

Between Lines: Critically Speculating Futures with
Location-Based Recommendation Systems

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Program Authorized to Offer Degree:

School of Art, Art History, and Design

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Abstract

Between Lines: Critically Speculating Futures with
Location-Based Recommendation Systems

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Location-based recommendation systems are becoming increasingly ubiquitous in the march toward fully tailored user experiences. Applications like Google Maps, Strava, Uber, Hinge, and many others utilize location data as key material for providing contextual recommendations. Rising concerns about usage and misuse of location data have arisen in recent years. I situate this thesis within design's future-oriented nature, critically speculating possible futures with location-based recommenders. I propose a refinement of current approaches and speculative design for engaging domain experts in co-speculation through the use of tailored, high-fidelity, critical design fiction videos. In this case study, I lay preliminary insights, including a widespread sense of fatalism, self-described lack of agency, and underlying individualist ideologies driving development and deployment of these systems. I also reflect on the process of creating four critical design fiction videos, their use in 11 guided co-speculation sessions, and implications for their use in gathering rich qualitative data, creating space for reflection, prompting stories and personal connection, and unpacking experts views on complex wicked problems.

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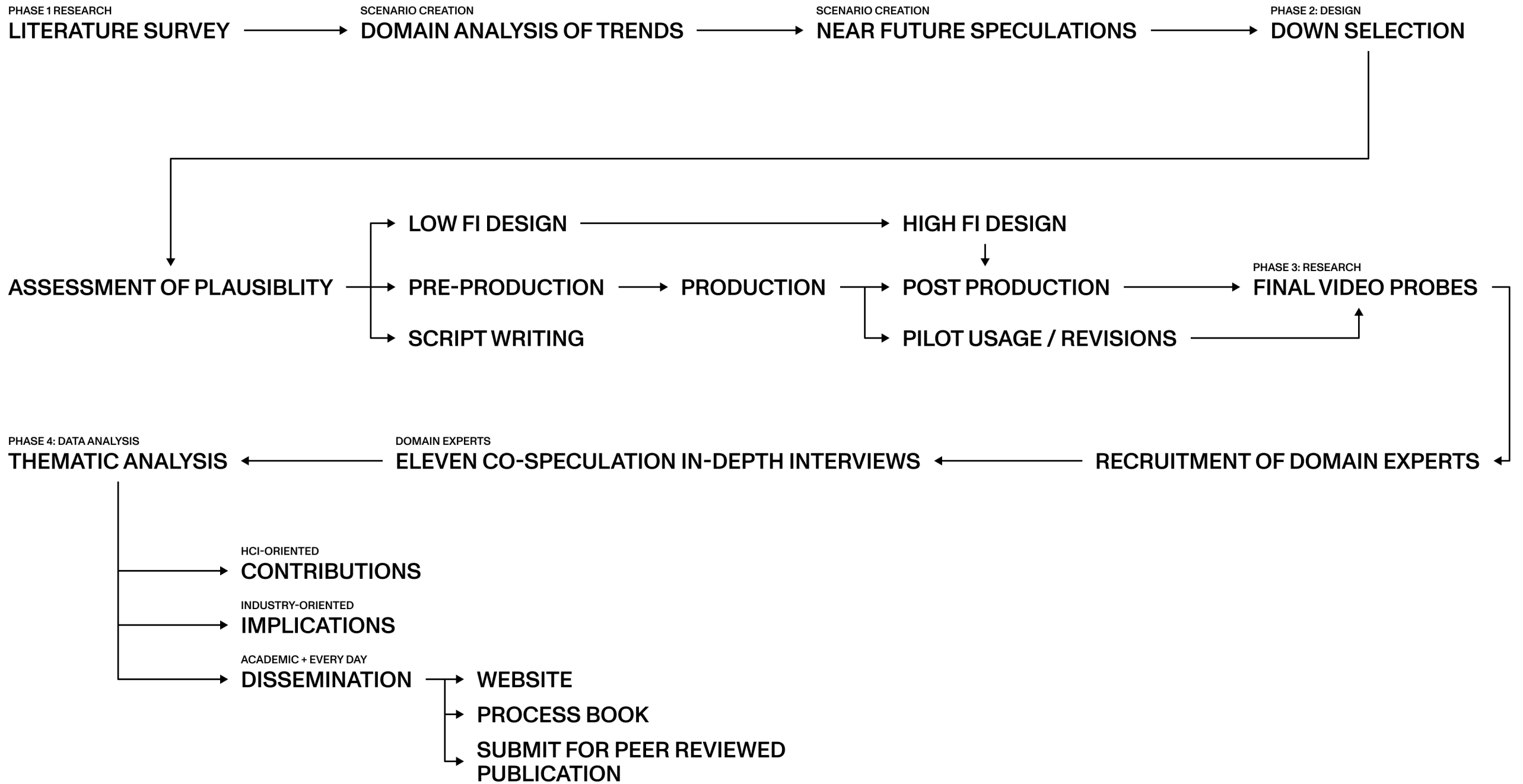
ON LOCATION
& RECOMMENDATION SYSTEMS

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“Not everything that is faced can be changed. But nothing can be changed until it is faced,” James Baldwin,
AS MUCH TRUTH AS ONE CAN BEAR,
New York Times, 1962

PROJECT OVERVIEW



PREFACE

We are living in unsustainable times—politically, socially, economically, and in turn globally. Much of this discord is driven by our access to information and the systems that we let manage our relationships with it. We have accumulated so much information that it is impossible to find what we need when we need it. The art of the crafted search query is less relevant than ever before.

Our outdated conceptions regarding the very models and motivations of the systems we interact with have left us unprepared to deal with current and next-generation algorithmic results that continue to expand into our everyday lives.

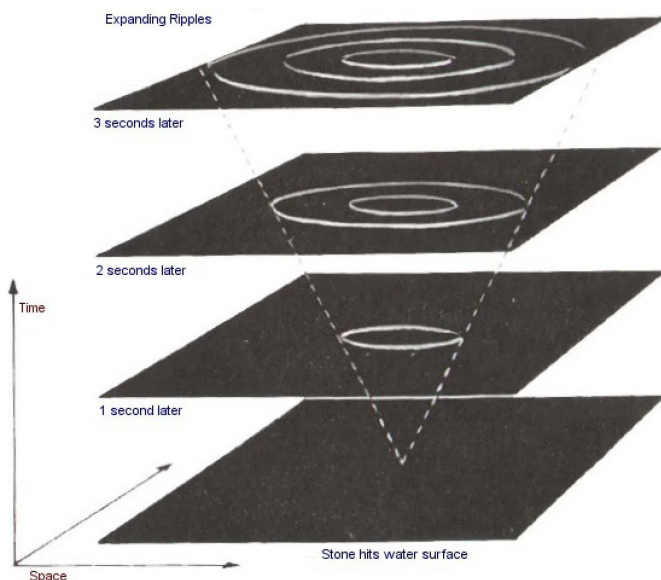
This work emerged from a combination of specific experiences, broader industry trends, and unanswered questions about how we create identities, both individually and as communities. I have long held a personal disdain for algorithmic platforms that position themselves as reliable authorities, acting as arbiters of taste and cultural exploration. Growing up with a profound curiosity and love for exploring niche music from faraway or underground scenes, I found Spotify's relentless algorithmic agenda particularly grating. As Netflix's rise significantly impacted the film and television industries, I began to question the role of algorithms in curation—a discipline traditionally undertaken by passionate individuals in art galleries and local and pirate radio stations. Early on, questions emerged about how these systems shape our worldviews and self-perception, especially as it became clear that recommendations were increasingly dominated by paid promotions and sponsored content. In my initial thesis research, I contemplated concentrating on these issues. However, I decided to look beyond what appeared to be surface-level symptoms, directing my focus toward the underlying motivations in the technology industry—data collection, surveillance, and agency.

