is to point the way towards a possibility space in which the ritual side of Julian Bleecker's use of the term 'interaction ritual' is taken seriously as something with its own material specificities that can be tinkered with in the same way that Donald Schön talks about working with grain of a material as a kind of conversation between the human and object. In this case, however, the material can also be framed in terms of embodiment, in the sense of: implicit rules of engagement, spatiotemporal boundaries, procedures, and coordinated actions that arrange bodies in relation to one another.

As I argued in Chapter 2, I worry that there is an opportunity in the practice of design fiction that may be lost if we only see the role of the designer as launching discursive objects into conversation spaces and networks of media circulation. Instead, I see it as part of the work of a designer to engage in the play of ritual enactment as part of their work.

## **Chapter 4: Rituals of Lifelogging from Interpersonal Communication to Human-Object Relationships**

In the previous chapter I made the case for considering ritual as an important subject for design research. In this chapter, I'll explore a range of projects in my own work as well as within collaborative work I have done with the Mobile and Environmental Media Lab at USC. These examples will help me to unpack what I mean by ritual as a subject of design fiction and speculative design. In particular, this chapter will explore the topic of lifelogging technologies that utilize ubiquitous video or sensor systems to capture, store, and retrieve data. These provocations raise questions for the design of lifelogging platforms as well as for how we understand our evolving interpersonal relationships in the 21<sup>st</sup> century. The following sections will introduce the concept of lifelogging and discuss its history and design context, in order to frame two areas of design research: (1) a short film depicting a couple moving into their first apartment together whose relationship is shaped by an augmented reality lifelogging platform called LoveLog; (2) a series of projects exploring lifelogs for nonhumans which serves as a springboard for speculating about how to design rituals for human-object relationships. Throughout, I will analyze these projects in relation to the themes of ritual design and the materiality of action developed in the previous chapters. Finally, I will use these design examples to draw insights about animism as a design theme.

### **4.1 Lifelogging: An Overview**

The concept of a lifelog, as a record or index of personal information, emerged in various contexts. As early as 1945, Vannevar Bush proposed a hypothetical device, the *Memex*, to exhaustively record and organize the details of a researcher's mental and physical experience

(Bush 1945). In the 1980s Steve Mann began experimenting with streaming video and started recording his life using the *Wearable Wireless Webcam* in 1994 (Mann 1998; Mann 2004). Later, inspired by Bush's vision of the *Memex* system, Gordon Bell began recording his life using *MyLifeBits* (Gemmell et al. 2002) a software later augmented by the *SenseCam* video recording system (Gemmell et al. 2004; Czerwinski et al. 2006). In both of these projects, the perspective of the video camera is aligned with that of a human subject observing their environment through a camera mounted to the chest or eye (a perspective that Mann has described as *sousveillance* (Mann 2004)). This move to ubiquitous video capture casts the lifelog subject as a human vector supplying an always-on audio-visual record of daily life.

Tripp Millican's iam platform was the first to use ubiquitous video capture and storage tools to broadcast live a POV video stream to the internet (Millican 2005). In this project he reported changes in the kinds of social interactions that occurred in intimate encounters due to participants knowledge of this expanded audience online. Adopting Millican's approach, in March of 2007, Justin Kan began broadcasting POV video 24/7 to generate publicity for a startup called Justin.tv which later launched as a video streaming site. Lifelogging as a concept also intersects with the Quantified Self movement, both of which prefigured the emergence of wearable tracking devices such as Fitbit and Jawbone.

#### ***4.1.1 Lifelogging and Rituals of Remembering: A Provocation***

All of the projects I will be discussing in this chapter relate in some way or another to platforms of lifelogging—both real and imagined—as prosthetic augmentations of memory. It is important to note here that “memory” as a concept can point to both its human

incarnation as well as to the ways that objects come to “see” the world through sensors and categorize those discreet events of “seeing” within particular ontologies of data. All of these projects also propose new kinds of interpersonal relationships mediated by technology in one way or another. These new relationships are not just abstractions but rather are constituted by a series of ritual encounters—the raw material that constitutes “becoming with” an Other (Haraway 2008).

The emphasis on lifelogging in this chapter will enable me to hone in on how particular *temporal* geometries of attention may come to shape ritual contexts. In particular, I will unpack how the acts of recording and retrieval connect independent contexts, one-to-another, in essence suturing—or removing the temporal partitions separating—what had previously been experienced as independently situated moments. The acts of recording, retrieval, and “replay” are, like André Bazin’s death mask, a kind of distorted preservation or reanimation beyond death, even if that death is not of a being in its entirety but rather of an “instance” of a being in a particular moment in time. Given the mundane presence of the living-dead all around us, it is easy to forget the strangeness of our relationship to our own living pasts, to “zombified” versions of ourselves and others preserved in the form of object traces.

This suturing between moments in time, through the traces left by objects, is perhaps such a familiar experience, such a quotidian aspect of everyday life, that it is easy to overlook. However, to make a record is quite literally a form of time travel. From the first examples of inscription and record keeping (nearly 6,000 years ago in Mesopotamia) to the first experiments with translating oral language into syllabaries and alphabets, the technology of writing represent has represented what Erik Davis (1999) describes as a kind of magic, an

animistic machine that would have startling impact on humanity. This machine had the capacity to channel the dead—to speak from the past to the present—and in so doing reshaped the fabric of society. Davis goes on to argue that this technological transformation enabled new configurations of subjectivity, community, and religion. And he shares Walter Ong’s perspective that “More than any other single invention, writing transformed human consciousness” (1982).

We can similarly think about the ways that technologies of lifelogging may reshape the way we relate to others and to ourselves. In their book *Total Recall: How the E-memory Revolution will Change Everything* (2009) Gordon Bell and Jim Gemmell make the case that new technologies of memory augmentation will have far reaching impact, changing the way we relate to our data and inflecting how we experience everyday interactions with one another. Indeed, Bell speaks from his own experience. As the human subject of the *MyLifeBits* project, he captured images, and later video recordings, of his life for over a decade, and he recounts how this form of memory augmentation shaped his thinking about social interactions in this context:

Imagine being confronted with the actual amount of time you spend with your daughter rather than your rosy accounting of it. Or having your eyes open to how truly abrasive you were in a conversation. Right now, only very special friends could confront me with such facts in a way I would accept. And they receive my thanks for helping me grow as a person. In fact, for such a mirror of ourselves, we sometimes pay such special friends and call them therapists or counselors.

....

Of course, having Total Recall to help with your self-awareness is one thing; having a spouse drag up e-memories to berate you is another. Even worse, imagine a moment of weakness being posted to YouTube by a bitter former friend. The Total Recall revolution implies that others are recording just as much as you are. That’s a big change to adapt to. (C. G. Bell and Gemmell 2009, 167)

Despite the cautionary tone in this passage, Bell is ultimately a firm advocate for the positive opportunities inherent in what he terms the e-memory revolution. He raises these concerns

more to point to challenges on the horizon, which he feels are a worthwhile tradeoff for the benefits of e-memory. For my own purposes, however, these cautionary examples are rich with implications about the ways that rituals of relational maintenance and conflict management may be ripe areas for speculative exploration.

Situating Bells comments in relation to what I have been calling the materiality of action, we might say that lifelogging technologies have the capacity to reshape human relationships to self and others by changing the temporal geometries of attention. Lifelogging threatens to cut through the silky fog of memory attenuation, removing partitions that separate one moment from the next, partitions that had previously made it possible to hide different permutations of ourselves from ourselves—not to mention from others.

And if memories are formed in part through acts of forgetting—stripping away the specificities of a memory’s negative space through the abstractions of narrative and language—then lifelogging has the capacity to disrupt this process as well. What new relationships to memory can be formed through sorting algorithms, relational taxonomies, and retrieval interfaces? New ways of defining what counts as “memory” may be offloaded onto design choices about particular sensors, sensing algorithms, and categorization schemes. And user-generated tags may come to shape new database-driven ontologies of memory organization through associative structures that are more rigid than the fuzzy notional intuitive connections that shape our embodied memories in the absence of lifelogging technologies. How might such changes affect the kinds of staging rituals we now associate with memory—rituals of committing-to-memory, recalling, and sharing memories with others?

## 4.2 Case Study 1: LoveLog and Design Fiction Filmmaking

In the summer of 2014 I was awarded an Alfred P. Sloan Foundation Production Award to make a short film called *LoveLog*, which was shot in August of 2015. The story follows a young couple, who wear augmented reality glasses with ubiquitous video capture and retrieval capabilities. During a difficult move, they quarrel over petty concerns, each using POV memory clips to accuse the other of wrongdoing. While dredging up the past, they ultimately find new ways of connecting to one another.

Rooted in the mundane, and often comedic, dramas of everyday life, *LoveLog* explores how opportunities of unlimited memory might transform human relationships and transform perceptions of ourselves and others through opportunities of ubiquitous recording, cataloging, and playback of memories.

As a work of design fiction, the story also gives me an opportunity to speculate about new rituals of organizing, sharing, and “replaying” memories. I am interested in how these new rituals might impact the ways that romantic partners connect to one another and manage conflict. In writing the screenplay I was particularly interested in rituals of “marshaling evidence” in domestic squabbles about such prosaic concerns as “who took the trash out last?” or more emotionally charged questions like “which one of us says sorry more often?”

In order to contextualize this project, I will first briefly review literature that situates design fiction in relation to narrative filmmaking. I will also discuss several examples from the world of film and television that depict similar kinds of stories, exploring the potential impact of lifelogging and augmented reality on interpersonal relationships. In response to

these works, I will lay out what I believe are a different set of opportunities and stakes in this particular area of storytelling which have yet to be explored.

Moving on to discuss the specifics of the film project, I will provide a synopsis of the story and then detail the various lifelogging inflected interaction rituals and fictive practices that the couple enacts. As part of analyzing these phenomena, I will deploy the materiality of action framework developed earlier to speculate about how particular spatiotemporal geometries of attention may become destabilized by the impact of lifelogging on ritualized forms of remembering in interpersonal communication.

#### *4.2.1 Design Fiction and Narrative Film*

Before I go into depth discussing the LoveLog film, I will review what design fiction theorists and practitioners have to say about narrative film as a medium for design. These positions will help me to situate my own perspectives on design fiction filmmaking.

A number of design theorists and practitioners have pointed to the centrality of story for design fiction. Josh Tanenbaum, for example, makes the case that story should be considered an essential aspect of design fiction, and not just something to be hinted at or evoked in the imagination.

Diegesis is important to our understanding of design fiction because it requires that we take the world of a story seriously: Objects and technologies that exist within the fictional world must abide by the rules of that world. Even if we don't fully understand those rules, they still must be seen to exist and to operate with consistency. We don't know how the teleporters in *Star Trek* work, but we know they have specific constraints and affordances that govern their operation within the story. The logics of the story are what give a design fiction its power, and I would argue that in the absence of those logics, a design fiction ceases to operate. (Tanenbaum 2014)

Tanenbaum argues that without the logic of a particular diegesis, design fiction becomes something else—perhaps “mere” speculative design. He points to the significance of ‘diegesis’ in Sterling’s definition of design fiction. Both Sterling and Bleecker point to David Kirby’s term ‘diegetic prototype,’ which Kirby uses to describe the ways that science fiction film communicates technological or scientific opportunities to the general public through prototypes deployed in narrative film. Kirby’s exhaustive research demonstrates the dynamic flows of influence connecting the worlds of science fiction filmmaking to the worlds of science and technology research (2011; 2010; 2003).

In my design work, overall, I am less strict in applying this criteria that design fiction must exist inside a fully fleshed out story.<sup>8</sup> For me, ‘diegetic prototypes’ can also suggest a world rather than flesh it out entirely. That said, in exploring the relationship between lifelogging and ritual, I found that narrative filmmaking was a particular productive medium for thinking through the practices of augmented memory that I described earlier.

In particular, as I gravitated towards a gestural interface for the lifelogging platforms represented in *LoveLog*, I found that those interactions were well suited to the visual storytelling techniques of narrative film. Gestural interfaces, prototypically high in ‘external legibility’ (Zigelbaum 2008)—are particularly attractive within the visual logic of cinema. The gestural interface of *Minority Report*, similarly, represent a canonical example of effective design fiction in the context of narrative film (Bleecker 2009a).

In addition to Kirby, a range of theorists and practitioners have written about narrative filmmaking in relation to design and speculative representations of technology.

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<sup>8</sup> I also believe that it is possible to flesh out world of a diegesis without explicitly exploring specific instances of story (see the world building work of Alex McDowell for examples of diegesis that exists independent of specific story).

Nathan Shedroff's book, *Make It So*, offers an in depth study of the way Hollywood represents interfaces in science fiction film (Shedroff and Noessel 2012). Steve Anderson's scholarship on cinematic representations of technology presents incisive critical analysis of the ways that Hollywood has represented computational interfaces, games, and data (2015a; 2015b; 2013). Brian David Johnson (2011) points to science fiction filmmaking as a practical resource for design-envisioning. And finally, futurist Noah Raford has written about the genre of design fiction videos created by designers (Raford 2012), and his blogged critique of "bad design fiction" is notable for the way it critiques typical corporate envisioning videos (Raford 2015).

Design practitioners who, themselves, make narrative films include Matt Jones, who has worked at the Google Creative Lab and BERG. He problematizes the term 'design fiction,' since, from his perspective, "all design is fiction."<sup>9</sup> But he nevertheless finds value in using the term to underscore how nascent moments of design can paint alternative universes and enable us "to 'try-on' a future for size" (quoting Proudfoot in Jones 2015).

There are also more critically minded design practitioners who use video creation as a tool of provocation, including Keiichi Matsuda's video series which satirizes common fantasies of augmented reality (Matsuda 2010). His piece *Domestic Robot* presents the POV of a person's morning kitchen routines saturated by an augmented reality of unnecessary instructions (on activities like "how to make tea"), branded logos (which saturate the kitchen like billboards), and an overall excess of information on quotidian details (like an up-to-date account of the contents of a fridge). Another piece, *Augmented City*, explores how augmented

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<sup>9</sup> Raford's position suggests the dangers of how Bleecker's terminology now threatens to rebrand the kinds of un-self-reflexive envisioning examples that Bell and Dourish were critiquing as, themselves, equally valid forms of design fiction. If the already established envisioning practices of design also count as 'design fiction' then what is the point of establishing a new term, except perhaps as a way of ironically validating precisely the kinds of always-just-out-of-reach, pristine, seamless, proximate futures that the more uncritical examples of design research in HCI and ubicomp tend to promulgate.

reality reshapes and complicates public space. Finally, his project *Hyper-Reality* presents a critical vision of work, neoliberal surveillance, and consumption.

I would contrast these sorts of examples of doing design fiction through video to the more prevalent class of corporate envisioning videos that Rford critiques. Examples include Corning's *Day of Glass* and Microsoft's *Visions of the Future* series made by advertising and marketing companies. Envisioning videos produced by technology companies themselves often share these aesthetics of these corporate envisioning videos. For instance, Google's *Project Glass: One Day...* and Microsoft's *Transform Your World with Holograms* fit this mold. These examples typically reproduce precisely the kinds of seamless visions of the future—unsullied by the messy details of daily life—that Dourish and Bell were critiquing as problematic and counterproductive for the field of ubiquitous computing research. Some examples complicate these differences, however, such as the short film called *Sight* by filmmakers, Eran May Raz and Daniel Lazo, which presents a critical vision of augmented reality in the context of a gamified world and predatory dating. These filmmakers also produce slick corporate envisioning videos, suggesting that the aesthetic sensibilities of envisioning can be subverted for critical ends.

#### ***4.2.2 Film and Television Depictions of Lifelogging***

Lifelogging opportunities are now frequently explored in film and television. Two *Black Mirror* episodes in particular stand out as relevant examples. The first episode, called “The Entire History of You,” presents a world in which people have a ‘grain’ implant that enables them to record and replay their memories for themselves and others. A husband, Liam, discovers that his wife has been cheating on him and forces her to reveal the evidence stored

on her grain. In the end, tormented by images of his wife with another man, Liam lashes out and ends up cutting the ‘grain’ out of his neck. The episode presents a critical vision of technology through compelling and inventive storytelling. But from the perspective of design fiction, the dystopian outcome of the ending and the focus on evidence of marital infidelity as a core theme of memory augmentation meant that more nuanced forms of everyday conflict were overshadowed.

In another episode, “Be Right Back,” the social media contributions of a dead lover are used to populate “personality data” for an artificially intelligent android doppelganger, raising questions about the role that lifelogging approaches to data collection might play in reanimating the dead. This episode’s relationship to the technology ends on a more complicated note, however, with the android maintaining a relationship to its flesh-and-blood progeny, but as a family pariah tucked away in the attic.

#### ***4.2.3 Goals for the Design Fiction Film, LoveLog***

In contrast to some of the examples described above, I created the story behind *LoveLog* to explore more quotidian forms of conflict as opposed to the exceptional or cautionary. Along these lines, I knew from the beginning of this process that I wanted to focus on the meaning of ubiquitous video capture in *domestic* as opposed to public space. So much of the conversation and controversy surrounding Google Glass had focused on big questions of surveillance and privacy, and media discourse fixated on the intrusiveness that such a technology might represent in public space. But these issues seemed to overshadow design questions about augmented reality and lifelogging in domestic contexts.

I also wanted to show people struggling over contested visions of what a platform “is for” in their daily lives. Drawing from Bell and Dourish’s concerns with the messiness of ubicomp infrastructure in everyday life (2011), I was interested in how lifelogging technology might be experienced as *seamful* rather than seamless. LoveLog, the AR app depicted in this film, doesn’t just make sense “out of the box.” Despite the way the LoveLog app is marketed within the world of the film, the protagonists have to figure out on their own what the app means for their lives. I wanted that process of discovery to be unfolding in-and-through the invention of new rituals. And I was curious about how a storytelling environment might serve as a sandbox for inventing new kinds of communication rituals and reimagining the unspoken ground-rules that structure a relationship. (What are the tensions and unsettled dynamics? What are the opportunities for growth and transformation?) And in particular, I was interested in how the LoveLog app (including its AR and gestural interface) might get folded into rituals of: relational maintenance, phatic communication, conflict mediation, and courtship.

And if lifelogging presents new “ways of remembering” then how does that opportunity alter the meaning and function of memory in a relationship. How might lifelogging change, for example, the way we tell the story of our relationships? I wanted Felix and Sadie to be invested in mythologizing their relationship, but then be troubled by their inability to whitewash away or resolve the documented evidence of doubt.

And finally, I didn’t want to depict the technology as “good” or “bad.” I didn’t want the characters just resorting to taking off their AR glasses or deleting the LoveLog app at the end of the story. Instead, I was interested in transformations that were neither cleanly utopian nor dystopian, but simply different, a reconciliation with a new world.

#### 4.2.4 *The LoveLog Story (A Synopsis)*

*LoveLog* follows a young couple, Felix and Sadie, who wear augmented reality glasses and constantly record their relationship, cataloging their memories as part of their everyday interactions with one another. [See Appendix 1 for *LoveLog* screenplay.]