Our human experience continues to be quantified and mined to train these algorithms. We are monitored, tracked, and surveilled. We are watched and looked at, only to be nudged, steered, or pushed. Our experiences are mined for data and content, co-opted into quantifiable metrics, and fed back into algorithms with a single primary goal: to give us yesterday tomorrow in the vain hope that we might continue to be too busy, anxious, and exhausted—to imagine an alternative to the reality that we have (been told we) constructed. These systems continue to extend in prevalence and scope through the combination of real-time location data and an already existing wealth of personal data, brokered across the internet. Pushing beyond the screen, combining the psychological and the physical worlds, the politics of bodies in space are encapsulated when we ask questions of algorithms utilizing location data not as cultural intermediaries but as our naturally evolving intermediaries with the physical world.

Within the past twenty years, the discipline of design has begun to understand its role in exploring and critically evaluating possible futures. In this way, the discipline of design stands as one of the frontlines, facing the future and dictating largely through the forms of products and systems, our relationship to the world, and individuals around us. This simplification leaves out the many business professionals and technologists working with the designer. Yet, it calls into focus the agency of the designer—an agency often rationalized away through staunch technocratic individualism.

In this book, I summarize my Master of Design thesis project, *Between Lines: Critically Speculating Futures with Location-Based Recommendation Systems*. I created four design fiction films encapsulating four alternative visions of the future. Extending current social, political, and economic trends, I aimed to elicit values and perceptions of agency among tech-industry professionals through a grounded participatory approach, futurizing through co-speculation. In the following chapters, I summarize my methodological approach, the process of creating scenarios and short films, and which highlight the sessions' findings.

Has the future ever been more malleable?



This graphic is a phenomena of the internet, attributed to *A Brief History of Time*, by Stephen Hawking, 1988. While it may have appeared from the ether, it aptly illustrates the impact of action on the near future.

ABSTRACT

Location-based recommendation systems are becoming increasingly ubiquitous in the march toward fully tailored user experiences. Applications like Google Maps, Strava, Uber, Hinge, and many others utilize location data as key material for providing contextual recommendations. Rising concerns about usage and misuse of location data have arisen in recent years. I situate this thesis within design's future-oriented nature, critically speculating possible futures with location-based recommenders. I propose a refinement of current approaches and speculative design for engaging domain experts in co-speculation through the use of tailored, high-fidelity, critical design fiction videos. In this case study, I lay preliminary insights, including a widespread sense of fatalism, self-described lack of agency, and underlying individualist ideologies driving development and deployment of these systems. I also reflect on the process of creating four critical design fiction videos, their use in 11 guided co-speculation sessions, and implications for their use in gathering rich qualitative data, creating space for reflection, prompting stories and personal connection, and unpacking experts views on complex wicked problems.

WHAT IS ON-SCREEN IS IN YOUR MIND

In this section, I introduce each film in the order they were shown to participants, outlining the current trends and extrapolations that led to the realization of these future scenarios.

These films are best understood through the lens of Italian neorealist philosophies. The use of non-professional actors, often in their own homes, facilitated a blend of reality and fiction, creating impactful stories resonating with undeniable realism.

individualism. Each service depicts a hyper-capitalist view of the world. A view in which technology is the solution. Seemingly good ideas are co-opted, forcibly maligned from their original intent—in the service of profit at the expense of all else.

The machines and systems of tomorrow may already exist in our minds. We often hold fatalistic and deterministic worldviews that go unchallenged. It is within this incrementalist fram-

DEPICTING FOUR

This project focuses on what might happen tomorrow if we do not act today, rather than on distant futures. Thus, exaggerated dystopian environments are unnecessary. In this project, believability is the horror.

Each film in this series subtly depicts wide-ranging surveillance states, economies of attention, fear, and

ing that the slow boiling of the frog resides. Our time is spent elsewhere, with limited attention and capacity to address the seemingly impenetrable nature of capitalist incentives driving companies to surveil us.

“One goes step by step into the darkness. The movement itself is the only truth.”

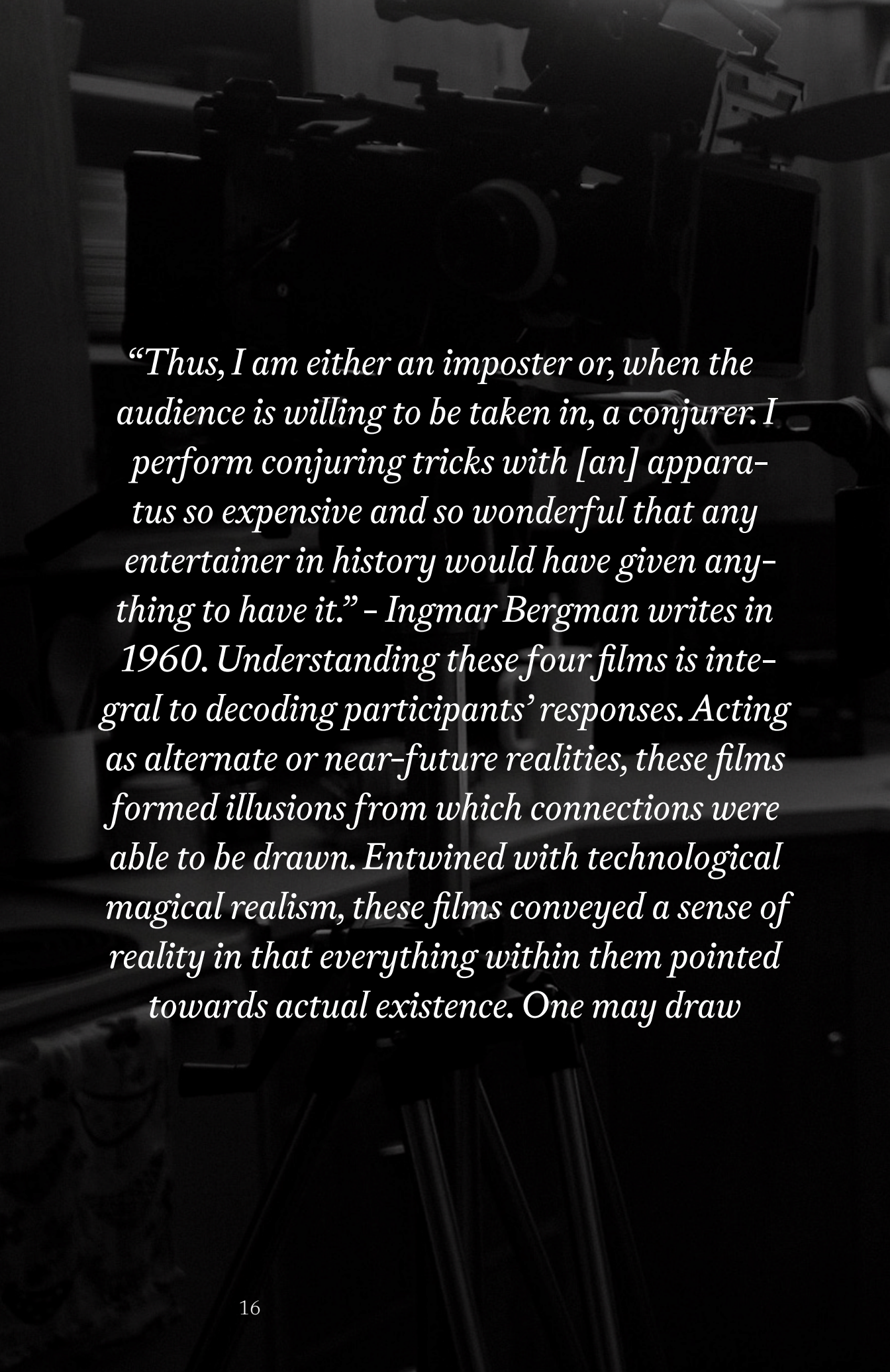
Bergman writes as dialogue for the former vaudevillian character, Johan Spegel (portrayed by Bengt Ekerot) who lies near death in the Swedish wilderness at the beginning of *Ansiktet* (The Magician), his 1958 film. It rings true again here.