The story joins Felix and Sadie as they make the momentous decision to start using a popular AR app called LoveLog. In the world of the story, this app is one among several lifelogging apps with ubiquitous video capture and tagging features. What is unique about this app is that it creates a shared memory scrapbook folder that serves as a repository for memories from the relationship. (Note: LoveLog memories start out private and must be dragged into the shared scrapbook folder to be viewed by both parties.) Much like the choice to change one's Facebook relationship status in our contemporary moment, in the world of Felix and Sadie, the decision to start using the LoveLog app marks a significant transition. But we also find out that the cultural status of the app is already fraught territory within the story world. Deciding to use LoveLog is also—again, like Facebook in our contemporary moment—an inescapable dimension of social life. “We don't want to become one of *those* couples,” Felix jokes. But to *not* use LoveLog after a certain period of dating would cast the relationship itself as suspect.

We soon learn that Felix and Sadie have reached another key transition marker in their relationship; they have decided to move in together. During a difficult move they experience tensions over their different approaches to domestic space. Sadie's cleanliness and need to create an oasis of domestic tranquility clashes with Felix's chaotic collection of art supplies and borderline hoarding practices. Sadie also needs to keep the space organized,

because the apartment is her professional backdrop when she videoconferences in to work meetings. Meanwhile Felix is in between jobs. During this time, their use of LoveLog, and in particular the way that they tag their memories, also begins to change. What had once been positive tags underscoring their romance and courtship, now included tags with a twinge of passive aggressiveness. Sadie tags things like Felix leaving the cap off toothpaste and other examples of his obliviousness. Meanwhile Felix tallies the number of times he's said sorry compared to Sadie. Felix's disruption of Sadie's space eventually causes her to lash out, triggering a period of tension in the relationship, reflected again in how they tag their memories.

They make up though and recommit to not doing anymore negative tagging. Feeling the momentum of this upturn in their relationship, Felix rises to the challenge of a final purge of his things. But just when their relationship seems on the mend, a fight over a painting reignites their conflict over different fantasies of their shared domestic space. During this fight both use LoveLog to marshal evidence to bolster their case. We learn that Sadie has harbored worries about Felix's commitment based on a moment of hesitation before he signed the lease in the property manager's office. Felix, switches that memory to his own POV to reveal that the reason he left the room in that moment was actually due to a nasty bout of diarrhea. Over the awkward memory of his bathroom POV, we see Sadie and Felix reconnecting in the present moment. The film ends with a new compromise. Felix and Sadie have created an augmented reality overlay of their space, an algorithmically generated "remix" of their decorative belongings that can be endlessly shuffled.

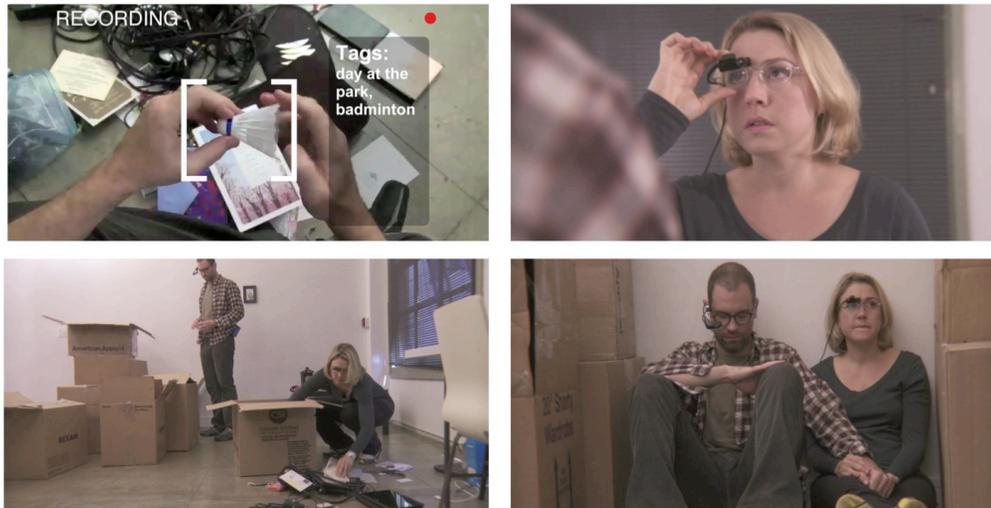


Figure 2. Production stills from *Moving Day*

#### 4.2.5 Insights from an early prototype

In 2013, I made a short prototype film called *Moving Day* [Fig. 2] that explored some of the ideas that would later become more fully fleshed out in *LoveLog*. In many ways, I think about this earlier project as a prototype, not only of the story world, but also of the embodied interaction rituals that Felix and Sadie participate in as they record, catalog, and exchange memories with one another. Prototyping in this way is a rare luxury in the film world, where test shooting often means simply ensuring that technical hurdles can be overcome. Instead, the opportunity afforded me with an early opportunity to test out what would become the LoveLog interface, not only through rehearsals with actors, but also through reflection on the basic underlying premises of the lifelogging platform and the ways that it could insert itself into everyday life.

One big area of experimentation, for example, was related to the interaction mechanisms for tagging and sharing of memories. I initially, tried out the idea that Felix and Sadie interacted with their AR interfaces solely through voice-activated instructions. In

rehearsals, this approach felt stilted, especially in situations where, right in the middle of a conversation, one would “send” a tagged memory to the other to view. I didn’t want to do away with memory sharing as *part* of the conversation though. I was interested in new ritualized modes of arguing about the past, and so manipulating the AR interface needed to feel more like a conversational gambit, a fluid speech act.

Since verbally triggered tagging and sharing of memories didn’t make sense when these actions interjected into the flow of conversation, I explored having them accomplish these separate acts of tagging and sharing through slightly different mechanisms. Mechanisms for *sharing* memories were the real sticking point, because they were the most likely to occur in the middle of a conversation.

In the end, I opted to have tagging activated through a combination of verbal cues and a button on the side of the AR glasses, but sharing happened solely through manipulation of the button (so that it wouldn’t interrupt their conversations). My hope was that in the final edit, by seeing the media that was being shared in the moment, we would understand more fluidly how this interaction was actually experienced by the participants in the story world. What I learned though was that, when the two characters were in the middle of conversation, even the minor action of pressing a button—and waiting for a beat while media was “replayed” for their partner—did too much to break up the flow of conversation. It didn’t feel believable that this could happen in a fight, because the person receiving the memory has to just sit there and wait for this “evidence” to present itself. It seemed more likely that receivers would simply reject the memory and refuse to watch what their partners were trying to share.

Then during the Sloan Summit in 2014, I had a chance to meet with John Underkoffler, whose G-speak system served as the inspiration for the *Minority Report* gestural interface. I was interested in what a more domestic version of a gestural interface could look and feel like. So, in the final version of the screenplay, I opted to explore gestures that activate, share, and navigate memory clips on Lovelog. Tagging still happens with a partially verbal component, but now when one person wants to share a memory with another, they share their entire interface view by gesturing in an opening movement. They can also throw the “plane” of the LoveLog interface onto a wall or table so that it can turn into a shared touch-based UI. By turning the LoveLog platform into a gestural interface in this way, I enabled Felix and Sadie to not only share individual memory “clips” but also to make their entire interface-view become a kind of shared “workspace.” I was particularly interested in how arguments over contested memories might map onto contested manipulation of this shared physical space. So unlike in *Minority Report*, where Tom Cruise’s character has full command over the interface in front of him, instead in this framework, multiple participants share the space and in some cases compete for control over it.

#### ***4.2.6 AR Interface Interactions and Interaction Rituals***

The following represents interface actions and interaction rituals that I explore in the latest draft of the film. The augmented reality dimension of these interactions emerged through a combination of personal conversation with augmented reality researchers (such as Ron Azuma at Intel), borrowing from and reworking existing AR interfaces (or those on the horizon such as Hololens), and from investigations into the history of collaborative work in

virtual reality systems—in particular Collaborative Virtual Environment research of the 1990s which examined questions of inter-subjectivity in virtual spaces.

I will note however that in the context of *augmented* reality, as opposed to its virtual cousin, many of the social implications for augmented interactions are still being fleshed out. So rather than let previous research dictate my creative exploration, I have instead used the context of a story world as a thinking tool to work through unexpected intersections between platform and emergent forms of sociality.

Where relevant, I will go beyond discussion of the basic interactions of the AR + lifelogging interface to describe the kinds of social contexts in which it might emerge and offer reflections about the inter-subjective dimensions or affordances of such a platform. Some of the more basic interactions (afforded by the AR interface) may appear less relevant to the forms of ritual as social practice that I pointed to in the introduction of this chapter. However, these more basic interface interactions will be helpful for me in setting up a vocabulary of embodied actions that will undergird more sophisticated inter-subjective rituals in the context of LoveLog.

#### *4.2.6.1 Basic AR Interface Interactions in the World of LoveLog*

The following represents a detailed design fiction accounting of the AR interface interactions in the world of *LoveLog*.

##### Activation:

To activate the AR interface from its ambient state, a user holds their hand up in front of their face, splays their fingers, and then abruptly closes them. The AR interface responds to

this gesture by briefly flashing a traced overlay on the finger joints to signal recognition of the signal.

#### Display Environment:

Once activated out of ambient state, a default “my applications” home display environment appears around the user. The default home display environment wraps around the user and moves along with the user’s head in space. A display environment can be populated by virtual objects: windows, application icons, 3D objects, and data visualizations, etc., but the home display environment is made up primarily of application icons.

This display environment can be expanded using the “spread” gesture: starting from a position with the arms extended in front of the body and expanding them to the sides. By reversing this spread gesture a display environment can be compressed. Such expansion and compression of an entire display environment also proportionally expands or compresses the virtual objects in that display environment. Individual objects, like windows, can also be resized by selecting them first and then spreading or compressing both arms.

#### Interacting with objects and displays:

To select a virtual object like a window or an application icon, users direct their gaze at a particular virtual object and point at it with their index finger (an I action I refer to as “point-selecting”). Point-tapping with this same finger (i.e. “tapping” the air) will activate or open an object. For example, point-tapping on a video window will play it. Point-selecting without point-tapping will select the virtual object but not open it. (Note: to deselect a user simply performs a “flick-away” gesture which looks like a “shooing” of a fly).

To close a window or display environment, a user performs a “flick-over-shoulder” gesture, analogous to throwing salt over one’s shoulder. This “flick-over-shoulder” gesture

will also close an entire application display environment if the application icon or banner is selected prior.

Within a display environment, users can “swish up” (pushing the air up upwards) to bring up a new display environment with a different array of apps (note: the previous display environment will snap to the ceiling).

#### Repositioning:

Users can reposition a virtual object or even an entire display environment by first point-selecting it and then holding a splayed-finger-pose while moving the hand in space (which “drags” objects and environments to a new position relative to the AR glasses). Rotation of the plane of the splayed-finger-pose also rotates the object or display environment being repositioned. To “drop” the window in its current position, the splayed-finger pose is simply released. Note: dropped objects and display environments will still retain their relative position as a user moves their body and their head. For repositioning in absolute space see pinning and locking.

#### Pinning and Locking:

In contrast to “dropping” which occurs in relative space, virtual objects and display environments can also be “pinned,” which means to place it in an absolute position within physical space. Pinning is accomplished by holding a splayed-finger-pose for a second after repositioning. Additionally, objects and display environments can be snap-pinned to walls and other surfaces during a regular reposition by quickly extending the arm forward into ‘z’ depth, a gesture also known as a “throw.” (Note: wrapped display environments that are “thrown” and “snapped” to a flat surface will unwrap into a flat plan.)

Virtual objects and display environments can also be “locked” in physical space. This means that even when the AR interface is placed in ambient mode, the virtual object or display environment stays active and visible. Locked objects, unlike pinned objects, will remain open even when the active display environment is closed. This is a particularly useful feature for ambient data-visualizations or for other sorts of decorative media like images or looped movies. Display environments can also be locked in place, for example, if there is an office workspace that requires a particular array of tools readily available in a particular location.

To lock an object or display environment, a user performs a “claw flick” which involves first selecting an object and then modifying a splay-finger-pose so that the fingers are curled forward in “claw pose” and then quickly flicking them out again. (When a successful lock has occurred, a small lock icon will appear briefly in the corner of the virtual object or at the origin of a locked display environment.)

#### Closing Display Environments:

At any time, the user can return back to the default “my applications” display environment by using the open-and-close splayed finger gesture. This also closes all open display environments that have not been pinned or locked. Holding out an extended first for longer than two seconds will send the AR interface back to ambient state and close all open display environments and virtual objects except those that have been locked. (Note: if an application’s display environment is dropped, pinned, locked, or resized, then additional display environments can also be opened and placed in different relative or absolute positions.)

### Sharing with Others in Physical Space:

By using a “curtain-raise” gesture, users can share their view of a particular virtual object (like a memory clip window) or even an entire display environment with another person who is also wearing AR glasses. A “curtain raise” gesture involves raising an extended arm with the hand flat and bent at the wrist so that the thumb points up. Any virtual objects or display environments that are selected at the time of a curtain-raise will be visible to anyone in proximity who is linked to the curtain raiser. This action is frequently accomplished with a free hand curtain-raising behind another hand in splayed-finger-pose while orienting an object or display environment for others to see it. The effect of this combination of gestures appears somewhat like curtains ascending to reveal the splayed hand, thus “curtain raise” was adopted as the name of this gesture.

#### *4.2.6.2 Opening LoveLog and Playing Memory Clips*

##### Opening LoveLog:

From the “my applications” home display environment, a user can point-select the LoveLog app and it will become the new primary display environment with the “my applications” display environment shrinking and sliding to the left. A user can toggle through multiple display environments by looking down and performing a so-called “spin-the-wheel” gesture—supposedly inspired by the classic game show *Wheel of Fortune*.

The LoveLog display environment features a live video window (recording the current memory) and a Shared Timeline showing the most recent memory-clips and tags. Rotating an index finger in the counter clockwise direction will toggle the live view back in time. Memory-clips can be searched and sorted by tags (a functionality that is driven by

either verbal order or by point-and-tapping on a particular tag displayed beneath each memory clip). If a user wants to play a memory-clip they point-and-tap on it. The memory clip will enlarge to “large screen” format (default roughly 4 x 7 feet) by default.

The Shared Timeline is organized by default in a grid formation, but as individual memory clips are rearranged (by dropping them into clusters for example) that relative spatialization can persist in the Timeline layout. Individual memory clips can also be repositioned by pinning them in absolute space, snapping to walls and surfaces, or locking them in particular location (i.e. so that they remain accessible outside of the LoveLog application display environment).

#### *4.2.6.3 Rituals of Rewind*

At times the rewind feature becomes the focal point for Felix and Sadie during their fights because it allows them to scrutinize what has just been said with the alluring promise of resolving disputes through an appeal to documentary evidence. For example, this feature plays a significant role in the way that Felix and Sadie scrutinize linguistic features like tone of voice in ongoing conversation. In this way, rewinding and scrutinizing serves as a ritual of “meta-argument” for Sadie and Felix.

Often these disputes happen from the heat of an argument but hinge on an alleged affront that served to ignite tensions in the first place. In other cases, the feature is used to resolve claims of illogical complementarity from one sentence to the next (“That’s not what you just said!”). Such examples point to what Deborah Tannen describes as incongruities of conversational style, which often spark conflict in relationships due to different parties’ disparate tactics for communicating ‘meta-messages’ (Tannen 2011). What we elusively call

“tone” often reflects a range of more subtle features such as rhythm, volume, duration of pauses between utterances, conversational expectations of directness vs. indirectness, prohibitions against interruption vs. expectations of cross-talk, etc. Rituals of rewind enable couples to develop a richer (and potentially more neurotic) attention to these meta-linguistic aspects of communication.

When I relate the story of *LoveLog*, I often start by asking people if they have ever been in a fight with a loved one and had the desire to rewind what had been said in an earlier moment as evidence to prove their case. Sometimes, this “earlier moment” is just a few seconds earlier. And many of the people I talked to related fantasies of wishing they could “play back” what had been said. We often think “if I could just *show* them how they sound, then they’d understand.” However, as Bill Nichols (1994) points out, video as documentary evidence can itself become contested, caught between competing narrative frames. In *LoveLog* I was interested in exploring this clash between the fantasy of resolution through rituals of rewind and the more complicated reality that such a ritual might expose.

#### *4.2.6.4 Rituals of Contested Social Space*

Due to the physicality implied by a gestural interface, other people in proximity can see when a person has activated their AR headset. However, others won’t necessarily know which app someone has selected based on gestures alone. This distinction represents potential limits of ‘external legibility’ (Zigelbaum 2008) for AR interfaces where the distinctions between personal vs. shared interface experiences can be subtle. For example, in certain cases it is possible for one to open the *LoveLog* app and surreptitiously tag one’s

partner. However gestures of toggling may give this action away (see tagging memory clips below).

The absolute positioning options (through pinning and locking) are also particularly relevant for social context because it enables the customization of any living space. Media assets like memory clips can be left in particular places that are meaningful, which means that Sadie and Felix can populate their spaces with items like “living photographs” – essentially gif-length memory clips. Whether these objects are shared or private, however, can become a source of tension.

Another source of tension involves the ways that virtual objects are left either in a tidy state or in a state of chaotic disarray. Despite the fact that users can choose to close locked virtual objects that they themselves don’t want to see. If a virtual object that is visible for one party is not visible to the other party, that discrepancy can create tensions. For instance, a locked virtual may serve a decorative purpose for one party but the other wants to “put it away.” That means that the two will end up inhabiting alternative social layers and when one wants to talk about, or gesture to, an object in their purview, each time they will have to share it with their partner through a point-select and raise-curtains gesture in succession. In some cases it will be easier for one partner to simply share their entire view. But raising the curtain on the entire living space through another’s eyes may trigger a defamiliarizing shock: “How can you leave our space this messy?”—meaning, how could you leave all these virtual objects strewn about in *our* space? Or alternatively: “Why don’t you want to see the living data visualization sculpture I designed? I thought you liked it?”

#### 4.2.6.5 *Tagging and Tallying Memory Clips:*

Interface Actions: Tagging occurs when someone wants to catalog a memory with a particular tag so that it can be retrieved later. If they would like to adjust the “in point” of their memory clip, they can rotate their index finger counter clockwise to toggle back to the beginning of the particular time segment they would like to tag. They can also extend the “out point” forward into the future if they want to tag an ongoing event. To tag a memory clip, then, all they have to do is say “tag” plus a description of the memory. So for example: “tag: date night.” If someone wants to add an *existing* tag to a new memory clip, the tag can be selected by first swishing up with the live view selected (which brings up recent tags in chronological order) and then using a point-and-tapping to select the tag and apply it. By contrast, since *new* tags have to be described verbally, they have a high degree of external legibility (others in proximity will know what’s going on). Existing tags, however, can be added to new memory-clips without others noticing.

When tagging a memory, the user has an option to select an “index object.” This object, when visible, will be accompanied by a subtle virtual outline. Point-and-tapping in the direction of the object brings up the associated memory-clip, which hovers above and stays pinned to the object until it is closed.

#### 4.2.6.6 *Rituals of Tagging and Marshaling Tagged Memory Clips:*

Gordon (2009) describes the significant impact that tagging schemas had on his social life. For example, conversations he had had years earlier were searchable and reviewable. Contexts long forgotten could be refreshed before he spoke to an old friend again. In certain ways, tags enable the off-loading of social life onto searchable forms of memory.