ON

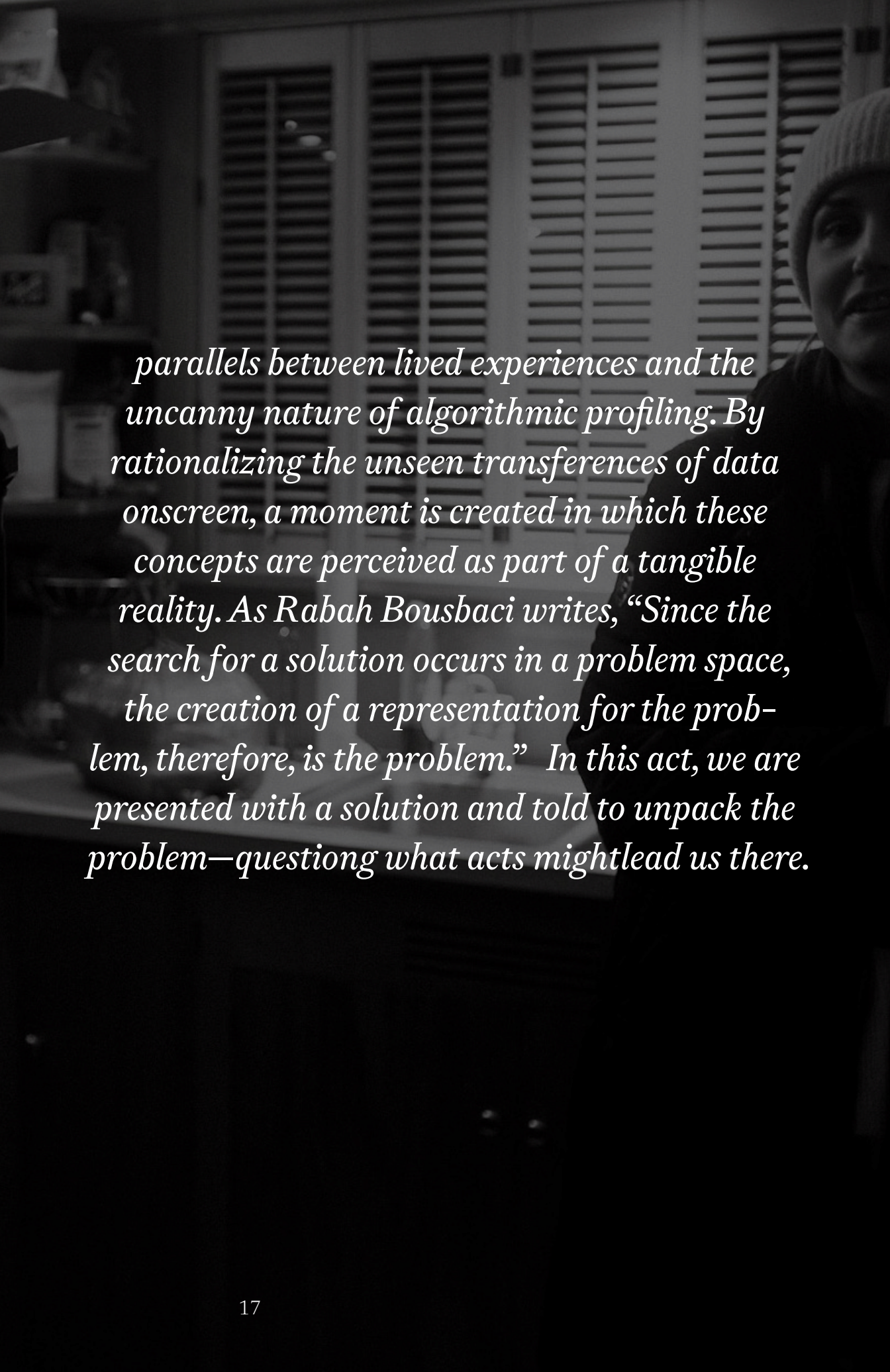
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1

REALITIES

& THROUGH SHORT FILM



“Thus, I am either an imposter or, when the audience is willing to be taken in, a conjurer. I perform conjuring tricks with [an] apparatus so expensive and so wonderful that any entertainer in history would have given anything to have it.” – Ingmar Bergman writes in 1960. Understanding these four films is integral to decoding participants’ responses. Acting as alternate or near-future realities, these films formed illusions from which connections were able to be drawn. Entwined with technological magical realism, these films conveyed a sense of reality in that everything within them pointed towards actual existence. One may draw



parallels between lived experiences and the uncanny nature of algorithmic profiling. By rationalizing the unseen transferences of data onscreen, a moment is created in which these concepts are perceived as part of a tangible reality. As Rabah Bousbaci writes, “Since the search for a solution occurs in a problem space, the creation of a representation for the problem, therefore, is the problem.” In this act, we are presented with a solution and told to unpack the problem—questioning what acts might lead us there.

AVOIDABLE INCONVENIENCES

We explore a future where the idea of individual and personal safety have been leveraged to sell new services that reduce privacy and impact the wider community in unforeseen ways. Centering the self.