But tagging has implications beyond the simple act of memory retrieval; to label moments of time also parses experience in particular ways. As social theorists have long pointed out, the act of categorization—by accounting for reality in a particular way—also imposes an ontological framework upon the social world (Bowker and Star 2000; Garfinkel 1967).

As Felix and Sadie move into their new apartment, their relationship is tested by the tensions of living together for the first time. Felix and Sadie’s tagged memories gradually shift from serving as positive reinforcement for the relationship to a more passive aggressive role. Tags become a site of contested meaning and categories point to foibles or evidence of victimhood as they vie for control over the new space. Sadie’s collection of examples of Felix ‘leaving caps off things,’ for example, serves as her “proof” that he is an inconsiderate partner. Meanwhile, Felix tallies the number of times he says “sorry” compared to Sadie. These tags are not added to the Shared Timeline but rather are hoarded within their respective personal memory-clip repositories.

Their tagging strategies come to matter in particular when they “reveal their cards” through what I call “rituals of marshaling evidence.” In these rituals, memory-clips serve the purpose of evidence, bolstering one person’s perspective of the relationship. In situations where tags can be tallied, this evidence can also be reshaped through various data visualizations. Arguments about the “data” of a relationship become like heated boardroom meetings with charts, graphs, and other visual aids deployed to support competing narratives about who deserves credit and who deserves blame. I was particularly, interested in exploring the defamiliarizing possibilities of this uncanny juxtaposition between the rigid authority of data-visualization and the everydayness of “silly” domestic squabbles.

#### *4.2.6.7 Rituals of Rumination:*

Both Felix and Sadie play particular moments of their relationship over and over again. To re-experience in this way is to solidify a memory. It becomes an externalization and more real than the original (since the ritual of remembering this event is now tied to the habit of replaying it). For example, Sadie obsesses over Felix's hesitation to sign the lease and scrutinizes the evidence of this moment again and again, not realizing that there was an entirely different explanation for his odd behavior. At the same time, *LoveLog* makes it harder to mythologize away negative memories of a relationship, forcing partners to address issues that, in other contexts might have been easier to sweep under the proverbial "rug" of strategic forgetfulness.

#### *4.2.7 Reflections on LoveLog*

By enabling me to test out a story-world, "to try it on for size," *LoveLog* served as a design fiction thinking tool for understanding possible collisions and dynamic interrelations between a lifelogging AR interface and the little dramas of everyday life that constitute any interpersonal relationship. It also gave me an opportunity to invent new kinds of embodied rituals that played with various spatiotemporal geometries and explored how bodies and space might come to matter.

Indeed, in this story, the contested space of the apartment becomes almost like a third character in the relationship, with shifting alignments (to place) and with its own dynamic story to tell. Such a conception of space and place provides a productive segue for introducing Case Study 2, which begins with an exploration of building-as-character with its own perspective, one just as worthy of as lifelog as a human subject.

### 4.3 Case Study 2: Lifelogging Beyond the Human<sup>10</sup>

Research in lifelogging has expanded beyond Bush's original emphasis on knowledge retrieval to subsume more experiential memory augmentation through video capture. However, this work largely retains the original assumption of an individual human subject.

This coupling of the lifelog concept with a human subject has deep historical roots. In describing the MyLifeBits project, Jim Gemmell & Gordon Bell et al. (Gemmell et al. 2002; Gemmell, Lueder, and Bell 2003; Gordon Bell 2004) point consistently to Vannevar Bush's Memex system (Bush 1945) as inspiration, and in particular they draw attention to the Memex as an indexing and recording system designed to augment a researcher's mental and physical experience. The centrality of a human subject is embedded in Bush's description of an interconnected web of human knowledge (presaging the internet) that enables humans to share and navigate vast stores of information. But while the imagined protagonist of Bush's tale is a human subject, our current media environment suggests a significant shift towards the recognition of non-human subjects as authors and readers of sensor data in an emerging Internet of Things.

Indeed, research has pointed to new perspectival orientations for lifelogging by using objects in the environment to capture video. For example, Lee et al. designed a lifelog system that captures images and other data from the perspective of objects (in proximity to humans) (Lee 2008). However, previous research has yet to address the possibility that objects and environments might themselves be positioned as the subjects of lifelogging.

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<sup>10</sup> Note: the themes described in this case study are adapted from McVeigh-Schultz, Stein, Watson, et al. (2012).

#### *4.3.1 Lifelogs for Objects and Environments*

How might we conceive of a lifelog for a networked object in the physical world? In research that I collaborated on with USC's Mobile and Environmental Media we looked at objects and environments as entities with their own stories to tell. In particular, we explored prototypes that positioned various objects as subjects worthy of their own lifelogs, able to sense and record the world and use this capacity to inform how they relate to humans.

Through projects like *The Million Story Building* (Stein and Fisher 2011) and *StoryObjects* (Stein, Carter, and Preuss 2009) we have explored the lifelog as a narrative platform for objects and buildings. This model of lifelog research has led to insights about how to animate built environments using networked objects (Stein, Fisher, and Otto 2010). In more recent work, Stein's dissertation project *PUCK* (2011) positions lifelogging as a platform for supporting relationships between a building and its inhabitants. This work departs from the familiar emphasis on video recording as the primary tool of the lifelog. Instead our design strategy aimed to support reciprocal relationships and learning experiences between objects and humans.

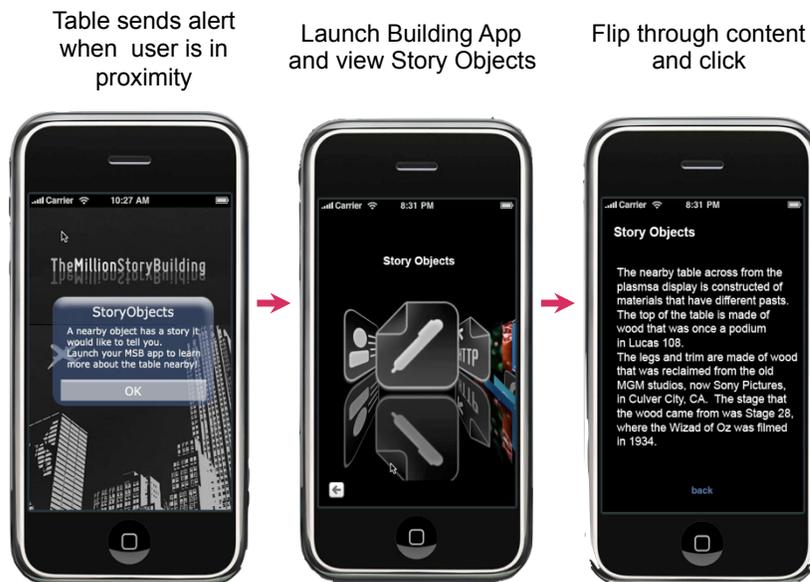
#### *3.3.2 The Million Story Building*

If a building could "talk" what would it say? How would it "feel" about the comings and goings of the people who use it everyday? Would it be affected by their moods and desires? What kind of relationship would it have with its occupants if it could communicate with them somehow? And how would they respond? Using these questions as a design prompt, we conceived of Million Story Building [Fig. 3 and Fig. 4], an experimental design project exploring how location-specific mobile technology can add playful, imaginative and practical new layers to the relationship between a structure and its inhabitants. As buildings become

dynamic generators of data and information, they have the opportunity to use their embedded technological systems to play a more collaborative role in an inhabitants' experience of space and place.



**Figure 3.** Image of the School of Cinematic Arts (SCA) building, subject of the Million Story Building and PUCK research projects at the University of Southern California



**Figure 4.** The mobile interface view of the StoryObjects feature within the Million Story Building application.

Using a newly-constructed School of Cinematic Arts (SCA) building as a test bed, our team designed a location-sensitive iPhone application that enables students and faculty to engage with the construction of place: from adding meta-data to movie posters in the hallways, to leaving virtual messages for others to read in an augmented reality view of the building's central courtyard.

In thinking through the rituals of encounter between building and inhabitants, we speculated that the building, as a young being, doesn't know much about itself, thus the solicitations to participate were framed as the building asking its inhabitants to teach it about itself. By adding metadata to the space, participants could teach the building to understand its evolving social context. Addressing concerns of surveillance (Lyon 2001), we align with research that confronts this issue by emphasizing mutual or horizontal participation (Albrechtslund and Ryberg 2011). In this way, our design strategy aims to support reciprocal relationships and learning experiences between objects and humans.

#### ***4.3.3 PUCK (Place-based, Ubiquitous, Connected, and Kinetic experiences for Interactive Architecture)***

Building on the work of the Million Story Building, Jen Stein developed the dissertation project, PUCK (2011), which investigated human-building relationships and place-as-character through interactive environment design. For this project, we created a lifelogging platform based on existing infrastructural sensors embedded within the walls, floors, and ceilings. These included sensors for temperature, power and water consumption, wireless network activity, HVAC pressure, CO2 levels, etc. In our scenario, we imagined these sensors as representative of how the building "sees" the world. A notable contrast to the Million Story Building project, this time the building carries information that the inhabitants

don't have access to. We speculated that the building wants to teach its inhabitants how to "see" the world as it does, and we developed interaction rituals that we explored through which the building might seduce inhabitants into valuing this data.

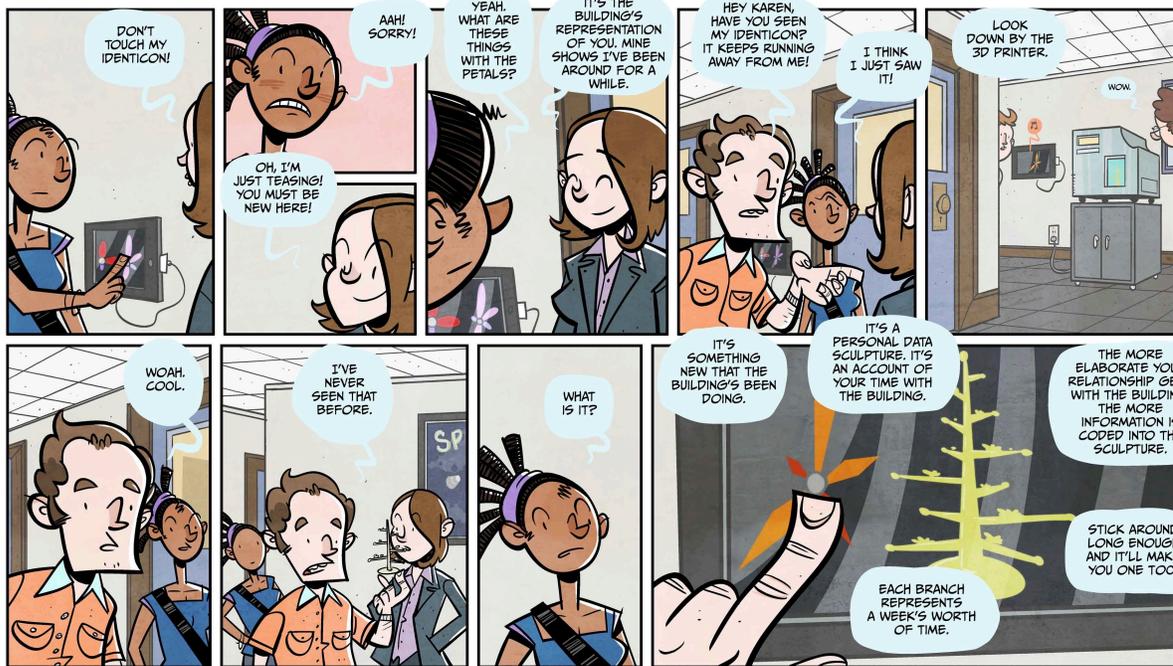


Figure 5. Comic illustration of interactions with Identicons in PUCK building platform

Inhabitants also interact with the building through wall-mounted touch interfaces. A personalized "Identicon" follows inhabitants as they move from one interface location to another [Fig. 5 and Fig. 6].

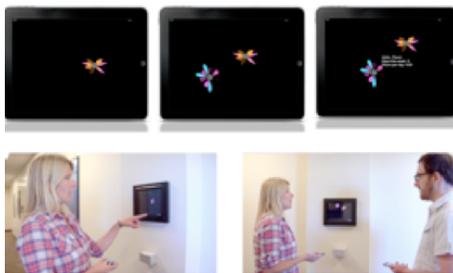


Figure 6. The building personally engages inhabitants through personalized data Identicons.

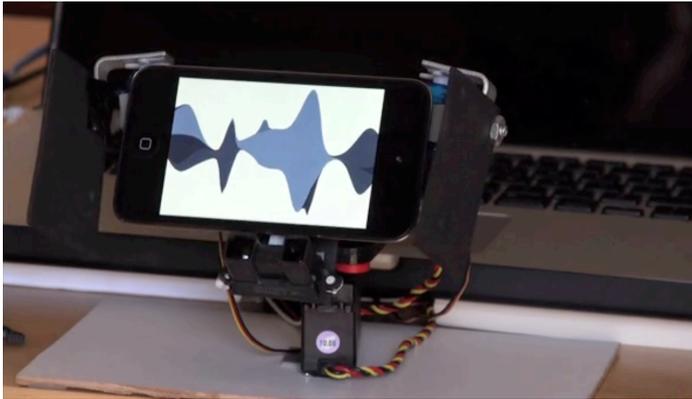


Figure 7. A data object "gift," representing a human-building relationship over time, which the building provides for its inhabitants.

This Identicon is itself a data visualization representing the history of the interactions between an inhabitant and the building. We explored the idea that the building would create

evocative data-objects, representative of the human-building relationship over time [Fig. 7], which the building would “gift” to its inhabitants after a certain period of time.

As part of my own contribution to this project, I explored the idea that the building is “shy” about revealing its data. Since the primary interfaces that connected building and inhabitants were touch screens located throughout hallways, I was curious about the possibility of exploring “shyness” through a touch screen that doesn’t “want” to be touched.



**Figure 8.** A touch screen interface that doesn’t “want” to be touched.

I built a prototype of a shy touchscreen object [Fig. 8] that follows a human with its gaze, but when the human approaches to touch and engage the object “hides” by closing two shielding appendages on either side. After a period of time it slowly emerges, but will hide again unless the human moves very slowly. If the touch happens slowly enough, then the object’s shielding appendages will stay open and interactive data-visualization features will be accessible.

#### *4.3.4 Lifelogs for Vehicles<sup>11</sup>*

Building on the work described above, the MEML team designed a vehicular lifelog prototype for a MINI Countryman, inspired by in part by the ways that many people tend to personify and build relationships with the cars (for example, see: Donath 2007).

A goal of the design was to extend the typical contexts of automotive user-interface design by (1) looking inward to the imagined “character” of the car and (2) looking outward to the larger social context that surrounds driving. We were interested in understanding how a vehicle-based lifelog might impact the way that drivers project character onto their cars. While the lifelog in this case could have been framed as that of the driver alone, we preferred to explore opportunities in which the lifelog would shape the relationship between driver and car. Revisiting this project in the context of concerns raised by this dissertation, I will unpack the kinds of embodied interaction rituals that we prototyped with particular attention to rituals involving: discovery, care, and attending to social context in the environment.

##### *4.3.4.1 System Design*

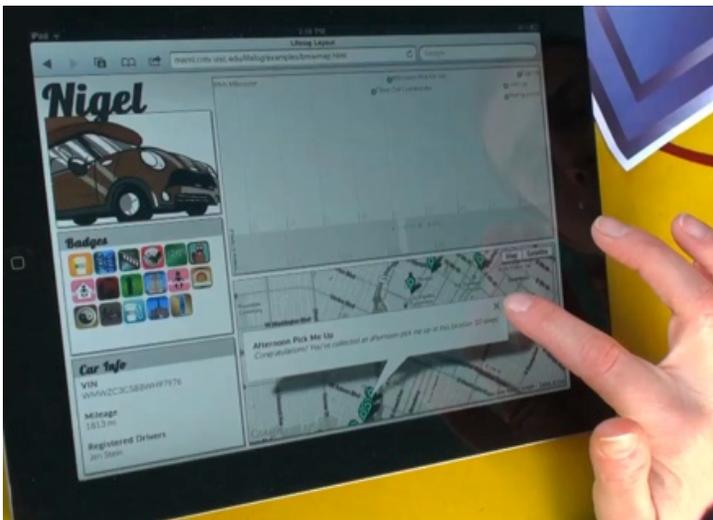
Using the various in-car sensors within the MINI, we designed a lifelogging system that tracks events and milestones, unlocks achievements, and tallies records associated with driving. This information triggers contextually relevant notifications on the MINI infotainment system. This kind of interaction takes place intermittently and does not always rise to the level of a driver’s experiential foreground, but if in-car notifications are missed when they first occur, a driver (or passenger) can review them later on in a lifelog review interface (iPad application).

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<sup>11</sup> This section is in part adapted from a paper on vehicular lifelogging delivered at CHI in 2012 (McVeigh-Schultz, Stein, Boyle, et al. 2012)

Our vehicular lifelog system consists of an iOS app and a server-based component. This server component not only tracks which events are found but also defines which events we are looking for—which the iOS app loads upon connect. A simple web interface enables us to define and edit events, making the creation of lifelog events less of an engineering task and more of a writing and storytelling task.

An iPad interface was also designed to enable users to review their car’s lifelog outside the car (or inside, in the case of passengers) [Fig. 9]. This interface maps lifelog events according to location, time, and event definition.



**Figure 9.** The lifelog tablet interface organizes the events of the lifelog according to time, space, and event definitions.

#### *4.3.4.2 Human-Vehicle Interaction Rituals:*

##### Rituals of Care:

Based on early interviews we conducted with people who personify their car, we found that people who felt a strong connection to their car as a living being placed a great deal of emphasis on rituals of care and reciprocity. For example, they expressed feelings of guilt if they delayed taking their car to the mechanic or waited too long to wash their car. We explored these themes by repurposing the rain sensor as a sensor, which would recognize

when a driver was washing their car [Fig. 10]. Washing the car triggers dashboard notifications that the driver will hear and see the next time they drive.

We also explored ways to trigger ambient notifications signaling that the car was “excited” if it passed by a carwash during a period when it hadn’t been washed in a long time. In this way our lifelog interactions often adapted sensors for unexpected purposes. The rain



**Figure 10.** Rain sensors, originally intended to trigger the automatic windshield wipers, were used instead to trigger a “Car Wash” event.

sensors were originally engineered to trigger the automatic windshield wipers. But here, we recontextualized this sensor to enable a driver to feel a sense of gratitude from their car.

#### Rituals That Involve Attending to the Environment and Social Context:



**Figure 11.** Memory detected: “Baby on Board.” Caption reads: “new addition to the family recorded on 11/10/2010.”

We speculated that driver a car could be similar to the experience of walking a dog in certain ways. Dogs see the world differently from their human companions but find ways to communicate that

different sensorial experience to humans as their affective state changes (excitement around sniffing the ground pulling the leash for example). Similarly, a car sees the world through a different sensorial lens. We explored the idea that the car related to other cars in particular ways, by triggering notifications that signaled antagonism when the car passed a “rival” Audi dealership. We also explored ways in which the car could remember important social contexts tied to particular places. For example, the seat sensors can recognize the difference between an adult and a baby seat, so we designed a memory notification that was triggered



**Figure 12.** Using the seat sensor, the lifelog recognizes that a passenger (in a child-seat) has been dropped off. This information, paired with GPS coordinates for a local school, adds an instance to the “Dropping Off Child” tally.

when the car returned to the site of a hospital where it had sensed a “baby on board” for the first time [Fig. 11].