In this video, a waitress leaves her shift at a restaurant in the city and gets herself home using her maps app's "Safe Route Option," which supposedly avoids any loitering or unhoused individuals. In this video we explore forms of reliance on omnipresent systems. The idea of hand-

ing off agency, in the service of personal safety. We look at how the individual choice, impacts broader communities centering surveillance. The tracking and watching of "historically" dangerous groups. In this sense a new era of digital racism will manifest. Historic redlining will rear its head once again under the guise of fear. Fear of the affluent-meritocratic technologist class. A fusion of computer vision, real-time monitoring of device and location data.

CAST: RACHAEL WINKLER, NELLY QUEZADA



CURRENT TRENDS:

Mayor Harrell's Push to Expand Police Surveillance Greeted with Lackluster Public Response
The stranger, 2024

Amazon's Ring now reportedly partners with more than 2,000 US police and fire departments
The verge, 2021

Monitoring Pets, Deterring Intruders, and Casually Spying on Neighbors: Everyday Uses of Smart Home Cameras
Tan, et. al., 2022, ACM digital library

From Point A to Point B: Identity-Informed Safety in Navigation Technology
Williams, et. al., 2022, ACM digital library

Crime prevention through neighborhood cohesiveness and collaboration: Neighborhood Watch
A Division of the National Sheriffs' Association





ROUTE UPDATE REQUIRED

LOADING PEER DEVICES.JSON

Determining Incident Type



Unmoving Individual -- [HISTORIC ISSUES IN AREA]

TASK: GENERATE NOTIFICATION
[% Conversion Chance] [00:00 Recency] [*Emotional Response]

NOTIFICATION COPY

[Option 1]

We have alerted EMS providers due to a unconscious unhoued person on your route ahead. We are diverting you from the area.

[Option 2]

We have alerted local police due to a potentially violent homeless man on your route ahead. We are routing you from the area now.

[Option 3]

We have alerted medical response services due to a potentially mentally unstable unhoued individual. We are changing your route to not interere with EMS personnel.

CALCULATING SUCCES CHANCES

USER_ID: 32348591 [LOCATION ACTIVE]

Starting Route Safety Evaluation...

User ID: 85923, Profile: Female,

Location: Salem, Time: 22:45

Fetching Current Location Data...

Success

Establishing Connection to Local Dat Streams...

Police Data Stream Connected:
Timestamp 2023-10-05 22:45:10

EMS Data Stream Connected:
Timestamp 2023-10-05 22:45:12

Local Surveillance System Accessed:
15 Cameras Online

Analyzing Recent Incident Reports in Salem...

Incident Analysis:
0 Violent Crimes,
3 Public Disturbances Today

Evaluating Night-Time Safety Metrics for Park Area...

Park Lighting Status:
80% Operational, 20% Zones Dark





LOADING UPDATED ROUTE DATA

LOADING PEER DEVICES.JSON

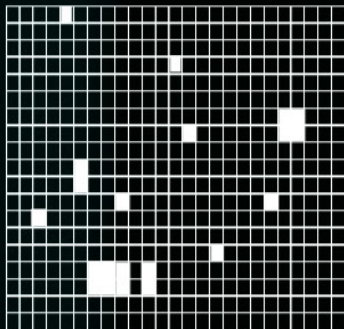
IDENTIFYING NEARBY EVENTS

NEARBY ACTORS [FORMAT _LIST.CSV]

2 GROUPS (10 DEVICES SHARING LOCATION)
4 NON-MOVING INDIVIDUALS
3 PATIO SEATING AREAS (OPEN BARS + CRO

UNPACKING STREETVIEW .PNG SEQUENCES

PLOTTING SAFE S



CALCULATING SUCCES CHANCES

USER_ID: 32348591 [LOCATION ACTIVE]

nnected:

Timestamp 2024-10-05 14:32:20

Location Tracking Enabled for
457 Users

Computer Vision Analysis:
30 Street View Cameras Active

Smart Home Camera Feeds:
120 Cameras Streaming

Processing Incident Reports...
12 New Incidents Detected

Analyzing Location Data...
37 Users Near Incident Zones

Street View Analysis:
2 Potential Hazards Identified

Smart Camera Feed Analysis:
1 Security Alert Triggered

Notification Sent to 37 Users:
Evacuation Alert Near Zone 4

User Response Received:
29 Users Acknowledged Notif

Route Updates Processed:
15 Users Rerouted for Safety

System Performance:
CPU Usage at 75%,
Memory Usag

RUNNING SYSTEM AUDIT



DECEMBER 26TH 4:36PM

We explore a future where location data and emotional surveillance are combined with new forms of machine learning and artificial intelligence to increase click rates for online advertisements.

In this video, a woman visits the site of her husband's suicide on the anniversary of his passing. Throughout the following week, she is consistently routed by it while being advertised to by E-Therapy Companies. We look at how location data may be used against the individual in the very near future. How the idea of place

may, in turn, be co-opted by the weighting of algorithms as a form of emotional manipulation. As companies are increasingly pushed to outperform the last quarter's sales, monetization arrives in unlikely places. Interconnected devices, from smartphones and smartwatches to smart home speakers. Each device is able to mine valuable information about users. This data can be packaged, bought, and sold, informing and training the next interaction of recommender systems.

CAST: ANNE WINKLER

CURRENT TRENDS:

Designing for the Bittersweet: Improving Sensitive Experiences with Recommender Systems
Lustig et al., 2022, ACM Digital Library

Spotify wants to suggest songs based on your emotions
The BBC, 2021

Am I Never Going to Be Free of All This Crap?" Upsetting Encounters With Algorithmically Curated Content About Ex-Partners
Pinter et al., 2019, ACM digital library

entropik.io
On market tech stack includes Emotion AI, Behavior AI, and Generative AI.







— CLICK CHANCE
25% [LOW]

RELATED PURCHASE HISTORY

- 1x BOQUET FLOWERS
- 3x CANDLES
- 1x \$200 DONATION TO NFW
- 1x GERMAN CHOCOLATE CAKE
- 2x BOTTELS OF WINE
- 1x BOTTLE OF MELATONIN

SUMMARIZING EMOTIONAL PROFILE

- 351 SE HARNEY ST, NEWPORT OR [HOME]
- FRED MEYERS
- FISHERMAN'S MEMORIAL SACTUARY
- ROUGE DISTILLERY
- YAQUINA BAY BRIDGE [CURRENT]

LOCATION HISTORY



CLICK CHANCE
25% [LOW]

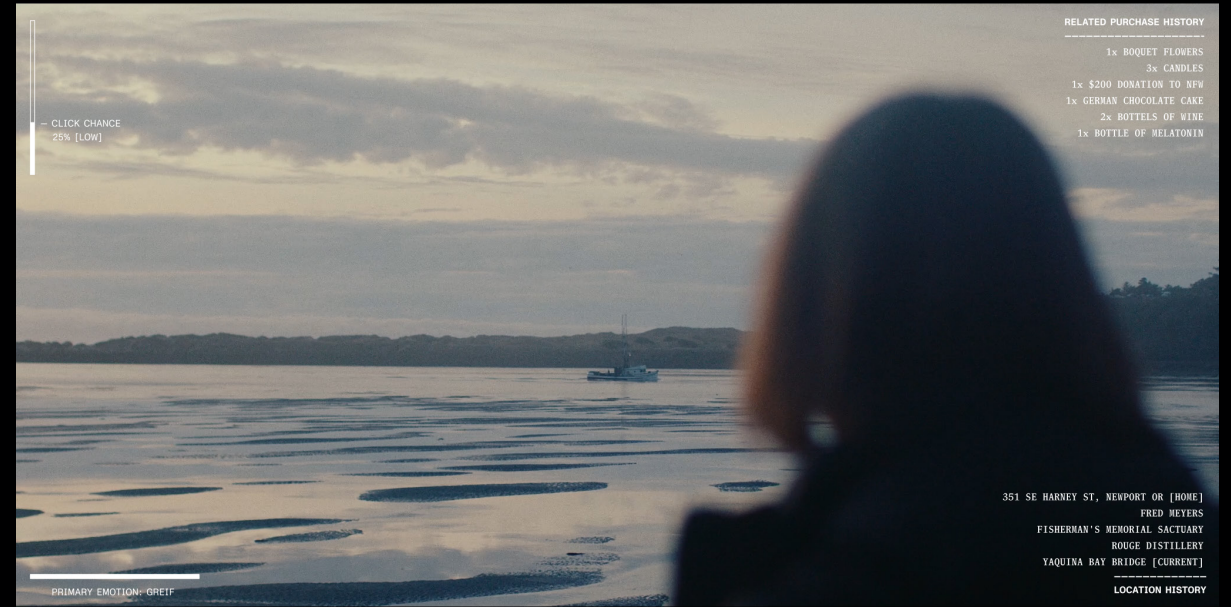
RELATED PURCHASE HISTORY

- 1x ROUQUET FLOWERS
- 3x CANDLES
- 1x \$200 DONATION TO NFW
- 1x GERMAN CHOCOLATE CAKE
- 2x BOTTELS OF WINE
- 1x BOTTLE OF MELATONIN

351 SE HARNEY ST, NEWPORT OR [HOME]
FRED MEYERS
FISHERMAN'S MEMORIAL SACTUARY
ROUGE DISTILLERY
YAQUINA BAY BRIDGE [CURRENT]

LOCATION HISTORY

PRIMARY EMOTION: GREIF



CLICK CHANCE
25% [LOW]

RELATED PURCHASE HISTORY

- 1x ROUQUET FLOWERS
- 3x CANDLES
- 1x \$200 DONATION TO NFW
- 1x GERMAN CHOCOLATE CAKE
- 2x BOTTELS OF WINE
- 1x BOTTLE OF MELATONIN

351 SE HARNEY ST, NEWPORT OR [HOME]
FRED MEYERS
FISHERMAN'S MEMORIAL SACTUARY
ROUGE DISTILLERY
YAQUINA BAY BRIDGE [CURRENT]

LOCATION HISTORY

PRIMARY EMOTION: GREIF



The Films



The Films





SENDING EMOTIONAL ADJUSTMENT



HIGH EMOTIONAL INTENSITY
SUBJECT [OFFLINE]

TABS OPEN [30] - STATUS [IDLE]

PRIMARY EMOTION: ACCEPTANCE







The Art Line

— CLICK CHANCE
90% [VERY HIGH]

RECENT SEARCHES

- DEALING WITH LOSS YEARS LATER...
- DOES THERAPY WORK...
- SUPPORT GROUPS NEAR ME...
- GRIEVING AND STAGES OF GRIEF WEBMD...



SUMMARIZING EMOTIONAL PROFILE

EVIDENCE OF INSURABILITY

We explore a future where location data and other collectible metrics are weaponized by insurance companies to maximize profit with enhanced surveillance and tracking strategies limiting risk at all cost.

In this video, a woman is manipulated into signing up for a new program with her auto insurance. Her insurance company is providing a new in-app GPS service—deviating from these routes has financial consequences. In this future, we are concerned about how everyday

surveillance manifests itself in seemingly mundane ways. Insurance is a necessary evil—concerned only with leveraging risk. Leveraging the latest in monitoring technology, we see these companies reduce agency and autonomy through purely financial gains.

CAST: TERESA MCDADE



CURRENT TRENDS:

Automakers Are Sharing Consumers' Driving Behavior With Insurance Companies
New York Times, 2024

Insurance black boxes and the surveillance state – how free are you, really?
The Conversation, 2019

Highway to (Digital) Surveillance: When Are Clients Coerced to Share Their Data with Insurers?
Loi et. al., 2022, Journal of Business Ethics

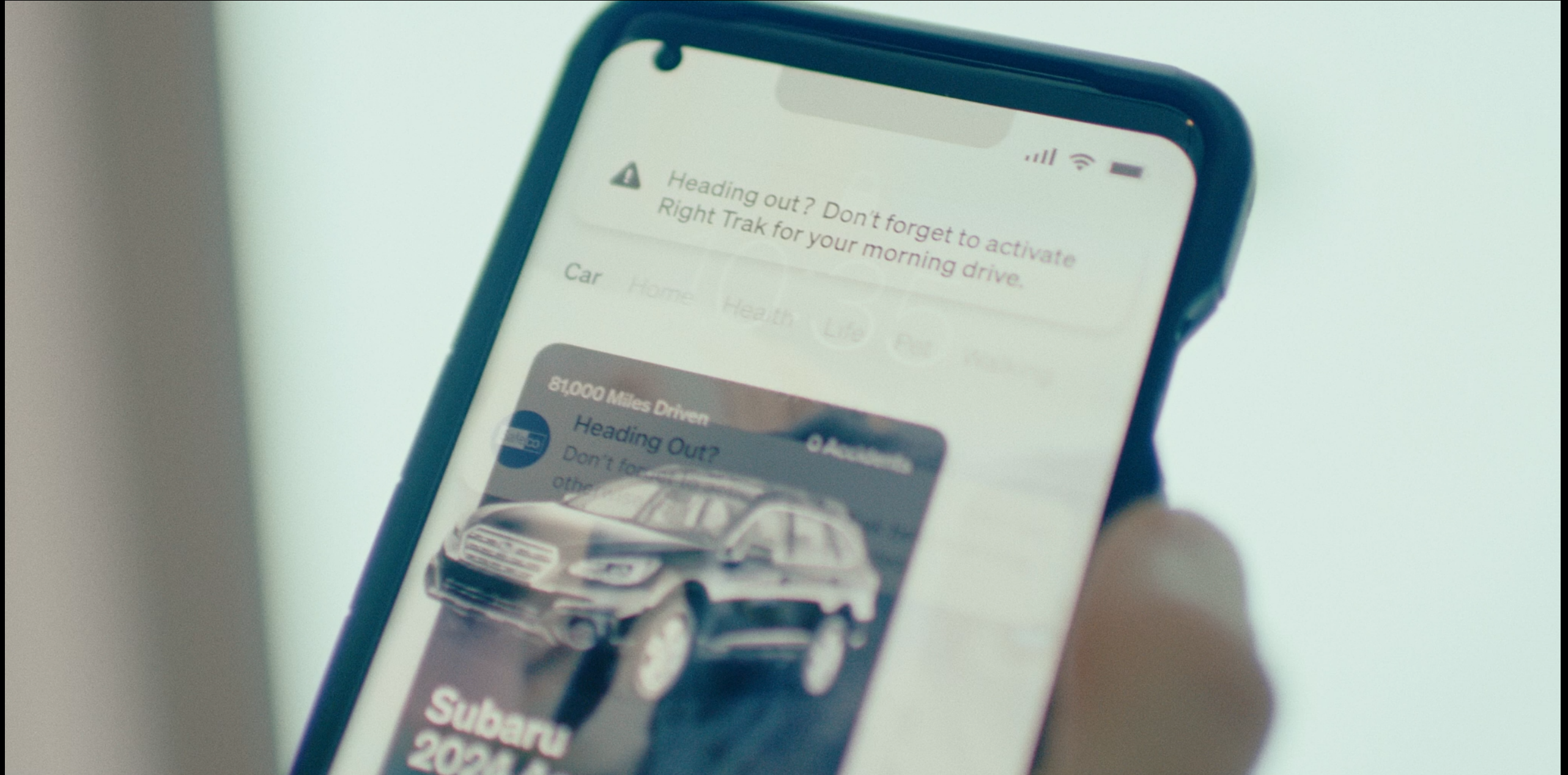
IoT-based Vehicle Surveillance and Crash Detection System
Kathiravan et. al., 2022, IEEE