We also used the passenger seat sensor to recognize when particular “drop offs” repeatedly happened in particular locations, for example, dropping of a child at school [Fig. 12].

We also developed a design fiction scenario in which a car would remember the photos that had been taken years ago on a road trip when it revisited that same path [Fig. 13].

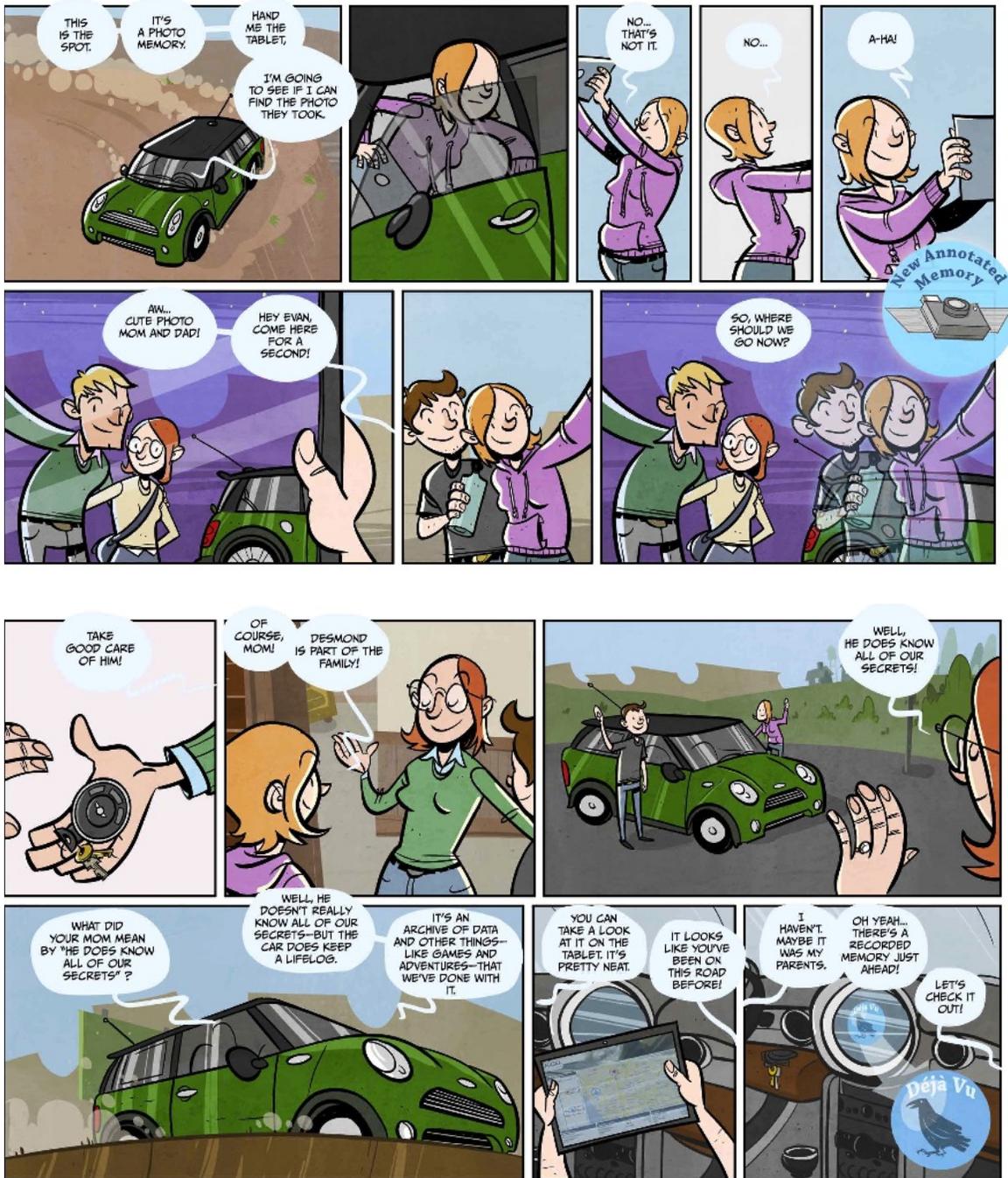


Figure 13. Comic illustration of vehicular lifelog “memory.”

#### *4.3.5 Reflections on Designing for Human-Object Relationships*

The concept of lifelogging can increasingly be extended beyond human subjects to include objects and built environments. This approach supports an alternative model of human-object interaction that we described as ambient storytelling, in which engagement is intermittent and iterative, non explicitly foregrounded, but potentially always-on. ‘Ambient storytelling’ is storytelling that unfolds asynchronously in the background, as opposed to the foregrounded narration characteristic of durational media artifacts such as video games, movies, or literature (McVeigh-Schultz, Stein, Watson, et al. 2012; Watson 2012). This idea is informed by a variety of artistic, narrative, and design traditions including but not limited to: Mail Art, Sticker Art, web-based ambient storytelling (such as The Nethernet), augmented reality games (such as Hidden Park), location-based games (such as Shadow Cities), environmental games (such as Macon Money), as well as historical antecedents in urban interventionist art practice of the Situationist and Fluxus movements. What these interactive experiences share is a kind of intermittence, a lack of explicit foregrounding, and a sense of always-on or potentially available mystery that confounds the expectations of a participant and keeps them guessing about what counts as play or story. This concept can help us to explore the ways that objects “see” the world through sensors and utilize narrative as a way of understanding the relationships between objects and humans.

Using a lifelog platform to seed ambient forms of engagement in this way requires a remapping of perspective away from traditional human subjects to consider the “lives” and stories of objects. Such an approach does not imply an anthropomorphic treatment of objects, however. Instead, there are opportunities to consider animism as a key design

theme. In the next section, I will lay out what I have described, along with coauthor Phil van Allen, as an animistic approach to design (van Allen and McVeigh-Schultz 2013).

#### **4.4 The Case for Animism as a Design Theme<sup>12</sup>**

Within HCI and related fields, researchers have long pointed out that humans have a propensity for attributing intelligence or personified intentionality to machines (Suchman 1987; Turkle 2005). In AI fields, this observation is also an aspirational one, framed by the elusive challenge of a Turing-test passable computer (Turing 1950). However, by targeting the simulation of human intelligence as an ultimate end goal, classical AI has tended to privilege anthropomorphism over other forms of projected sentience. By contrast, alternative or interactionist approaches to AI, have shifted emphasis away from human intelligence, instead advocating for the situated AI of ‘autonomous agents’ (Sengers). Other research has similarly sidestepped ontological questions about human subjectivity by exploring the pragmatics of human machine interaction in terms of ‘affective computing’ (Picard 2000), and design researchers have applied this concept to sociable robots (DiSalvo 2012).

From humanities and STS fields, theoreticians similarly have emphasized nonhuman forms of agency (Latour 1999) and pointed to the vitality or vibrancy of matter (Bennett 2009). This idea, that material forms have a “life” of their own, takes on particular potency when designed objects accrue interactive features, becoming what Sherry Turkle calls ‘relational artifacts’ (Turkle 2006). Within alt.chi, research has similarly explored this imagined “inner-life” of objects through projects such as a vehicular lifelog that supports

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<sup>12</sup> This section is in part adapted from writing I contributed to a paper by Philip van Allen and McVeigh-Schultz (2013).

human-car relationships (McVeigh-Schultz, Stein, Boyle, et al. 2012) or moving TV screens which orient preferentially towards certain participants over others (Mortensen).

Sidestepping the gravitational pull of anthropomorphism, we instead advocate here for the notion of animism as a more appropriate metaphor for interactive systems that invite users to imagine an inner-life of objects. This position takes inspiration from Brenda Laurel's writing on 'designed animism' as a network of "individual perception-representation-action loops" (Laurel 2008). Laurel's framework draws on an ecological metaphor as a way of linking animism to the notion of emergent systems. Existing design research, however, has yet to unpack the particular methodological strategies and opportunities unique to the animism metaphor. Such an approach, we argue, directly engages with the myth-making narrative tendencies of the human mind.

Animism as a design metaphor can effectively integrate and express the interactive system's designed intentions, affordances, limits, status, history, expertise, and reliability/fallibility. Given the familiarity and power of personification, this paper proposes that designers embrace this propensity of humans to ascribe inner-life to machines.

The tendency of humans to ascribe intelligence to systems based on limited evidence has been criticized as "delusional thinking" by Joseph Weizenbaum, creator of the famous *Eliza* text-based therapist simulation program (Weizenbaum 1976; Wardrip-Fruin 2009). But others like Janet Murray have celebrated the so-called *Eliza* effect as a kind of dramatic suspension of disbelief (Murray 1997). And Noah Wardrip-Fruin complicates Weizenbaum's concerns by pointing to the inevitable breakdown of the illusion that occurs when *Eliza*'s canned responses eventually become predictable (Wardrip-Fruin 2009).

Animism, as distinct from anthropomorphism however, offers a way of separating out issues of ascribed intelligence from ascribed intentionality or inner-life. When a user engages with animistic objects, the objects begin to take on a life of their own in the user's imagination. Turkle has described this process as the move from stable "transitional objects" to contemporary relational artifacts, in which "the psychology of projection gives way to a relational psychology, a psychology of engagement" (Turkle 2006). Like Turkle's notion of 'relational artifacts,' animism is not *merely* about projection. Animism as a design metaphor also suggests an engagement with the creative capacities of users and a taking seriously, or opening up of, the practices of myth-making about, and through, objects as a modality of distributed cognition (Hutchins 1996).

By deliberately supporting an embodied fiction through the metaphor of animism, designers can leverage the myth-making narrative capacities of people, and enable more fluid, productive, and meaningful relationship between humans and interactive systems. And by designing behaviors around this simulated inner life, we can build ecologies of interactive objects and spaces that allow people to leverage the power of fast computation, sensing, actuating, and large databases in a productive, imaginative and collaborative manner. Animistic systems can be especially appropriate for contexts where people (individuals or groups) are in a creative, generative mode where they are problem-setting and inventing. These contexts include professional roles such as writing, architecture, design and law, as well as personal activities such as vacation planning and house-hunting, where multiple goals, complexity, and the intention to create a unique and appropriate "fit" is a priority. Such contexts call upon divergent thinking and cross-domain creative solutions.

## Chapter 5: Designing Rituals of Collective Extension - From Telepresence to Audience-driven Animistics

“You say ‘we’ again.” Timas did not feel comfortable...

....

“*We* is what we say when we are engaging you. When I use *I* it’s just me talking.”

....

“But you’re still controlled by that.” Timas pointed at her eye. He’d seen a silver-eyed Aeolian once, visiting his dad.

....

“If you volunteer to be on a sports team of some sort are you controlled by your team?” Katerina asked. “Or are you still you, but just within the team?”

“You’re still you...”

“I’m on a very big team.” Katerina hunched forward. “There are three hundred thousand people from a random variety of Aeolian cities, live, voting on my every word because I’m their avatar, emissary, diplomat, or whatever you would like to call me. I agreed to this when I became a citizen. Three days ago I was studying for finals when I got the message that I’d been randomly selected for citizen’s duty. And here I am, representing Eupatoria’s interests.

—Tobias Buckell, excerpted from the novel *Sly Mongoose*, 2008 (40-41)

This chapter explores the intersection between two design themes: (1) telepresence prosthetics as remote extensions of the body, and (2) live audiences as intervening agents capable of impacting the unfolding drama to which they are a witness. Together, these themes point to opportunities for reconfiguring audiences as new kinds of bodies, collectivities of remote extension. No longer defined solely by their shared receptivity, audiences in this framework act upon a remote performative arena through improvised modes of collective expression. In such contexts, the material specificities of interfaces become particularly key. By mediating between the singular body and the collective body positioned in a remote space, such interfaces simultaneously enable, define, and entangle multiple subject positions and also shape the ways that audiences reflexively come to make sense of themselves.

This conception of audiences as capable of reaching out and affecting events in a remote location, coincides with emerging themes in 21<sup>st</sup> century science fiction. In *The*

*Hunger Games*, for example, district audiences pool money to succor tributes in need by sending “sponsorship” via tiny parachutes that descend into the game arena. In Tobias Buckell’s novel *Sly Mongoose*, quoted above, a people called the Aeolians collectively peer out through the silver eye of their diplomatic avatar, while voting in real-time to make decisions about what she should say.

Revisiting the framework developed in Chapter 2, we can look to the productive intersections between design and science fiction/speculative fiction (SF) to help us open up new ways of understanding the ritualized relationship between audience and “performance.” Using this lens as a thinking tool can also help us to understand the transformative capacities of popular movements to create new social worlds and imagination spaces.

In protest movements of the past decade, we have witnessed the exploration of new rituals of audience engagement as online audiences became entangled with events and actions “on the ground” through streaming video and social media. Occupy protestors on the ground “hacked” rituals of consensus and coordination using tactics like the ‘Human Mic’ borrowed from anarchist approaches to consensus formation (Williams 2012). In Egypt, Tahrir Square became a laboratory for rituals of deliberation, coalition forming, and even collaborative prayer across religious lines to evolve and mutate. In Iran in 2009, the Green movement revived rituals of revolutionary rooftop calling (echoes of the 1979 Revolution). Important design lessons can be drawn here about the designerly capacities of everyday people as they reinvent rituals during moments of intensified cultural change as well as about the malleability of implicit rule-sets of communication. What Garfinkel describes as the everyday maintenance of social order is not an inevitability but rather a situated set of ritualized practices subject to the contingencies of history and material form.

Drawing upon these themes, this chapter will explore the materiality of collectively driven objects like “parachutes,” “silver eyes,” and “human microphones” alongside more prosaic representational tools like the live audience response graphs that accompany presidential debates. As a design researcher, I have started to explore a range of material agents under the rubric of ‘AudienceBots.’ Placed in a speculative landscape, I use the concept of AudienceBots as a way of sparking speculation about the infrastructures and rituals of civic life. To set the stage for this discussion, however, I will first trace a brief history of telepresence research, telematic art, and audience agency in a variety of domains.

### **5.1 From Telepresence to Telamatic Art: Opportunities and Critical Perspectives**

You don a comfortable jacket lined with sensors and muscle-like motors. Each motion of your arm, hand, and fingers is reproduced at another place by mobile, mechanical hands. Light, dexterous, and strong, these hands have their own sensors through which you see and feel what is happening. Using this instrument, you can "work" in another room, in another city, in another country, or on another planet. Your remote presence possesses the strength of a giant or the delicacy of a surgeon. (Minsky 1980, 45)

In the quote above, Marvin Minsky literalizes McLuhan’s vision of technology, and electronic media in particular, as extensions of the body. In this rendering, extensions not only extend sensorial capacities across time and space, but do the same for mechanisms of output (the servos and actuators of a mechanical arm).

As I argued in chapter 2, SF is not merely a reaction to advances of technological innovation but also influence the ways that technologists imagine new possibility spaces.

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<sup>13</sup> It deserves repeating here that I have been talking about materiality both in the sense of objects, interfaces, and spaces having particular affordances (the space of “the square” or “the rooftop” for example) but also in the sense of ritual rule-sets and procedures (the Human Mic for instance), which, like objects, spaces, and interfaces, have particular affordances rooted in the materiality of embodied action.

Indeed, Minsky's research was directly inspired by Robert Heinlein's short story *Waldo* (1942), and he notes in his *Omni* article quoted above that Heinlein even had suggestions for the article.

In *Waldo*, the eponymous character is a rather effete wealthy genius who suffers from pronounced muscle weakness due to a disease called myasthenia gravis. However, he is able to operate machinery in his factories by manipulating an array of tele-operated mechanical arms from the zero gravity conditions of a spaceship orbiting earth. He controls these mechanical arms via gloves that sense the subtle movements of his own hands. Together the glove-interfaces and their remote counterparts are dubbed "Waldos" after the inventor's own name. Describing these fictional devices, Minsky writes that: "Waldo created dozens of mechanical hands, some merely monkey fists in size, some micrometers in span; he rigged others so huge that each 'hand' spread six meters from finger to thumb. The hands imitated everything he did." Heinlein's notion of a hand-driven manipulator for tele-operated robotic machinery would become so influential that NASA engineers started using it to describe their research in this area, and the name eventually caught on in the world of Jim Henson's Muppets, where similar devices were constructed to manipulate puppets by radio control.

Minsky's student at MIT, Scott Fisher, would go on to realize much of Minsky's vision for telepresence through his work at NASA Ames, where he built the Virtual Environment Workstation (VIEW) project featuring a head-coupled virtual reality interface driven by datagloves [Fig. 14]. Fisher's student, Mark Bolas, built a telepresence robot called "Molly" (1991) that enabled a full 360-degree virtual relay of vision for a remote operator. The two would go on to design another version of Molly for Matsushita Denki [Fig. 15].



**Figure 14.** Scott Fisher demoing VIEW Project with "goggle and glove" system



**Figure 15.** *Telepresence Mobile Robot "Molly"* (1991) Mark Bolas & Scott Fisher (NASA)

During this same period, researchers at Xerox PARC were constructing VR telepresence in collaborative work situations using platforms they called Collaborative Virtual Environments. They were also experimenting with new forms of sociality that emerged when multiple workplaces were linked via live video feeds, phenomena they called Hybrid Media Spaces (Harrison and Dourish 1996).

Throughout the 1980s and 90s this kind of research both inspired and drew inspiration from the emerging field of telematic art. These projects often connected together remote spaces into a single experience. Norman White and Doug Back's piece *Telephonic Arm Wrestling* (1986) emerged from a speculative conversation about resolving the nuclear arms race through an arm wrestling competition. Eschewing the typical active-passive unidirectionality of most telepresence work, this project enabled live two-way flow between identical robot arms manipulated by two participants in different remote locations. Paul Sermon's *Telematic Dreaming* (1992) would expand on this kind of exploration of shared telepresence by enabling two participants in separate locations to share a bed with one another through a combination of live video feed and projection ("Paul Sermon Interview at the Ars Electronica Center, Linz" 1997). Other work positioned viewers as controllers of remote telerobotic bodies, as in Eduardo Kac's *Rara Avis*, in which viewers wore a headset

that enabled them to see from the perspective of a telerobotic macaw situated inside an aviary with 30 other birds (Kac 2001). Kac also developed the term “dialogical telepresence event” to describe pieces that enabled two telerobotic bodies engaging with one another.<sup>14</sup>

As telematic art evolved alongside the net, artists began creating work that utilized the affordances of the web to facilitate and organize remote participation. Such projects often involved forms of collective or collaborative agency. In *Telegarden* (95-99), Ken Goldberg invited participants on the Internet to operate a robotic arm that could tend a garden (by planting and watering seeds). One well-intentioned participant notoriously flooded the lab where the project was originally installed, raising risks of participants “breaking the system” in ways that echo the themes of Chapter 4. In *Telegarden*, participants took turns to manipulate the remote space, but Goldberg has also experimented with collective forms of real-time audience participation in a series of projects that explore the theme of a *Tele-actor* (Goldberg et al. 2002). In this work, the actions of a human emissary (and later a robot avatar) are driven collectively by a live audience who vote in real-time to determine the actions of a “Tele-actor” situated in a remote space.