RightTrack® by Safeco
Safeco Mobile App

RightTrack® by Liberty Mutual
Liberty Mutual APP











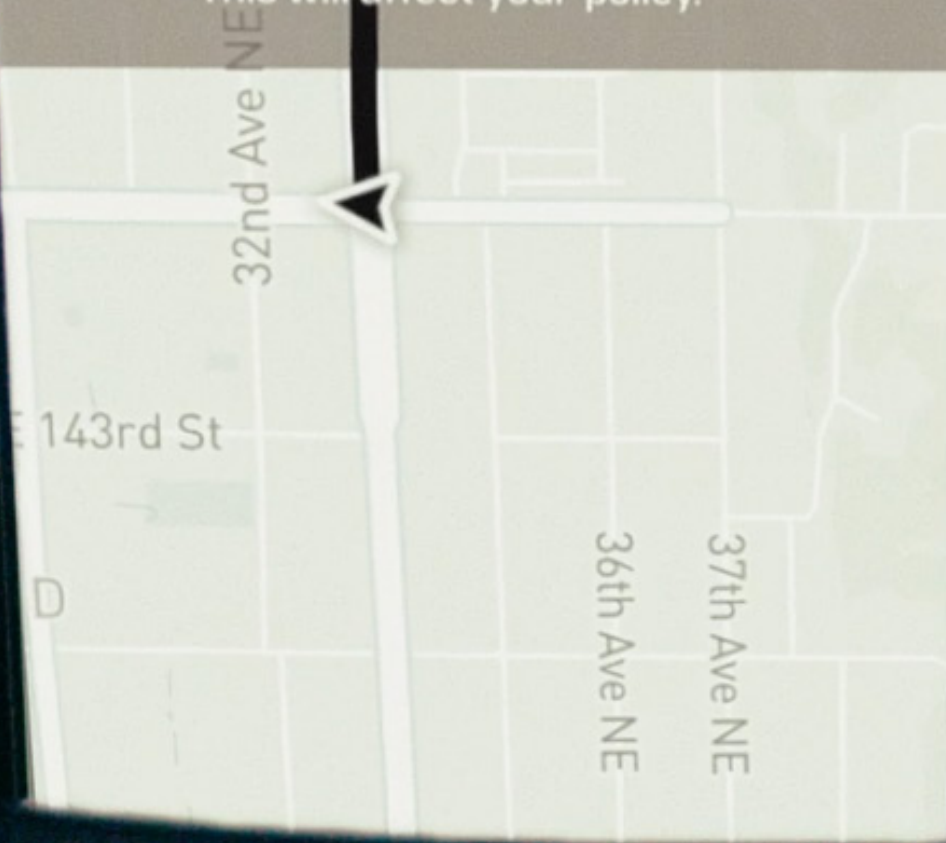
L  R

7:41



 30m Lake City Way

 **Diverted From Safe Route**
This will affect your policy.





Hi Teresa!
Your Insurance

Car Home Health Life Pet Walking

Alert of Rate Increase



Your monthly rate has increased by \$30 to a total of \$195.78 due to our awareness of unsafe actions performed while driving; included but not limited to, a low route adherence score, hard braking, fast acceleration.

Confirm that you have received this notification of adjustment.

Confirm

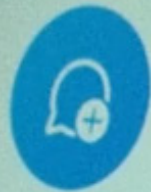


Upgrade to P
Email to get a better
we can get a better

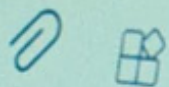
Share F



What can I help you with? Try one of the examples or enter your own prompt.



How to cancel Safeco Right Track?





The Films



ROUTINE REPETITIONS

We explore a future where GPS recommendations are co-opted by advertising agencies/ Potential paths users may be routed on are bid on by businesses with storefronts matching users' advertising profiles.

In this video, a runner gets a new fitness training app that leverages biometric data and AI to create personalized fitness plans. He notices that his runs take him by numerous coffee shops owned by the same chain. This future depicts a reality in which products and services seek

to reduce vectors for independent choice in the service of capitalist incentives. Utilizing behavioral nudge techniques, third-party ad brokers can now market potential paths a user might take. Pay enough, and you might be able to raise brand awareness subconsciously. Leave less to chance and move targeted ad campaigns to the physical world. There's less risk when everything's tailored.

CAST: KENNETH NGUYEN



CURRENT TRENDS:

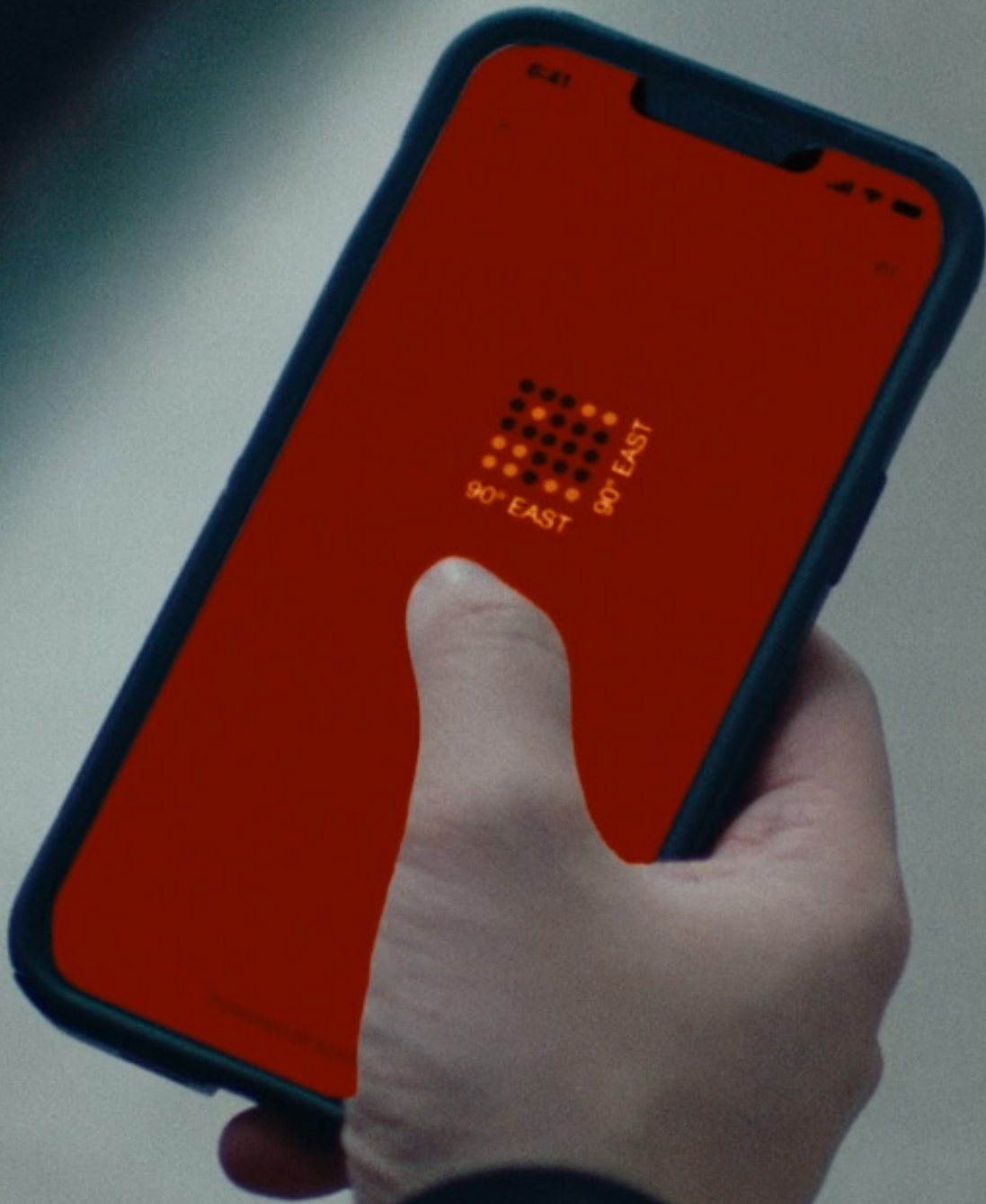
Type, tweet, tap, and pass: How smart city technology is creating a transactional citizen
Johnson et al., 2020

Navigational Mapping Practices: Contexts, Politics, Data
Michael Duggan, 2018, Westminster Papers in Communication and Culture

You are where you go, the commodification of daily life through 'location'
Jim Thatcher, 2017, Environment and Planning A: Economy and Space

Can we get there from here? Teleological red-lining and avoiding the ghetto
Jim Thatcher, 2012, Antipode





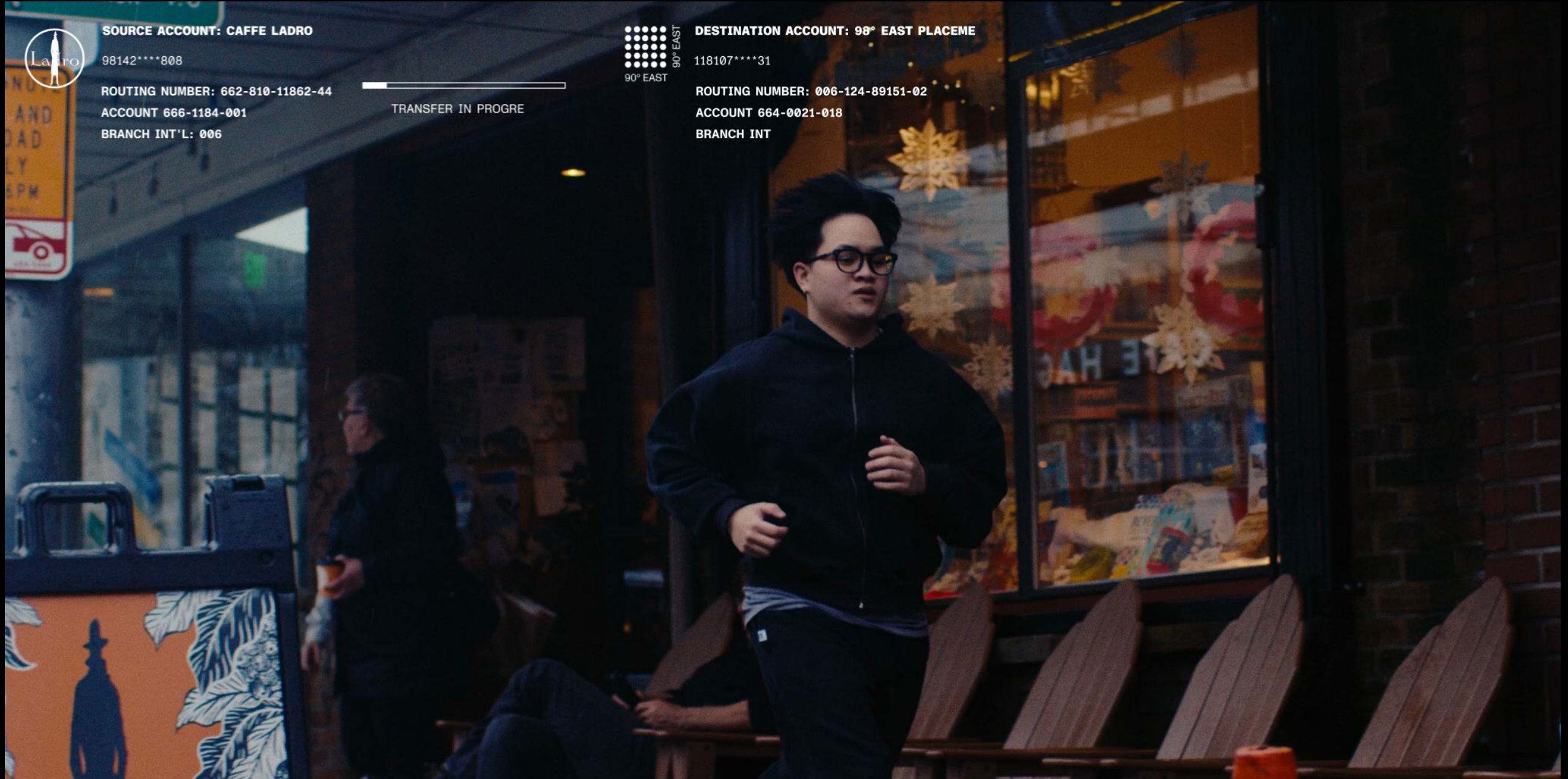
PARTNERSHIP ACCOUNTS OPEN 90° EAST
PERSONALIZED ROUTES GENERATED
OPENING BIDDING FOR PLACEMENTS
BIDS RECEIV