Throughout the 2000s, telerobotic art increasingly leveraged participation of online audiences in unexpected and sometimes disturbing ways. Wafaa Bilal’s unsettling performance *Domestic Tension* (2007) enabled online participants to move and operate a remote controlled paintball gun which shot at Bilal who was confined to a small room for 24 hours a day for one month (Bilal and Lydersen 2008). He details the ways that the piece represented a response to the killing of his brother in Iraq by a Predator drone. He wanted

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<sup>14</sup> In the case of the *Ornitotrinco in the Sabara*, for example, the telepresence event consisted of a dialogue between “two remote participants who interacted in a third place through two bodies other than their own” (Kac 2001, 193). This project involved a conversation between a telerobot and a human “teleborg” wearing a Telepresence Garment worn by a remote human operator controlled by telephone (*ibid.*). Many other artists explored similar territory of telepresence as a vehicle for experiences of remote embodiment.

to confront the ways that telerobotic warfare desensitizes us to the act of killing, a point echoed by Paul Virilio (2002). Another project that takes a more critical approach to telepresence is the *Freedom Flies* project of Chris Csikszentmihalyi's Computing Culture Group at MIT, which features a prototype for an affordable drone created to help human rights monitors level the playing field on the U.S.-Mexico border.

Much like the linkages between Minsky and Heinlein, we can also spot resonances between these more critical takes on telepresence and science fiction explorations such as Alex Rivera's *Sleep Dealers* (2008) which explores themes of global labor and drone warfare. This film presents a narrative framework for unpacking the dangers that Hayles identifies in her critique of the erasure of embodiment in the research of cyberneticists such as Minsky and Wiener—a position that she finds rooted in the mechanics of the Turing test itself and the implicit connections it draws between gender mimesis and a computer's ability to pass as human.

Laura J. Mixon's novels *Glass Houses* (1992) and *Proxies* (1999) also explore themes of exploitation and control, but for her these themes relate in complicated ways to the mutability of identity. The possibility for transformation is the flipside of Hayles's critique. Indeed, Thomas Foster contrasts Hayles's critique with Sandy Stone's (1996) approach to communication prosthetics, pointing out that: "For Stone, then, what looks like an 'erasure' of the relevance of bodies might actually be an opportunity to reimagine the relation between body and mind or social identity" (Foster 2002, 471). The opportunities that Stone identifies are also embraced by Anna Munster, who describes the translation of bodies into information aesthetics in terms her notion of 'symbiotic transformations' (2006, p.19).

Tacking in a different direction to these questions of erasure vs. transformation, Eric Paulos and John Canny's work on Personal Roving Presence devices (PRoPs) seeks to humanize the telerobotic interface by representing the remote body of the teleoperator with greater fidelity. Describing this project, Andy Clark writes: "Each PRoP would provide gaze control, body-control, posture, and dialogue. Canny and Paulos's aim is to create ProPs that become transparent interfaces between a remote operator and their local contract" (Clark 2004, 113). Canny and Paulos characterize this ideal of "transparent" mediation in the following way:

If it still seems a stretch that a human-machine combination could be a social interface, think of a PRoP as the ultimate prosthetic: a full-body replacement. It is still fully under control of a human being. With good design and practice it should be able to display the subtlety that humans have already demonstrated in human-machine symbioses like computer games, playing musical instruments, and driving automobiles. (Canny and Paulos 2001, 280-281)

For Canny and Paulos, the threat of erasure that telerobotic prosthetics pose can be overcome through greater representational fidelity to the subtlety of human expression. By contrast, for Hayles (2008), the erasure of embodiment is tied to the constitutive ways in which bodies and subject positions construct one another.<sup>15</sup>

## **5.2 Evolving Relationship of Audience to Spectacle in Popular Culture**

Parallel to the history of telepresence we can also trace themes of audience participation and the aesthetics of intimacy as indicative of an evolving orientation of audiences towards the subjects and spectacles of their gaze. These themes can be broadly grouped into two areas:

(1) the emergence of platforms that position audiences as experiential drivers, and (2) the

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<sup>15</sup> Echoing Butler (1990), Hayles points to the way such constitutive processes play out through performative or normative acts of saying-as-doing, which she contrasts with the kind of saying-as-mimesis in the parlor game on which Turing test was modeled—a distinction she points out Turing only wrestled with when his own embodied identity, as a gay man, came under violent attack (Hayles 2008).

development of media practices that encroach upon intimate space. Before addressing these themes, however, I would like to briefly address historical and theoretical contexts that inform the term 'audience' as well as related concepts such as 'public,' 'crowd,' 'participation,' etc.

In our increasingly mediated world, the analytical boundaries that define 'audience' are increasingly in tension with alternative categories such as 'public' or 'user.' Sonia Livingstone's writing traces the overlaps of: 'audience', 'public', 'mass', 'crowds', and 'collectivities' (S. Livingstone 2005), and bringing these terms into productive dialogue, she identifies the complicated isomorphism of their referents:

The analysis of 'audience' and 'public' draws on distinctive bodies of theory, prioritising different issues. But they do not refer to wholly separate realities. In a thoroughly mediated world, audiences and publics along with communities, nations, markets and crowds, are composed of the same people. This apparently banal observation is significant when we observe that it is commonplace to define audiences in opposition to the public. In both popular and elite discourses, audiences are denigrated as trivial, passive, individualised, while publics are valued as active, critically engaged and politically significant. (*ibid.*, 2)

Livingstone reminds us that each of these categorical groupings could conceivably refer to the same or overlapping assemblages of people. But artificial constraints, built upon 20<sup>th</sup> century business models and technological infrastructures that privilege one-to-many models of communication, have framed audiences as uniquely passive. Likewise, this framework posits a relatively stable relationship between produces and their addressees. However, Henry Jenkins's notions of participatory culture (Jenkins 2008) and spreadability (Jenkins, Li, Domb Krauskopf, & Green, 2008) point to the ways in which audiences are neither passive nor inherently stable.

Different periods in our history have demonstrated different modes of audience participation within these rituals of civil discourse. For example, Richard Butsch in *The*

*Citizen Audience* (2007) points to historical models of *The American Town Meeting of the Air* that supported listening group discussions in the 1930s. This practice was firmly situated within what Michael Schudson describes as the era of the “private, rational ‘informed citizen’” (1999, 6). But by the 1970s, these sorts of opportunities had all but disappeared, giving way to what Butsch now described as

...a different kind of public sphere, a ritualized representative public sphere in which networks reduced the role of the citizen-viewer to that of witness of the national drama... Audiences were invited to watch and learn rather than participate. (Butsch, 2007, 96)

Our contemporary moment may represent another shift towards participation, however, questions remain about whether the term ‘audience’ up to the task of accounting for the kind of collective agency that we frequently encounter in our contemporary social media landscape. For the purposes of this discussion, however, I will continue to use the term ‘audience’ as a short hand, while acknowledging the ways that increasing opportunities for audience agency and collaboration complicate distinctions with the concept of ‘public’ and upend traditional notions of ‘audiences’ as passive.

### *5.2.1 Audience Agency in Interactive Experiences*

Platforms that position audiences as drivers of experience cover a spectrum from “strong” to “weak” versions of audience agency. The strong version, in which audiences direct a spectacle towards unauthored outcomes, includes early examples like *The Most Dangerous Game* (1967) (Schirra 2013), a call-in model UN TV show in which audiences chose repeatedly to destroy the entire world), to more recent examples like “Twitch Plays Pokemon” in which 60,000 players shared a single game controller (Ramirez, Saucerman, and Dietmeier 2014).

On the “weak” end of the audience agency spectrum lie examples like the first interactive film *Kinoautomat* (1967) in which audiences have limited choices that route them inevitably towards a foregone outcome. This “weak” version of audience agency also includes branching narrative structures like “choose your own adventure” books as well as more sophisticated narrative algorithms behind games like *Mass Effect*, which constrain choices within particular narrative boundaries. By describing these examples as representative of a “weak” form of audience agency, I am not making a value judgment about their worth as forms of storytelling, in fact quite the opposite is true. Instead, I am signaling the ways in which, in such examples, audience choices are constrained by the priorities of storytelling.

On the “strong” end of the audience agency spectrum, gaming experiences like “Twitch Plays Pokemon” represent a much more open process of collective experimentation. In this example, the streaming website Twitch.TV created a platform that enabled thousands of players to simultaneously share a single game controller—at its peak reaching 100,000 simultaneous players (Ramirez, Saucerman, and Dietmeier 2014). The experiment continued to result in an, oft-times, chaotic set of in-game choices that did not resemble those of a competent player. Despite the challenges posed by such a scenario, the context of collective play enabled affinity spaces to emerge around opposing play styles and mechanics associated with “democracy” vs. “anarchy.”<sup>16</sup> These opposing groups created quasi-religious lore and eventually developed a rich meta-game narrative that further fed into, and contextualized, the identities of these opposing affinity spaces (*ibid.*).<sup>17</sup>

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<sup>16</sup> On the sixth day of the experiment, Twitch.TV introduced a “democracy system” as a way of helping the players get past a puzzle that was blocking their progress.

<sup>17</sup> As we can see in this example, the Twitch.TV platform afforded and constrained particular actions of participants. So to be clear, I am *not* defining “strong agency” in terms of a lack of *system* constraint, but rather, in terms of independence from

### 5.2.2 Audience as “Fly on the Wall” in Documentary Film and “Lifecasting”:

The examples of participatory platforms described above parallel the emergence of particular observational aesthetics and techniques in documentary film, which would come to prefigure similar thematic developments in online contexts.

The 1960s witnessed the emergence of American Direct Cinema—documentary films that positioned audiences as a “fly on the wall,” often during an interpersonal conflict or unfolding crisis. Examples of this aesthetic style include the films of the Maysles brothers as well as the films of Robert Drew, Richard Leacock, and D.A. Pennebaker. One of Drew’s most notable films, *Crisis*, has been characterized by social theorists like Joshua Meyrowitz as an important moment in the breakdown of barriers separating public and private space (Meyrowitz 1986)—a shift that would continue decades later as Reality TV and, subsequently, social media would further erode partitions of identity and social context.

The camera’s intrusion into intimate space reemerged as a central theme during the early days of the Internet. Jennicam (beginning in 1996) placed a live-updating camera in her bedroom and became an overnight sensation. The proverbial camera in the bedroom and its associated ritualized genres of address would later become a hallmark of YouTube “confessional” vlogs.

Themes of intimacy-in-public would carry over into emerging genres of streaming video. As discussed in chapter 4, artists and researchers had experimented with various forms of live video capture and broadcast throughout the 90s and early 2000s (Mann 1998; Mann 2004; Millican 2005), but popular platforms for streaming video finally packaged these

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the guiding hand of an author or the privileging of particular outcomes due to the priorities of authorship. I will grant, however, that the introduction of a “democracy system” when players got stuck, represents a minimal step in the direction of authorship.

opportunities for a mainstream audiences in 2007 with the advent of a webstreaming startup called JustinTV, which, as part of a publicity tactic, positioned the eponymous Justin Kan as the subject of a near 24 hour “lifecasting” experiment. His audience quickly found ways to flex their agency, by ordering pizza to his apartment or, in one case, calling the police.<sup>18</sup> These more provocational opportunities will be explored below.

### *5.2.3 Shifting from “Fly on the Wall” to Provocateur and Live Participant*

In the 1960s, the genre of French *cinéma vérité* took a more provocational approach than its American counterpart. Filmmaker Jean Rouch, for example, often took on the role of provocateur, as in cases where he deliberately sets up collisions between performative contexts of intimate and public space. In a vox pop interview sequence from his film *Chronicle of Summer* (1961) pedestrians were asked the simple question “Are you happy?” And in another well-known sequence at the end of this film he exposes the subjects of the documentary to critical feedback from an audience who wanted to scrutinize and debate the authenticity of the subjects’ own self-performances.

Audiences of livestreamers have similarly found ways to engage collaboratively with live audiences interested in intervening with ongoing events “on the ground.” For example, Occupy livestreamer Tim Poole developed a relationship to his audience by responding to questions from a livechat feed and made them invested in affecting the reality he was documenting. In one example, Poole’s livestream audience helped him when his access was blocked by a group of union organizers who had taken on the role of crowd control. In response, the audiences flooded the union’s Facebook page, demanding Poole’s free passage.

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<sup>18</sup> <http://www.fastcompany.com/1839300/many-pivots-justintv-how-livecam-show-became-home-video-gaming-superstars>

Such examples point to opportunities for remote audiences of livestreamers to engage in ways that go beyond more familiar rituals of participation like Q-and-A. And more recently, audiences and performers using Twitter-integrated livestreaming apps like Meerkat and Periscope have demonstrated willingness to explore new mechanics of audience-performer interaction, for example using audience-generated suggestions to guide the ongoing events.

#### *5.2.4 Reality TV and Real-time Interactions in 2<sup>nd</sup> Screen Apps*

Rituals of real-time audience participation have also emerged in the context of Reality TV shows like the Canadian Broadcasting Company's *Over the Rainbow*, which debuted in 2012, and the show *Rising Star* in Israeli (2012), which was rebooted in the U.S. in 2014. Both shows were modeled on singing competition shows like American Idol but introduced aspects of live voting via 2<sup>nd</sup> screen apps. *Over the Rainbow* enabled audiences to signal approval through a shimmering crystal ball, and *Rising Star* enabled participants to "send" their faces to the performer as a sign of support. However, such examples ultimately reified the basic structure of a talent competition ritual and, especially in the case of *Over the Rainbow*, perpetuated a fairly conservative vision of audience participation through the ritual of applause.<sup>19</sup> Despite the opportunities posed by participatory platforms, sites of old media power nevertheless frequently seem unable to imagine forms of audience engagement outside of minor tweaks to otherwise familiar rituals. In such cases, 2<sup>nd</sup> screen apps tend to reify the model of audiences as passive receivers and consumers.

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<sup>19</sup> The CBC's *Over the Rainbow* featured a 2<sup>nd</sup> screen app that enabled audiences to manipulate an applause meter while contestants perform. Based on the degree of applause, a crystal ball displayed in the corner of the television screen would glow and shimmer. However, by framing the crystal ball as a graphical element outside of the diegesis of the performer and on-site judges, the audiences had no sense that their virtual "applause" could be "heard" by anyone in the remote context. Indeed, this graphic was actually replaced for each time-zone in which the show aired.

### 5.3 Real-time Doesn't Scale... Or does it?

Real time doesn't scale, right? You can't get hundreds of people into a phone chat room and have it work. Phone conversations can't easily be stored or searched or forwarded.... [But with asynchronous platforms online, I type] something now, you read it three days from now, she reads it three months from now, somebody else finds it and reads it three years from now. That doesn't happen in phone chat rooms. (Shirky 2012, interviewed for NPR TED Radio Hour)

Clay Shirky likes to say that real-time social media doesn't scale. Admittedly, there is a common sense appeal to the contrast he sets up by positioning asynchronous, large-scale, online communication vs. synchronous but small-scale "party line" telephone conversations. He points to the cacophony that would result if we tried to scale up natural human conversation by talking to thousands of people at once. But he slips too easily from this more modest point—that the mechanics of human verbal communication do not scale well—to the much more sweeping claim that "real time doesn't scale," meaning, real-time collaboration in general cannot happen at the scales we have come to associate with online communication.

On this point, I disagree. Audiences are beginning to demonstrate the potential for real-time coordinated action in a variety of domains. Indeed, Howard Rheingold described these sorts of phenomena as 'smart mobs' more than a decade ago (2003).<sup>20</sup> And we can see so-called "weak signals" of real-time smart mobs having an impact in a variety of domains including: Reality TV, webstreaming, and collective gaming.

So my response is to instead reframe Shirky's challenge as a design hurdle, asking the question: *How* might real-time communication scale? Similarly, we can reframe the challenge as a critical provocation: What would it mean for our civic rituals if real-time communication could scale? By expanding the scope of the design problem beyond the interface to include

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<sup>20</sup> Rheingold's characterization admittedly does not make a hard distinction between synchronous and asynchronous modes of interaction, however.

alternative rituals of participation and alternative ways of thinking about what *counts* as communication, we can start to imagine what a scalable real-time experience might look and feel like.

I have included Shirky's perspective here, though, because it grounds these questions within the concrete limitations of verbal communication. The constraints of our embodied "wetware" *do* matter. There is a limit to the number of voices that our ears and brains can process at one time. I would argue, however, that such limitations constrain precisely insofar as our mental models of coordinated action are confined to the ritual of verbal conversation and its reliance on orality, turn-taking, and mutual address. By contrast, alternative modalities of communication may exhibit quite different parameters of scalability, and it is towards these alternatives that I now turn my attention.

#### **5.4 Speculative Rituals of Audience-Performer Interaction**

The remaining sections of this chapter address intersections between tele-operated extensions of audiences and speculative rituals of audience-performer interaction. This discussion will focus on two design research projects in particular: an audience-driven vox pop platform and a telerobotic microphone that adjusts its "mood" based on real-time audience feedback. Both of these projects represent attempts to address the design hurdles posed by Shirky's claims about the scalability of real-time coordinated actions and both projects seek to engage with the critical questions opened up by rethinking familiar civic rituals as encounters with collective subjectivities. In discussing this work, I hope to (1) raise critical questions about the ways ritualized audiences "stand in" for the public in familiar

rituals of politics and journalism and (2) speculate about alternative rituals that reconfigure this mechanics of “standing in” by allocating performative power to live audiences.

## **5.5 Redesigning the Vox Pop**

One of the ways I have explored speculative rituals of real-time audience interaction is by tinkering with the performative structure of the vox pop (or “on the street”) interview (McVeigh-Schultz 2014). In particular, this work has explored the effects of allocating the responsibility of question formation to a live audience. I was curious about how this shift might empower audiences and performers alike to alter the norms of interview interactions.

### ***5.5.1 Vox Pop as Ritual:***

While the vox populi term predates broadcasting technology, television has nevertheless formalized the vox pop form into a set of easily recognizable structures. When we watch a vox pop interview, it’s useful to remember that they’re edited in a very particular way. Usually it involves a single question posed to a succession of people, then edited to emphasize inherent juxtaposition and range among the responders. Due to the way these responses are framed, vox pop sequences are not supposed to be taken as expert testimony. Instead, the purported news value they offer has more to do with the way that certain responses map onto what Greg Myers has called “improvised categories of ‘public’” (Myers, 2004: 209). Vox pop encounters usually take place in public space, but more specifically, they take place in interstitial spaces where people are in the process of doing something else (walking in the street, pumping gas, playing in a park, etc.). The “street” here operates somewhat like a fantasy of the Habermassian café. In other words, it represents an ideal of

cultural mixing and serendipitous connection. As a public ritual, the vox pop leverages this fantasy and activates an imagined community made up of various prototypical categories of citizen: the ‘young professional,’ the ‘mom,’ the ‘construction worker,’ etc. As Greg Myers argues, this framework places the interviewee in the tenuous position of having to figure out which identity category they are being asked to represent (Myers 2008).

By reflecting a particular image of the public back to itself, the vox pop represents a particular kind of contrived cataloging of difference, in which the public is curated into a set of compartmentalized identity types, with broadcast media positioning itself conveniently as the neutral intermediary. And indeed, this self assigned neutrality is a phenomenon that Nick Couldry (2003) has critiqued as the ‘myth of the mediated center.’

If designers were to destabilize this curatorial logic, however, what new kinds of civic rituals might emerge? And what new tactics might audiences develop to reflexively represent themselves in the contexts of live encounters? The following project has been in part an attempt to destabilize and reconfigure this process of public curation associated with the ritual of the vox pop.

### *5.5.2 Vox Pop Experiments*

In work titled *The Synaptic Crowd: Vox Pop Experiments*, I designed a mobile platform that “crowdsourced” on-the-street video interviews by enabling remote participants to nominate and vote on questions in near real-time. This shuffling of the agencies of the interview, enabled different kinds of questions to be asked and reshaped the relationship between personal identity and public voice. In this way, the project raised questions about the potential role of mobile platforms in supporting new kinds of civic rituals where live

audiences shift from passive witnesses to active shapers of public space (McVeigh-Schultz 2009).

*The Synaptic Crowd: Vox Pop Experiments* project explores a series of performative experiments that enable online participants to conduct collaborative “on the street” interviews while they watch the interview stream in real-time (McVeigh-Schultz 2009; McVeigh-Schultz 2014). The collective interviewers are not co-present with their interview subjects, nor with each other. Instead, interviews are conducted in physical space through an intermediary wielding a camera and a phone.

The Synaptic Crowd tool integrates browser and mobile interfaces, along with face-to-face interaction. Online participants submit potential questions or statements to a public pool and then select the question or statement that they most want to hear at a given time. This question or statement that has been selected most gets relayed to the intermediary’s phone. Online participants can watch the interviewee’s response in real-time as they formulate follow ups, a feature which sets this project apart from other sorts of online question aggregation and vote-ranking contexts such as Google Moderator and Reddit AMAs.

In this way audiences make active decisions, not only about which questions to ask, but also about when to ask a follow-up and when to introduce a new line of questioning. Of particular interest to me was the emergence of what I call ‘inter-sequitors’: questions that demand an ad hoc reweaving of context, prompting the interviewees to move between different subject positions as they struggle to adapt to an unseen audience (McVeigh-Schultz 2014).

Borrowing from Garfinkel’s terminology, I situate this work as “making trouble” for

the assumptions that traditional journalism creates when it uses social media to curate the public back to itself. By facilitating a live feedback loop between audience and subject, these experiments shuffled the agencies of the interview and enabled different kinds of questions to be asked. Likewise, by destabilizing the compartmentalizing logic of the traditional vox pop, the ritual of the audience-driven vox pop enables different sorts of social encounters to emerge as audiences became active participants in the process of constructing publics (McVeigh-Schultz 2009; McVeigh-Schultz 2014).

#### *5.5.2.1 The Synaptic Crowd: A Note on Naming the Platform*

As an aside, I want to briefly reflect on the choice of the name, ‘Synaptic Crowd,’ which I used to describe the platform. My goal in referencing the metaphor of the synapse was to draw upon McLuhan’s imagery of electronic media as prosthetic extensions of the nervous system and also position this physiological imagery in the context the networks of relations that connect bodies to one another. This latter connotation I had hoped to activate via the theme of ‘the crowd.’

In retrospect, I am actually unsatisfied with the metaphorical work this name seems to be doing. Though it was not my intention, the connotation of the ‘synapse’ risks reifying the erasure of the body through the kinds of mind-body binary that Hayles critiques in the context of cybernetic theory (2008). And the invocation of ‘the crowd’ risks recapitulating Gustav Le Bon’s notion of crowds as unthinking mobs acting in unison (Butsch 2007).

Instead, I had hoped to conjure up the structure of synapses organized by ganglia, simultaneously hierarchical and rhizomatic. I was interested in the ways that these combinations of horizontally and vertically organized structure might be analogized by the

complex interactions of a live audience as it comes to make sense of itself through the mechanics of question-submission and voting. I was also curious about the ways that this structure might affect reflexive processes of collective subject-formation—the birthing process of imagined communities (B. Anderson 1993)—which I believed might emerge in surprising new ways through live encounters with remote performers.

### **5.6 From Vox Pop Experiments to Expressive Objects**

As I demoed various iterations of the vox pop experiments work, I became interested in a productive critique of the work that I believe I have never fully resolved. The project revealed a blindness to the complexities of audiences. And in particular, while there was a rich communicative experience happening on the back channel through submissions and voting, much of this richness was not being conveyed in the remote space of the interview. Instead, by framing the audience monolithically in terms of the top vote-getting prompt, the audience-driven vox pop ritual was missing out on an opportunity to communicate the shifting dynamics, competing interests, and cross-fertilization happening as audience members nominated and voted on submissions. I was interested in what it might look like to represent this richer picture in a performative context.

These interests and questions were percolating during a particularly interesting moment in the 2008 elections when CNN had begun placing a live audience feedback graph on screen during the Obama McCain debate coverage. This live graph reflected input from a preselected focus group that had been given Perception Analyzer Dials to register the degree of positive or negative reaction while a candidate was speaking. It was unclear where the candidates themselves could see the graph. But regardless, the live audience feedback had no

clear role in shaping the unfolding ritual of the debate. I was interested in how this live graph might be repositioned as a kind of intervening force. Using the architecture of the debate space itself as a jumping off point, I explored the possibility that the debate podiums themselves might be raised or lowered based upon live audience feedback.<sup>21</sup>

Later, I started exploring the idea that the debate microphones themselves might be redesigned as expressive objects, taking a cue from Norman McLaren's short film *Opening Speech* (1960) (which pits McLaren in a battle with a microphone that refuses to obey his command). These new directions intersected with my interest in animism as a design theme (described in Chapter 4). Thinking about the relationship between animism and translation in mapping data to behavior, I started to develop the concept I would come to call 'representational animism.'

### *5.6.1 Representational Animism*

As discussed in Chapter 4, in various projects, I have explored animism as a design theme and as an alternative to anthropomorphic design (van Allen and McVeigh-Schultz 2013; McVeigh-Schultz, Stein, Boyle, et al. 2012; McVeigh-Schultz, Stein, Watson, et al. 2012). Introducing this theme to the context of audience-performer interaction, I began to explore how audiences might be represented through the kinetic behaviors of telerobotic objects. Taking a cue from the *Luxo Jr.* (1986) lamp and a similar interactive prototype called Pinokio,<sup>22</sup> I was interested in the ways that a multi-jointed armature might afford a rich array of deictic expressions.

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<sup>21</sup> Note: Later I was thrilled to see John Stewart deploying a podium on a crane during his debate with Bill O'Reilly (although without an audience feedback component).

<sup>22</sup> Pinokio was designed in 2012 by Shanshan Zhou, Adam Ben-Dror, and Joss Dogget.

But how might such an expressive vocabulary translate the collective feedback of live audiences into something that felt more alive than the live-graph which CNN deployed? And what would it mean for a single object to stand in for, or “be possessed by the spirit of” a living collective? Such questions point to what Anne Allison (2006) and Jensen & Blok (2013) have described as the polymorphic perversity of Japanese techno-animism.

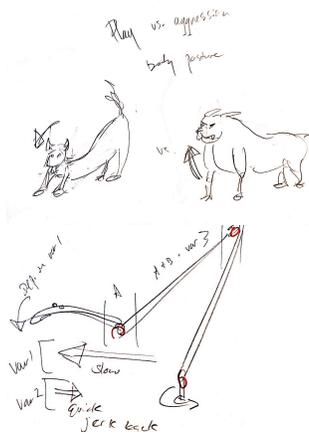
The very term ‘techno-animism’ is intended to convey this continued capacity for *enchantment* in non-modern, techno-scientific life (see Bennet, 2001). It is no coincidence, then, that we borrow the term from Allison (2006; 10) who associates the techno-animistic imaginations of Japanese *anime* with a ‘polymorphous perversity’, or morphing and moving across territories of worldly and otherworldly, mixing humans, spirits, robots and animals in playful and ambiguous ways. (Jensen and Blok 2013, 105)

Jensen & Blok go on to unpack their approach to techno-animism in relation to cosmograms: emergent ontologies of relation that unite practices and objects, arguing that “practices and objects are interrelated in contexts of Japanese animism” (*ibid.*, 96). Similarly, the concept of representational animism positions animistic objects as both representative *of* data-translations of practice as well as embedded *within* particular rituals of encounter.

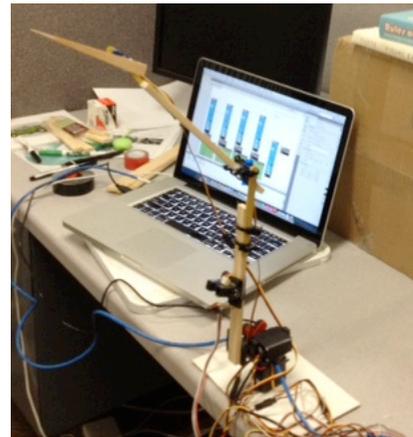
I should add a point of clarification here. By ‘representational’ I do not mean in the sense of associative symbolic or discursive meaning, but rather, ‘representational’ in the sense of representative government—something or someone standing in for a collection of other absent bodies. Such representational schemas may of course involve discursive meaning, but as Dourish argues, the meanings of objects are always shaped through the actions and relations to practice within which they are embedded. In this sense, representation itself becomes a kind of artifact that gets taken up and (re)defined by particular embodied actions (Dourish 2004, 167-170).

### 5.6.2 Data Monsters: Translating Data into Affective Expression

In 2012 at Intel’s Interaction Experience Research Lab (IXR), I was prototyping a modular toolkit for kids on the theme of “playing with data.” In this work, I was drawing on animism as a design theme again and thinking about the expressiveness of animals as they move between signals of play and signals of aggression. I was also fascinated by potential design lessons that might be gleaned from domestic rituals of care for pets and houseplants.



**Figure 16.**  
Data Monster design sketches



**Figure 17.**  
Data Monster 1.0

A house plant, as a form of data visualization, reflects both the care of human as well as a relationship to an outside power source. And this notion of two intersecting data inputs originating from different sources inspired me to prototype an animistic kinetic objects whose behavior is modulated by an outside data stream. Prior to this experiment we had been using fluctuations in live Twitter keyword counts to modulate the parameters of evocative objects that we internally called ‘Data Monsters.’ In my own twist on the Data Monster theme, I created a prototype for a robotic armature that reflected live Twitter data by changing its behavioral profile in response to a comparison of two preselected keywords.

Made with four articulating servos, this Data Monster [Fig. 16 and Fig. 17] was

designed with specific kinetic actions in mind (some described the movements as bird-like or snake-like). I wanted the Data Monster to convey the kind of intentionality, attentiveness, and inner life that I have associated elsewhere with animistic design (van Allen and McVeigh-Schultz 2013). In addition, though, these objects—like the houseplant—reflect more than a response to the presence of a human in their midst: they also channel external data streams in ways that modulate their core behaviors.

The design method that emerged from my work on Data Monsters crystallized this concept of representational animism for me, in the sense of animistic objects that reflect an inner life but modulate their “moods” in ways that represent external data sources. A key feature of representational animism is a design approach I call double layering. This concept points to the double layering of two distinct behavioral rule-sets. (1) In a first layer of interaction, the data monster



**Figure 18.** Data Monster 2.0 with Galileo Board (version designed by Lucas Ainsworth and Carlos Montesinos)

engages with those in proximity. Its “gaze” tracks any moving body that passes in front of it, and it responds to distance of an approaching body by rearing back at the base of the armature. (2) A second layer of interaction modulates the first layer. In this second layer, a comparison of a Twitter keyword counts controls the parameter of “mood,” which impacts how the Data Monster responds to bodies that are distant or close. One keyword is set to drive “playful mood” while another keyword drives “aggressive mood.” On the playful end of this spectrum, the Data Monster angles its “head” so that it is looking up from a low

angle and its “haunches” are relatively high (picture a dog with its butt high in the air as an invitation to play). On aggressive end of this spectrum, the Data Monster rears up so that its head is as high as possible and its body is erect, like a snake about to strike. Its lateral movements also become more abrupt. Depending upon which keyword count is higher the overall mood is modulated accordingly. In this way, remote data feeds are translated into parameters that modulate how the object reacts to stimuli in its proximate world.

The concept was later taken up by researchers at Intel Labs to become a modular toolkit for Intel’s Galileo boards [Fig. 18]. A more recent iteration of the Data Monster by designer Lucas Ainsworth served as a model for one of the data-driven microphone prototypes that I will discuss in the next section. Indeed, when I first designed the prototype’s multi-jointed armature structure and kinetic movements I was already thinking about the animistic microphone’s structure and behaviors.

### **5.7 The AudienceBot Microphone**

Drawing upon the themes and tactics described above, I wanted to explore the possibility that the architectural components of public address (the podium and the microphone for example) might themselves be positioned as a kind of representational animism—as affective data visualizations. I have begun calling these affective data visualizations of dynamic audience feedback ‘AudienceBots.’ I was interested here in the context of political debates and in how the taken-for-granted features of debate as a performance—what counts as a question, how time is managed, the role of the moderator—might be hacked or tinkered with by positioning AudienceBots as performative agents.

This work is informed by Ken Goldberg’s “Tele-actor” model (Goldberg et al.

2002), where the actions of a human emissary (and later robot avatar) are driven collectively by a live audience. However, I am interested in positioning this sort of “telematic” participation as a reflexive representational act. In other words, I think of a tele-actor or tele-object not only as an opportunity for audiences to act, but also, as an opportunity for audiences to reflexively understand and transform themselves. In this sense, I see AudienceBots as sites for both self-representation of—and performance by—the audience.



**Figure 19.**  
The AudienceBot Microphone prototype/

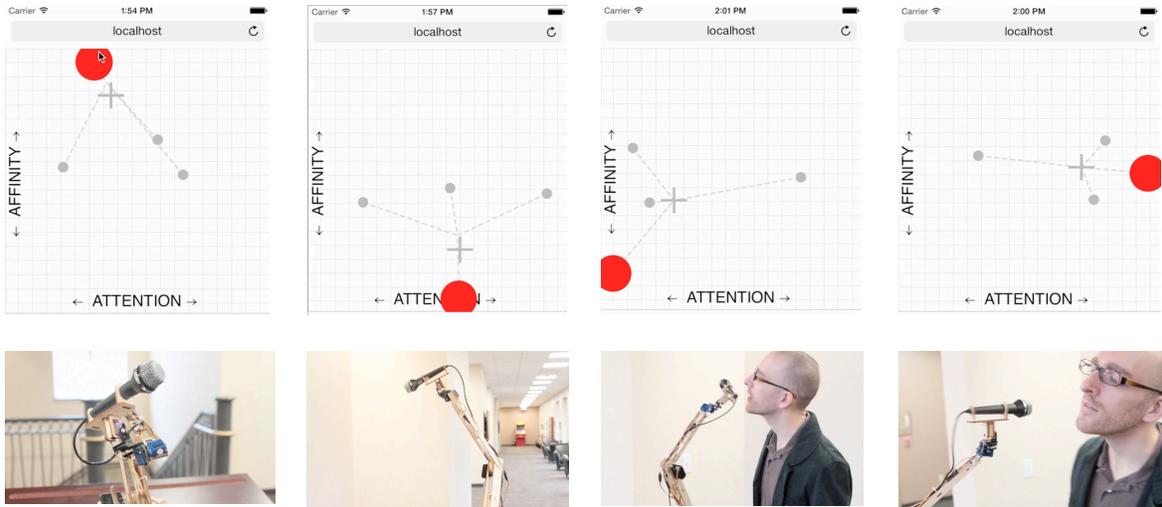


**Figure 20.**  
Playtesting the AudienceBot microphone.

In a proof of concept, I built an AudienceBot Microphone with five articulating joints. This version used an iPad application to modulate the “mood” of the microphone. In later iterations a sixth servo was added to provide great mobility of the AudienceBot’s “head” [Fig. 19] and a mobile compatible webpage was built to drive the “mood” of the microphone in real-time via a websocket server application [Fig. 21]. Like the Data Monster, the microphone attends to a speaker via a small camera and motion tracking algorithm, but the *way* that it attends is modulated by live audience feedback. The AudienceBot Microphone can embody various dimensions, from aggressive to playful or from attentive to inattentive depending upon the aggregate decision making of a live audience.



**Figure 21.**  
The AudienceBot interface



**Figure 22.**  
Interface and posture of  
“high affinity” state.

**Figure 23.**  
Interface and posture of  
“low affinity” state.

**Figure 24.**  
Interface and posture of  
“low attention” state.

**Figure 25.**  
Interface and posture of  
“high attention” state.

The audience makes collective decisions about these different affective states by controlling a “center of gravity,” indicated by a gray cross. When the collective center of gravity is high the affinity is high and the microphone assumes a playful posture with its body low and its head tilted up [see Fig. 22]. When the center of gravity is low, the affinity is also low and the microphone assumes a more aggressive posture, rearing up so that it is higher than the speaker and standing erect with head oriented as if to strike [Fig. 23].

When the collectively audience signals high attention, the center of gravity is to the right and the microphone attends closely to the speaker [Fig. 25], following the speakers movements. When the audience collectively signals low attention, the center of gravity is to the left and the microphone begins to actively ignore the speaker [Fig. 24].

### *5.7.1 Key Questions*

Prototype experiments using the AudienceBot Microphone have drawn attention to the following core questions:

(1) How do we design interface features that both give a sense of collective participation as well as individual agency? And what is the relationship between interfaces and rituals in this regard.

(2) How does one interact with a telepresence device when it stands in for, not just a single human being, but an entire live audience? What new rituals of engagement are possible? And what happens when an interactive object stands in for algorithmically mediated public speech such as keyword content on Twitter?

(3) What happens *after* more familiar rituals of public address break? For example, while it seems likely that positioning an AudienceBot in the context of a political debate may simply cause the debate ritual to break down. I am interested however in what new kinds of rituals and genres of performance might get built upon the rubble of those former rituals. And what new kinds of performative tactics and performer characteristics would thrive in such an environment?

(4) A related question from the perspective of audiences is: what new rituals of participation can emerge and how do we reimagine dynamics of social interaction in these large scale encounters? As I detailed in the vox pop experiments described earlier, by shuffling the agencies of the interview, we construct the preconditions for subject positions. So, given the configurations of participation suggested by the mechanics of AudienceBots, what new kinds of subject positions might emerge?

Some of these questions are addressable through “playtesting” experiences with live participants, but since I am ultimately unlikely to be able to enact a debate between political candidates, I can also utilize the tactics of design fiction to explore the logic of some of these questions in a story world of my own creation.

### *5.7.2 AudienceBots and Design Fiction Storytelling*

As part of this project, I wrote a short screenplay called *American Agora*, a fictionalized “documentary” set in the future looking back upon the evolution of our civic rituals as AudienceBots become a part of everyday life. At the center of this fictionalized documentary is an account of the first time AudienceBots were deployed in a political debate context by a desperate CNN-type entity. From the network’s perspective the result was a disaster, but the experience is such a hit with the audience that they stage their own DIY debate event without any politicians, instead allowing liberal and conservative audiences to square off against one another through two independent AudienceBots. Of particular interest to me was exploring the developmental evolution of the larger media ecology as AudienceBots became increasingly folded into the ways that different publics represent themselves. Within this context, I was able to ask the hypothetical question: what does a “regular” mic look like in this world? And I speculated that performers who use inert microphones (with no audience feedback mechanism) come to represent a kind of enforced-listening that symbolizes authoritarian control.

### *5.7.3 Discussion*

In contrast to the classic Tele-Actor model described earlier, the approach that I have characterized here—utilizing the concept of representational animism—enables us to think about the rich background processes of audience engagement as a kind of affective expression that can be conveyed through an evocative or animistic object. So, rather than merely issuing orders to a Tele-Actor, instead, the background process itself is itself positioned within a performative context. As audiences collaborate to drive, or competes to

drive, the behaviors of a remote object, that very dynamism is reflected in behavioral modulation of the animistic object's "mood."

Several critiques are relevant here though. While the AudienceBot microphone prototypes do convey a sense of affective dynamism, at any given moment the "mood" of the microphone is ultimately monolithic, meaning it reduces a complex collective process down to a single "result," and the microphone itself, as a singular deictic extension, corroborates this monolithic treatment.

We can invoke an analogy to Nancy Fraser's critique of Habermasian rational discourse, here. Fraser argues that the totalizing "we" of the idealized public sphere also dominates and marginalizes through this very gesture of assumed inclusivity (Fraser, 1990, 10). A telerobotic microphone that purports to stand in for an entire audience may be similarly problematic. Likewise in contexts where audiences take on a harassing or grieving role towards a speaker, such positioning may be particularly dangerous.

We can contrast this monolithic figure of the single microphone with the tentacle-like representations of group minds represented in speculative fiction by Octavia Butler. For example in both the Oankali's literal tentacles in *Lilith's Brood*, as well as in the network of mind extension tendrils depicted in *Mind of My Mind*, Butler presents material representations that convey multiplicity, tension, and difference within a singular organism as well as within a group. This trope of group minds connected via tentacle-like objects is a repeated theme in a variety of science fiction, including *Slan* by A. E. van Vogt, and *Fire Upon the Deep* by Vernor Vinge, in which dog-like aliens with group minds work in concert, using their bodies like the appendages of a spider.

#### *5.7.4 Reflections and Next Steps:*

If the figure of a single monolithic microphone tends to obscure the potential multiplicities inherent in an audience, such a critique might nevertheless open new opportunities for prototyping. What would it look like for an audience to drive a more rhizomatic symbolic form? Consider, for example, collection of kinematic AudienceBots modeled on the tangle of Medusa’s hydra-like hair. Might such a form be better equipped to represent the complexity of live audiences? Such a model might be able to accommodate a more versatile set of audience dynamics. Consider, for example, the prospect of two different groups squaring off against one another as hydra-headed AudienceBots—embodied interlocutors that each maintained their own sense of dynamic multiplicity.

While psychologist Paul Ekman has offered us a glimpse into the pancultural semiotics of emotion, reflected in physiology of facial movement (2004), designers seem to have more limited tools for thinking about—and designing for—the collective “emotions” of complex groups engaged in performative encounters.<sup>23</sup> While we may have an intuitive sense of the complex and fluid ways that affect circulates on Twitter during a live event, such dynamics are only weakly conveyed by the Twitter user interface with its emphasis on scrolling timelines and trending topics.

We seem to lack an Ekman-like set of semiotic correspondences for collective “moods.” Rather than the simple mapping of individual emotions onto facial physiology, how do we map the dynamism of collective affect onto richer physicalized representational forms? And how do we represent meta-categories such as: factionalization, cohesiveness, coalition building, fluidity, resistance to change, cross-fertilization, entrenched opposition,

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<sup>23</sup> Perhaps the closest model is Nigel Thrift’s (2008) framework of non-representational theory, which he uses to account for the ways that collective affect circulates. But as far as I know, no designer has used this theory to inform the design of audience-interaction platforms.

etc.? What if we were to think of such states *themselves* as forms of collective affect, as the morphology (the collective “faces”) of live audiences? And how do we understand, and design for, this sort of phenomenon in ways that go beyond the kind of decontextualizing abstraction demanded by methods of like sentiment analysis?

Instead, the approach I am proposing points more in the direction of a poetics of collective affect. This framework positions the situated affective states of audiences as a kind of performative action that goes beyond mere measurement of sentiment to transform of the audience itself. The hydra-headed AudienceBot, for example, might accommodate reflexive awareness—helping live audiences with the task of *making sense of themselves*. Likewise, such an approach might alter how live collectives relate to one another, potentially enabling new rituals of inter-group or intra-group communication as performative action. For me this is *the* promise of real-time representational animism. Such an approach could support representation not (merely) in the discursive sense but in the sense of situated performative representation-*as-action*.

## Chapter 6: Reflections

To recapitulate the goals of this dissertation, my aim with the framework of speculative ritual design was to re-center the interaction ritual—and its relationship to embodied interaction—as a core aspect of design fiction and speculative design. Methodologically, speculative ritual design marries goals of speculative practice with techniques of experiential prototyping. And more specifically, I have illustrated this approach through two primary models of prototyping that I have described as tangible imaginaries and fictive practices.

### 6.1 Reflecting on the Methodology of Tangible Imaginaries

Tangible imaginaries are experiential prototypes that bridge artifacts, embodied interaction, and imagination spaces through embodied interaction. In my own work, the creation of a tangible imaginary typically involves some combination of material construction, experiential prototyping, and a mode of reflective iteration that attends to both situated embodiment and defamiliarization.

Examples of tangible imaginaries I have already discussed include the following:

(1) As part of the short film *LoveLog*, I created an imaginary AR gestural interface, which I refined along with a team of designers, a choreographer, and two actors. The process of rehearsing with a choreographer and actors proved to be a particularly important part of the design process, as we tested out movements and refined interaction rituals to balance the requirements of affordances and situated contexts within the story world. As a tangible imaginary, the gestural system combined: (a) *artifacts*: including sketches of imaginary interfaces and movement diagrams as well as props that we manipulated as stand-ins for virtual interface elements; (b) *experiences*: including choreographed movement sequences

(interaction rituals) and video demos to teach our actors how to “think” with their body in this new gestural medium; (c) *activated imagination spaces*: in particular, dramatic contexts shaped by the affordances of an AR gestural system. Through this combination of factors, interaction rituals were often placed in productive tension with the dramatic goals of the narrative scenario. Actors not only had to learn how to manipulate imagined virtual elements, but they had to do so in a way that made sense of the narrative constraints of the story world they inhabited.

(2) Also in Chapter 4, I described a series of nonhuman-lifelog prototypes that position objects, environments, and vehicles as characters with their own stories to tell. This work relied on a combination of digital and experiential prototyping, the latter of which included elements of: body storming, Wizard of Ozzing, and informance. As tangible imaginaries these projects each brought together artifacts, experiences, and imagination spaces in a variety of ways. Artifact prototyping included: automotive sensors and interfaces; mobile apps; table-top interfaces; proximity sensors embedded in objects; digital authoring tools for defining and responding to sensor-driven events in code; and comic illustrations of use-case scenarios. Experiential prototyping included: performances in which we acted out various interaction rituals, such as: showing affection for a car, meeting a building for the first time, sharing a memory with a table, etc. This combination of artifacts and experiences provoked speculation about the dynamics of relationships between humans and nonhumans. Questions raised included: how does one build trust with a building? How might a car invite you on an adventure? What might a table want to tell you about its history? We also used the logic of a narrative context to test out scenarios in which actual human drivers and passengers (performing scripted identities) interacted with their car as events unfolded, triggering automotive sensors. The logic of this

story world often led to unexpected and playful discoveries that defamiliarized the landscape as we began to “see” the world as the car experiences it (through its sensors).

(3) In Chapter 5, I described a series of vox pop experiments that leveraged a mobile platform to crowdsource questions for an on-the-street interview. As a tangible imaginary, this project combined a mobile interface, a series of performative experiments, and a process of reflective iteration that focused on the ways participants adapted to the experience on the fly. Modeled on tactics of performative intervention, the project served as a breaching experiment of sorts—one that reframed the on-the-street interview as a live conversation between audience and interviewee. Grappling with a live interactive audience, participants were invited to reinvent the ritual of the vox pop on the fly. The experience seemed to alter the subject positioning of the audience and the interviewee, so that their interactions began to resemble something like a conversation, one that enabled new kinds of questions to be asked and new kinds of performative gambits to be taken. By jostling the expectations of an interview in this way, the project provoked speculation about new kinds of intersection lines between the personal and the political.

(4) Also in Chapter 5, I discussed the AudienceBot Microphone, an audience-driven kinetic microphone that alters its “mood” based on real-time audience feedback for a performer. As a tangible imaginary this project combined a physical prototype of a multi-jointed microphone driven by a mobile app with a set of experiential prototypes involving performative interactions with different microphone “moods.” The project aimed to open up an imagination space around new kinds of political rituals, for example, by provoking speculation about a ritual of political debate in which audiences can communicate affective feedback in real-time.

## 6.2 Reflecting on Methodology of Fictive Practices

Fictive practices also leverage techniques of defamiliarization by framing unfamiliar practices as relatable. Examples of fictive practices I worked on as part of this dissertation included the following:

(1) In projects that explored nonhuman-lifelog applications for buildings and vehicles, I wrote several narrative scenarios for comic illustration. This process helped our team to test out ideas for particular fictive practices within the logic of a story world. For example, by placing an automotive “memory” platform within the situated context of a narrative world, we realized that as cars are passed from parents to children, automotive memories might be inherited. And a road trip with the family car could provide a teenager with a glimpse into the former life of their parents as young adults.

Similarly, an illustrated narrative scenario involving a building with its own lifelog enabled us to explore how fictive practices of reciprocity—gift-giving for example—might occur between a building and the humans that inhabit it. We also used this technique to explore fictive practices of greeting and serendipitous encounter, in which the building would announce its presence through an icon (‘identicon’) that would appear on touch screens mounted throughout hallways.

(2) In the short film, *LoveLog*, the story explores how memory augmentation and mixed reality might reshape the ritual of a lovers’ spat. The *LoveLog* story served as a prototyping tool through which I could test out various thematic collisions between interfaces and interaction rituals. For example, in the story world, the LoveLog app is marketed to reflect values of romance and opportunities of shared memory construction.

But in the context of the narrative, the protagonists begin to use the app for purposes that subverted the intentions of its diegetic designers. Instead, they invent new interaction rituals which leverage LoveLog for various antagonistic purposes, as they keep tabs on one another, ruminate over negative memories, and use memory-clip playback to scrutinize what their partners say.

(3) Finally, in the short screenplay, *American Agora*, I explored how a class of audience-driven robots called AudienceBots might come to play a role in rituals of political contest. Conservative and liberal audiences square off against one another in political debates that utilize audience-driven robotic emissaries. These fictive political practices are made uncannily relatable through the familiar frame of a retrospective historical documentary. In such a world, how might the media ecology of politics change? And would performing to a live audience *without* the accompaniment of an AudienceBot eventually begin to seem like arrogance or evasiveness?

### **6.3 Metaphors in Tension**

Viewed as a collection, these projects reveal an interesting pattern relating to a tension between dominant and intervening interaction metaphors. Each of the projects I have discussed has been shaped by a particular dominant interaction metaphor that underlies the various design contexts I explored. And in each one, part of my process involved subverting or exposing this dominant metaphor by introducing a new interaction ritual with new associated metaphors. For example, the projects that explored opportunities of lifelogging drew upon an interaction context dominated by the trope of Vannevar Bush's Memex device (1945), with its associated interaction metaphors of professional research and

personal memory retrieval in professional contexts. In contrast to this self-oriented interaction model that approaches memory as a collection of abstract knowledge, our projects on nonhuman lifelogs introduced a new interaction metaphor of relationship-building. This alternative metaphorical frame for the lifelog drove our thinking to consider a different set of interaction rituals around themes like reciprocity (gift giving) and co-construction of memories through shared milestones.

A similar tension between metaphors appears in the vox pop experiments described in Chapter 5. Elsewhere I have described how the traditional ritual of the vox pop involves a kind of problematic metaphor of curation, in that the logic of the vox pop compartmentalizes the public into identity types (McVeigh-Schultz 2014). By enabling a live interactive feedback loop between audience and interviewee, though, we see a new kind of interaction ritual emerge, one that side-steps the familiar focus on topical questions in a traditional vox pop, and instead, resembles something like a conversation between two individuals getting to know one another. This shift in core action metaphors destabilizes the performative logic of the traditional vox pop interview, by—for example—encouraging questions to be more rooted in the here-and-now of the remote interview context.

In the AudienceBot Microphone project, the underlying interaction metaphor of “attentive listening” sets the stage for a related set of tensions. In traditional lecture contexts, the architecture of performance itself, the podium, the microphone, etc. all operate to reinforce the unidirectionality of this ritual of communication. For live television, the audience is imagined but not represented on camera, except through the possibility of indexical signals such as: verbal address, orientation to the camera, or the presence of a microphone.

By contrast, the AudienceBot Microphone reshapes the interaction metaphors that govern rituals of audience-performer engagement, as the microphone itself becomes a live index of audience sentiment—a cooperative illocutionary signal (Hancher 1979). That said, the new dominant metaphor, of aggregate “averaging,” at the heart of how the AudienceBot determines its “mood,” also draws attention to the inadequacy of treating an audience as if it were a monolithic entity. By making this index into a ‘matter of concern’ (Latour 2008), we can start to imagine alternative models for representing multiplicity and difference through new expressive capacities of AudienceBots and a multiplicity of interaction metaphors including: factionalization vs. fluidity, divergence vs. convergence, turmoil vs. tranquility.

Finally, in the short film *LoveLog*, the dominant metaphors of interaction that underlie how the LoveLog app is marketed include: sharing of memory, storytelling, romantic growth, and contemporary forms of public display. But, complicating this set of interaction intended by the diegetic designers, the protagonists instead adapt the affordances of the app to their own set of interaction rituals, which involve: petty record keeping, disputes over tone, competition over space, and rumination.

#### **6.4 Revisiting the Orchid and the Wasp**

In Chapter 1, I described how the interface and the interaction-ritual exist in a mutually constitutive relationship of “becoming,” like the “orchid and the wasp” of Deleuze and Guattari (1987). But where does the designer intervene into this symbiosis? In reality there is not *one* relationship between interaction-ritual and interface but rather many, evolving, situated relationships that resonate within a broader media ecology. This situatedness of embodied interaction means that the relationship between an interface and an interaction-

ritual is less stable than that of a literal orchid and wasp pairing (which has co-evolved over evolutionary time). Elsewhere I have introduced the concept of vernacular affordance to illustrate how the ways people make sense of affordances are more multifarious and multilayered than we often give them credit for (McVeigh-schultz and Baym 2015).

Drawing on Judith Butler's (1990) description of the constitutive nature of the encounter, according to which "the 'doer' is variably constructed in and through the deed," (p. 142) we might ask what new kinds of 'doers' and what new kinds of interactional 'deeds' does ritual design offer? If the framework of speculative ritual design helps us to experiment with new kinds of interactional 'deeds,' such an approach also implies new kinds of 'doers' as well. I look to tangible imaginaries in as frameworks for tinkering with the implicit structure of "deeds" (encounters with social-action) as if they were available for critical redesign. Likewise, fictive practices offer us new ways of constructing subject positions articulated through the constellations of competing interests and obstacles that define story worlds. In this sense, we might extrapolate from the logic of Butler's framework and posit that ritual design offers a framework for exploring subjectivities themselves as a form of speculative design. Examples of this phenomenon in action might include the new subject positions of audiences-as-conversational-partners or the channelling of audience participation into collective representational forms forms such as the AudienceBot Microphone.

## **6.5 Democratizing Ritual Design and Next Steps**

Technologists' self-proclaimed efforts to reshape culture can often be problematic. Indeed, the triumphalist rhetoric of disruption that emanates from Silicon Valley, has been critiqued as reflecting a kind of colonial perspective (Dourish and Mainwaring 2012). When techno-

elites claim to pursue a noble mission of “making the world a better place,” they convey implicit assumptions about “how” and “for whom” one makes the world a better place. And depending on particular metaphors (“enable,” “trigger,” “afford,” “support,” “transform,” etc.) they invoke different models of user experience and frame the agency of designers vs. users vs. platforms in different ways.

By introducing the framework of speculative ritual design, it is my hope that we can approach these sorts of thorny question with more criticality and reflexivity. In Nussbaum’s 2007 speech at the New School of Design he remarked that “The emerging question is therefore how do [designers] ... switch gears from designing for to designing with?” (quoted in Telier, 2011, p.4). This sentiment is one that has motivated how I think about my next steps as a design researcher.

In an effort to take on this mission of “designing with,” my aim going forward is to make my approach to speculative ritual design more broadly accessible. I am currently constructing a toolkit for the design of speculative rituals along with colleague Jeff Watson. This toolkit combines a card-based mechanic and a series of prototyping exercises to enable designers and non-designers alike to construct their own rituals. In building this tool we are incorporating insights from a number of existing approaches including: Ronald Grimes’s Ritual Lab pedagogy (1995), the breaching experiments of ethnomethodology (Garfinkel 1967), Lawrence Halprin’s RSVP cycles (1970), as well as design methods of bodystorming (Oulasvirta et al. 2003) and experience prototyping (Buchenau & Suri 2000). For the purposes of this toolkit, we will focus on supporting ritual design with objects and environments that are near at hand rather than through novel interfaces. Our hope is that we build a tool that anyone could pick up and, in the course of an afternoon with friends or

family, they could design an entirely new ritual, ideally one that addresses a significant need or a personal passion.

By making the prototyping techniques associated with tangible imaginaries and fictive practices broadly accessible, my ultimate goal is to inspire an experimental ethos for tinkering with, envisioning, and reinventing interaction rituals. Tangible imaginaries and fictive practices offer us a way to think about the mechanics of human behavior that is both systematic and provisional. By approaching rituals in this way, designers and lay practitioners alike can begin to tinker not only with affordances but also with more implicit social rule-sets of embodied interaction. Such an approach enables us to carve out an imagination space for platforms and interfaces that wouldn't otherwise make sense. Fictive practices give us an opportunity to leverage the logic of a story world as a thinking tool, one that places embodied interaction within situated contexts of a narrative with competing interests, obstacles, and objectives at stake. And tangible imaginaries enable us to see what is obscured by the taken-for-granted background of a sociomaterial landscape and expose particular entanglements of materiality, embodiment, and imagination as “matters of concern.”

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## Appendix 1

LoveLog

By

Joshua McVeigh-Schultz

INT. CAFE - DAY

Everyone in the cafe wears AUGMENTED REALITY (AR) glasses. A man gestures as if playing an invisible game of chess. A business woman hurries by, manipulating an invisible interface, and addressing a POCKET-SIZED DRONE that hovers in front of her. Customers gesture idly as they place orders. Others sit and work on invisible interfaces.

A cashier wipes his eyes and puts his AR glasses back on. We see his interface.

ON INTERFACE -

Text: "Customer ready" accompanied by an arrow.

Throughout the room now we see people with their AR interfaces revealed.

STELLA, (25), is approached by the CASHIER (38), male, and the two swap wordless gestures. Stella orders a latte.

CASHIER

Thank you.

STELLA

Thanks.

STELLA'S AR INTERFACE TEXT: "To receive your discounted coffee watch this short advertisement."  
She taps "OK."

A SERIES OF SHOTS WITH VOICEOVER - COMMERCIAL FOR LOVELOG

EXT. ROSE GARDEN - DAY

A couple takes a drone selfie in a rose garden.

NARRATOR (VO)

Falling in love. It's your unique story. Your memories.  
As only you can capture them.

The couple reviews their memory-clip on the LoveLog AR interface. One drags their POV onto a shared timeline.

ON AR INTERFACE - they tag the memory "Falling in Love."

EXT. OUTSIDE EXERCISE STATION

A couple jogs up to an exercise station.

NARRATOR (VO CONT)

LoveLog lets you tag, retrieve, and share memories from your always-on capture stream.

ON AR INTERFACE - a hand drags a memory onto a timeline.

EXT. GROVE OF TREES - DAY

Woman proposes to another woman in a grove of trees.

NARRATOR (VO CONT)

Build the story of your relationship together...

Embracing, one wipes a tear from the other. They laugh.

NARRATOR (VO CONT)

...and add your personal memory-clips to a shared timeline-

INT. CAFE - LATE MORNING

Back in the cafe, Stella gestures to skip the rest of the commercial. A pop-up appears.

STELLA'S AR INTERFACE TEXT: "Already have LoveLog? Invite a friend to receive a free pastry."

She selects PROFILES for: "Sadie" and "Felix."

EXT. PARK - AFTERNOON

A young couple recline in the grass. SADIE COVERLY (27), effervescently organized optimist, manipulates an AR interface while FELIX PALOMER (31), wistful slob and doting lover, sketches a CHAOTIC DRAWING of her. In Sadie's lap is a PAD OF GRAPH PAPER with ELEGANT PRODUCT DESIGN SKETCHES.

SADIE

OK it's downloaded.

FELIX

You think we're ready for Lovelog?

SADIE

Well Stella invited us. She must think we're ready.

FELIX

Exactly. Stella and Kofi. You want to become one of those

couples?

SADIE

I am ready to Lovelog you so hard.

Felix laughs. In the background two teens dribble an invisible soccer ball.

FELIX

OK, it's loading...

(he reads)

"To link with Sadie..."

ON INTERFACE: An image of two hands, palm to palm.

They connect their hands as shown.

INSERT SPLASHSCREEN: "The ultimate memory app for lovers."

FELIX

Now we'll never argue about who left the dishes your sink.

SADIE

Right, because I'll know it's you.

FELIX

You want to try tagging a memory?

Sadie takes out a POCKET DRONE and launches it. They mug for the drone camera. A crumpled CANDY WRAPPER sits prominently on her side.

SADIE Shit.

Felix examines the wrapper.

FELIX

No, it's perfect.

INSERT: Someone throws SEAFOOD into a pan. It sizzles.

INT. SADIE'S APARTMENT - LIVING ROOM - EVENING

Elegantly decorated dining room. Felix enters with a steaming bowl of SEAFOOD LINGUINE, but stops short of the table, glancing at Sadie as she wraps up her video call.

ON INTERFACE -

INT. DESIGN STUDIO - EVENING 8A

GINA

Yeah, we just don't want a situation like last time.

INTERCUT WITH GINA ON INTERFACE

SADIE

Yes, I know how important this meeting with Charles is.  
I'll make sure the mock-ups are ready.

Felix pantomimes salt. Sadie points to the counter.

GINA

Thanks Sadie.

SADIE

OK, Gina. Yeah, I should probably wrap up. OK. You too.

Sadie gestures to engage her AR glasses. Then, hamming it up for Felix, she uses LoveLog to capture the moment.

SADIE

Ooh LoveLog time!

(to her glasses)

Tag: date-night; tag: eating in; tag: seafood linguine,  
and tag: Felix cooks delicious meal.

SADIE'S LOVELOG INTERFACE now includes a POV memory-clip with several tags.

FELIX

You're gonna keep track of all that?

SADIE

Yes, I am. Seriously though, I appreciate you coming over  
and cooking. I want to remember.

INT. SADIE'S APARTMENT - LIVING ROOM - LATER IN EVENING

They've finished eating, and Felix and Sadie now sit on the couch giggling over half empty wine glasses.

SADIE

Wouldn't it be nice if we could do  
this every night?

FELIX

That would be literally the nicest.

SADIE

No, I'm serious. I mean, let's move in together.

FELIX

Really?

Felix glances around her apartment.

FELIX

You think there's room enough for my stuff?

SADIE

I mean a new place. All our own.

Felix considers this.

FELIX

OK.

SADIE

OK?

FELIX

OK!

She embraces him.

SADIE

You know there's actually an opening down the street.

FELIX

Let's go tomorrow!

(to his AR glasses)

Lovelog add shared tag: "Sadie and Felix, decide to move in together."

SADIE

Ooh! Can we post it?

FELIX

Sade, we talked about this.

SADIE

OK. Lovelog is just for us.

INSERT: A fly BUZZES over the remaining seafood linguine.

INT. NEW APARTMENT - LIVING ROOM - DAY 11

Sadie, Felix, and a PROPERTY MANAGER (42) stand in an empty apartment.

SADIE

It's perfect!

Sadie's POV shows an AR overlay of the apartment with sleek, modern, interior design. From a sidebar floating to her right she drags a coffee table into the AR scene.

SADIE

Ooooh.

Felix uses his AR overlay to drag in 2D CUT-OUTS from his own PHOTOS OF BIZARRE SCULPTURAL OBJECTS onto the blank apartment. Felix shares

his AR overlay with Sadie.

FELIX

Look at it with my art.

When she sees all his stuff filling the room, she pauses.

SADIE

You might have to get rid of some stuff, you know. Is that gonna be alright?

FELIX

Yeah... I've been meaning to do a purge.

INT. PROPERTY MANAGEMENT OFFICE - LATER THAT DAY

CU on Felix, anxious and lost in thought.

Felix and Sadie sit across from a PROPERTY MANAGER (40s). Sadie reads the lease. She passes it to Felix.

SADIE

Tag: the moment of truth.

Felix seems lost in thought.

SADIE'S POV - she sees his heart rate rise.

FELIX

Um...

PROPERTY MANAGER

Gettin' cold feet?

The joke does not land.

FELIX

I think I need a moment.

He signs and rushes off. Sadie shoots an awkward glance at the manager.

INT. NEW APARTMENT - LIVING ROOM - A FEW DAYS LATER - DAY

Sadie positions an IKEBANA FLOWER DISPLAY on a table.

SADIE

We did it. Our very own place.

Sadie's neatly labeled boxes are stacked against the wall. Felix drops a messy BOX onto the table, blocking the flowers.

SADIE

OK. How about for now, my stuff can go on this side, and

you can put your boxes on that side. Will that work?

Sadie draws a virtual line in space.

FELIX

Sure, I don't have that much more to bring in anyway.

SMASH CUT TO:

INT. NEW APARTMENT - LIVING ROOM - EARLY EVENING

Felix's side of the living room is now overflowing with his BOXES and piles of ART SUPPLIES, HARD DRIVES, odds and ends of PLASTER, as well as a tangle of VIRTUAL SCULPTURES. Felix heaves another box onto the pile. On her side, Sadie designs her domestic paradise, hanging a VIRTUAL IMAGE OF TWO BLACK HANDS RELEASING A DOVE.

SADIE(to her AR glasses)

Share with Felix.

(to Felix)

How is the unpacking going babe?

FELIX

I'm purging. See I make a memory-clip of an object-

He shares his overlay with Sadie and holds up an old battery to capture it in his AR POV.

Surrounding him are memory-clips of strange odds and ends that he plans to throw away.

FELIX (CONT)

-so it's easier to part with.

Sadie shoots him a quizzical look.

INT. NEW APARTMENT - LIVING ROOM - THE NEXT MORNING

At the table, Sadie launches her POCKET DRONE.

She opens a videoconference app and chooses 'test view.' She sees Felix's stuff encroaching into the field of view and tries to push it aside. An incoming video conference call appears, and she snaps to attention.

SADIE

Hey there Charles. Hi Gina. Yeah, I'm ready.

INT. NEW APARTMENT - BATHROOM - SAME

Felix, in a towel, brushes his teeth post-shower.

INSERT: drops the wet towel on the floor.

INT. NEW APARTMENT - LIVING ROOM - SAME

SADIE

Yeah, so I also...

Sadie tries awkwardly to move Felix's junk aside. Meanwhile, the drone she's addressing is confused by her movements.

SADIE

...prepared these... mock ups.

ON INTERFACE -

INT. CONFERENCE ROOM - DAY

CHARLES

Everything OK over there?

ON INTERFACE -

GINA

Sadie, what's going on?

INTERCUT - SADIE IN LIVINGROOM AND GINA ON INTERFACE

SADIE

Sorry, it's just... the mess.

GINA

What mess?

SADIE

(under her breath)

Felix.

Felix enters the living room naked save his AR glasses.

FELIX

Sexy time!

He sees that he's in full view of the drone and shrieks.

INT. NEW APARTMENT - LIVING ROOM - MOMENTS LATER

Sadie sits on the couch, her head in her hands. Felix, wrapped in a towel, sits on a chair, distant from Sadie.

FELIX

I was just-

SADIE

Not now Felix.

She gets up and exits.

FELIX  
(calling after her)

I'm sorry.

(beat)

You never accept my apologies!

SADIE (OS)  
Well maybe clean up your shit!

Felix gestures in midair to engage his AR.

IN FELIX'S AR INTERFACE - "Add to sorry tag tally? Felix: 22 Sadie: 5."

Felix gestures to add to a running tally of "sorries."

INT. NEW APARTMENT - BATHROOM - MOMENTS LATER

Sadie angrily hangs up the wet towel, sees the cap left off the toothpaste and recaps it.

SADIE  
(to her interface)  
Tag: Felix leaves caps off things.

IN SADIE'S AR INTERFACE - her view shows thumbnails in the tag category "Felix leaves caps off things" including images of an open milk and an open lube bottle dripping on sheets. She "pins" the toothpaste memory to the sink.

INT. NEW APARTMENT - BATHROOM - DAY

Felix does dishes while an augmented tally of how many times Felix and Sadie have done the dishes floats above the sink.

INT. NEW APARTMENT - KITCHEN - DAY

Felix makes breakfast while Sadie stands drinking coffee.

Various LoveLog memory-clips are "pinned" in physical space, accompanied by VIRTUAL TEXT: "Felix, please wipe off counter;" "Sadie, mugs on this side." etc. Sadie exits.

Felix stares ahead blankly.

INT. NEW APARTMENT - LIVING ROOM - CONTINUOUS

Sadie enters the living room. It's filled with more annotated memory-clips, such as: "Felix snaps at Sadie;" "Sadie being unfair." She sits alone on the couch. Then she starts to plays her memory from the property office.

INT. NEW APARTMENT - LIVING ROOM - NIGHT 23 Felix sits at the dining table. Sadie moves one of Felix's plaster sculptures off a chair so she can sit.

SADIE

OK, do you know why we're having this talk?

FELIX

You tell me.

SADIE

You don't have to take that tone.

FELIX

What tone?

Sadie opens LoveLog, rewinds and replays the moment for Felix on a shared AR projection.

REPLAY -

FELIX

You tell me.

BACK TO PRESENT

FELIX

There's no tone. That's neutral.

SADIE

Really, Felix? You clearly don't want to be in this conversation.

FELIX

We're having this conversation. I'm in it!

SADIE

And this conversation is about taking a break from LoveLog. No more tagging.

FELIX

Well maybe if you'd stop using it for all this petty bullshit.

Sadie laughs derisively and stares at Felix for a beat.

FELIX

OK, I know that I said I'd get rid of some stuff, and I've been slacking. I'll try harder.

SADIE

Thank you. And I'll try to be more understanding. I know moving takes time.

FELIX

OK.

SADIE

OK.

INT. NEW APARTMENT - LIVING ROOM - DAY

Felix dumps the contents of a box onto the floor, rapidly sorts his things into piles. He tosses old papers and memorabilia into a giant garbage bag.

EXT. NEW APARTMENT - TRASH BINS - MOMENTS LATER

He throws garbage bags and crushed boxes into trash bins.

INT. NEW APARTMENT - LIVING ROOM - MOMENTS LATER

Felix sweeps up debris. He adds the candy wrapper from earlier to an abstract PORTRAIT OF A WOMAN WHOSE BODY IS COMPOSED OF FOUND OBJECTS. It's the chaotic drawing from before. He looks for a place to hang the painting, but the walls are covered with Sadie's decorations.

INT. NEW APARTMENT - LIVING ROOM - AFTERNOON 27

Felix's art is now prominently displayed in the living room. Felix enters the living room guiding Sadie, who walks covering her own eyes.

FELIX

Not yet... OK now.

Sadie opens her eyes and surveys the space, impressed.

SADIE

Where's my dove?

FELIX

What?

SADIE

It was right here.

FELIX

Oh, I moved it. So I could hang the portrait I made of you. You love this one.

The figure in the portrait is bizarre, bearing no resemblance to Sadie. She finds the dove in a corner.

SADIE

Felix, you shrunk my dove and put it in a corner behind your feet.

The dove sits behind a collection of LEFT FEET.

FELIX

Look, 57% of the stuff in here is yours anyway.

He gestures to reveal the annotated space and a graph.

SADIE

You annotated all this? Huh. Well your data's not accounting for differences in occupied surface area-

Continuing to speak, she points to his one of his sculptures and then to a SMALL FROG. During this,

SADIE (CONT'D)

-You've got Space Mountain Apocalypse over here counting the same as Mr. Hopscotch.

FELIX

Well I feel like I've been living in Sadie's apartment, not Felix and Sadie's apartment.

She rifles through her LoveLog files, tossing out a vast array of tagged memory-clips: Felix's mess, dirty dishes, spills, the toilet seat up, etc. During this,

SADIE

Maybe that's because up until today, I've been the only one taking care of this place.

FELIX

Seriously?! We agreed not to tag, and here you've been tagging everything. Come on this is so petty.

SADIE

It's not petty, Felix. It's the just the truth.

FELIX

Anyone would agree with me on this.

SADIE

Anyone. Well maybe I should post them online then. So, we can see what "anyone" thinks.

FELIX

Go ahead. I dare you.

Sadie sizes him up for a moment, collects her memories with a sweep of the hand and storms out.

SADIE (OS)

I'm posting them!

Felix rushes after her.

INT. NEW APARTMENT - BEDROOM - CONTINUOUS Felix rushes in.

FELIX

All over a dove?

SADIE

It symbolizes peace!

Sadie gestures, and he tries to obstruct her AR interface to stop her from posting. She gives up.

SADIE

Why did you even want to move in with me?

FELIX

You asked me to!

SADIE

Exactly, you never wanted it in the first place. I saw how you looked when you were signing the lease.

Felix pauses for a beat processing what he's hearing.

FELIX

What are you talking about?

SADIE

In the management office. You had this look like I was taking away your freedom. Your heart rate even jumped.

FELIX

Huh?

SADIE

It's in LoveLog. You can't lie about it.

Sadie shares a LoveLog memory-clip with Felix.

SHARED MEMORY-CLIP (SADIE'S POV) -

INT. PROPERTY MANAGEMENT BUILDING - OFFICE - DAY 30 She passes the lease to him.

SADIE

Tag: the moment of truth.

FELIX

Um...

PROPERTY MANAGER

Getting cold feet?

SADIE FROM THE PRESENT (OS)

Do you see it?

FELIX FROM THE PRESENT (OS)  
Um. Baby? Can we switch to my point of view?

INTERCUT MEMORY CLIP AND PRESENT MOMENT IN BEDROOM PRESENT MOMENT -

Felix flips the memory-clip perspective to his own POV.

MEMORY-CLIP -

INT. PROPERTY MANAGEMENT BUILDING - BATHROOM - DAY 31  
Felix hurriedly shuts the door of the bathroom while moaning.

PRESENT MOMENT -

Sadie's eyes go wide while she watches Felix's memory-clip. In the background we hear him violently relieving his bowels. She winces.

SADIE  
Oh my God.

FELIX  
Seafood linguine.

SADIE  
That f-ing seafood linguine. I thought I was the only one who got sick.

Sadie reaches out to touch Felix.

SADIE  
Baby, I didn't realize.

Felix, defiant, avoids the touch at first. Then laughs.

MEMORY-CLIP -

Felix video-calls ANDREW (32), and it begins to RING.

FELIX  
Call Andrew.

PRESENT MOMENT -

FELIX  
OK that's it.

Felix motions to stop the memory-clip, but it keeps playing. He tries again, getting desperate.

Sadie shoots him a look. He tenses as the video-call picks up.

IN MEMORY-CLIP ON INTERFACE -

INT. CASUAL OFFICE - DAY

Andrew is eating his lunch.

ANDREW

Yo.

FELIX

Hey. I'm here at the management office. With Sadie. We're moving in together.

ANDREW

Oh wow. Really? Today? Congrats!  
Wait, are you in the bathroom?

FELIX

Yeah, I'm kind of freaking out. All I know is last night we were having wine, and we decided to move in together, and next thing I know we're signing a lease. And now she's telling me to throw my stuff out. And I don't know if I'm making the I'm making the right decision-

ANDREW

Woah, woah. Slow down

PRESENT MOMENT -

SADIE

So you do have doubts.

FELIX

Keep watching.

MEMORY CLIP -ON INTERFACE -

Andrew chews and swallows.

ANDREW

Look, it's a simple question: do you love her?

Felix takes moment.

FELIX

Yeah. Yes. I am completely in love with her.

ANDREW

OK. Well, you give it a shot then, right?

FELIX

Right.

Felix feels another rumble in his stomach.

FELIX

I'll call you back.

PRESENT MOMENT

SADIE  
So you really love me, huh?  
Felix nods and reaches for her.

FELIX  
So do you have doubts? About us?

SADIE  
I mean sure.  
(beat)  
I wonder where you see us in 3 years. Are we heading  
somewhere? ...Or have I been wasting time?

FELIX  
I don't think we know yet. But I want us to try. Is that  
OK?

SADIE  
(hesitant)  
OK.

FELIX  
Tell me what to say.

SADIE  
Tell me you love me.

FELIX  
I love you so freaking much.

SADIE  
I love you too.

They touch. It's a sweet moment.  
In the background, Felix from the past succumbs to a wave of  
diarrhea.

SADIE  
Oh God, turn it off.

FELIX  
Should we post it?

SADIE  
Um, no.

They laugh.

INT. LIVING ROOM - EVENING

FELIX POV -

Felix sets the dining table. From his POV the entire apartment is

filled to the brim with his sculptures and memorabilia. Sadie enters carrying two plates of food.

SADIE

This is fun isn't it.

SADIE'S POV -

We see the apartment from her perspective now and reveal a completely different interior design. The room is simple and elegant. Instead of Felix's artwork, only Sadie's decorations hang on the wall, including the dove.

THIRD PERSON PERSPECTIVE -

The apartment is bare, neither Felix's nor Sadie's decorations are present. An AR interface is on the table.

INTERFACE TEXT: "Interior Remixer: Select from custom." As Sadie selects, the decorations "jump" between eclectic "mixes" of Sadie and Felix's integrated belongings.

SADIE

Ooh. I like this one!

Felix opens his LoveLog interface and launches his drone.

FELIX

Are you ready? LoveLog, post to public feed: Sadie and Felix's new home.

They sit in their living room facing the world.

INSERT - ON INTERFACE: Stella "likes" their post.