The Films







SOURCE ACCOUNT: CAFFE LADRO

98142****808

ROUTING NUMBER: 662-810-11862-44

ACCOUNT 666-1184-001

BRANCH INT'L: 006

TRANSFER IN PROGRE



DESTINATION ACCOUNT: 98° EAST PLACEME

118107****31

ROUTING NUMBER: 006-124-89151-02

ACCOUNT 664-0021-018

BRANCH INT












PARTNERSHIP ACCOUNTS OPEN 90° EAST
 PERSONALIZED ROUTES GENERATED
 OPENING BIDDING FOR PLACEMENTS

90° EAST 90° EAST 90° EAST

ASSESSING ROUTE IMPACT

AUCTION WINNER:
 CAFFE LADRO



UPDATING ROUTE...
 PASSING BY [UPPER QUEEN ANNE].
 ADD ON: [MULTI-RUN BONUS]
 ADD ON: [REDUCED SHADE ROUTE]
 ADD ON: [END OF RUN]
 \$00.16 - PER RUN PRICE
 \$36.00 - CONVERSION RATE HELD

SENDING ROUTE ADJUSTMENT







4:28



Text Message
Today, 4:24 PM

Hey, are we still meeting this morning?

Yeah we are, I can grab us coffee if you want. There's a place I've been seeing lately

lately

CUSTOMER CONVERSION DETECTED

[FINALIZING PAYMENT + BILLING]

INITIATING PAYMENT

...SUBTRACTING RUN PLACEMENT DEPOSITS

45 ROUTES @ .16¢ PER PLACEMENT

1X CONVERSION BONUS @ \$22.80

TOTAL: \$36.12





SOURCE ACCOUNT: CAFFE LADRO

98142****808

ROUTING NUMBER: 662-810-11862-44

ACCOUNT 666-1184-001

BRANCH INT'L: 006

TRANSFER COMPLETE



DESTINATION ACCOUNT: 98° EAST PLACEMENTS

118107****311

ROUTING NUMBER: 006-124-89151-02

ACCOUNT 664-0021-018

BRANCH INT'L: 004



HOW DO WE ENVISION?
HOW DO WE SPECULATE?

P
A
R
T

AN INQUIRY
INTO

*Thirty weeks, twenty concepts, four short films,
and eleven interviews, to uncover one question:
What does the future of location-based
recommendation systems look like? And most
pressingly—what are we sacrificing for it?*

2

“OUR”

FUTURES
WITH

LOCATION-BASED
RECOMMENDATION

DREAMS OF ALGORITHMIC SHEEP

Location-based recommendation systems are becoming increasingly ubiquitous in the march toward fully tailored user experiences. Applications like Google Maps, Strava, Uber, Hinge, and many others utilize location data as key material for providing contextual, personalized recommendations. These systems can, and often do, touch every corner of individuals' online lives. Usage of these systems carries out a well-known unstated agreement: if you are not paying, you are the product. The selling and brokerage of data have become somewhat unfashionable passé critiques, leveraged towards users for whom the practices have little readily visible impact.

Lurking beneath the surface of these stable interfaces is an intensive data collection and brokerage practice. These wide-sweeping activities extend what are commonly referred to as forms of personalized surveillance. These surveillance practices impact the users in two primary ways: outwardly influencing their relationship with the world (for example, reliance on GPS worsening users spatial knowledge and memory [38,57,58]) and orienting their sense of self to quantifiable metrics understandable by the algorithm (for example tailoring tastes or habits due to recommendations from systems i.e. Netflix or Spotify [21,69]).

As location data becomes increasingly accessible through technological advancements and the broader adoption of artificial intelligence and machine learning programs, these systems' consequences and ontological impacts extend beyond purely digital interactions [39,47,60]. Recommendation systems, incorporating location data, now directly influence how populations navigate and interact within the physical world. Questions now emerge about how routes are determined, why specific routes are chosen, and how individuals' visited locations might be used against them. Pressingly, these

systems simultaneously extend a form of para-state surveillance. This is exemplified by Google's collaboration with state and federal law enforcement agencies, which is evident in several high-profile events: the surveillance and tracking of peaceful protesters during the 2020 protests following the death of George Floyd, the 2021 storming of the Capitol Building by right-wing extremists, and, most recently, activities following the overturning of *Roe v. Wade* [1,10,39].

Designers can play a key role in mitigating these concerns, provided they are aware of and share similar values or concerns [5,46,62]. A notable example of this is the adoption of Privacy by Design principles [5]. Design is inherently a future-oriented discipline, and designers have many tools at their disposal for exploring alternate futures. Critical speculative approaches are one pathway for realizing experiences that are yet to happen.

There continues to be a lot of interest in speculative design, particularly fictional design scenarios as a design approach. The utility and value of these approaches are not always immediately apparent, especially within the realms of academic research and professional design practice. Nevertheless, speculative design practitioners have proposed a range of applications for these methods. Some argue that these approaches can be used to engage members of the public in reflection, debate, and critique [13,14,52]. Others suggest these approaches can actually inform decision-making and social change. Some suggest that speculative scenarios can be used in expert contexts to drive innovation. More recently, some in Human-Computer Interaction (HCI) and design have used these approaches within participatory design processes in needs-finding and other early-stage design activities or more generally to understand stakeholder perspectives[31].

However, as Kerridge [28], Coulton et al. [8,9], and others have pointed out, very little is known about how people actually respond to these uses. Aspirationally, these approaches hold compelling potential, but empirically, the uses of speculative design often remain quite speculative.

Motivated by these issues, I set out to investigate two core questions:

How can we use design to anticipate concerning and contentious futures with location-based recommendation systems?

Additionally, I wanted to get people to think critically about and with these speculations—could they be used to anticipate plausible/possible outcomes, raise questions about agency or responsibility? Aiming to understand how we can go beyond the often cited limitations and gallery oriented nature of speculative design, I asked:

What can we learn by showing these scenarios to various domain experts?

To answer these questions, I conducted a two-step study involving the creation of four design fiction films. Each film presented a near-future interaction with a location-based recommendation system, integrating conceptual composition, critique, and world-building elements (RQ1). Initially, I used existing empirical and theoretical research to develop a framework providing a theoretical foundation for these fictional scenarios. This framework elucidated current deployments of recommendation systems and the prevailing concerns regarding the use of personal data. Subsequently I employed this framework to construct twenty fictional scenarios that depicted future recommendation systems applications, ultimately refining these into four core scenarios. I then developed these scenarios into short films ranging from 3 to 6 minutes. In the second step of the study, I engaged 11 participants with relevant expertise in ethnographic interviews (RQ2). Participants engaged in co-speculation during these sessions, providing reactions and feedback on the envisioned technologies.

There are two main categories that I set out to learn about. **First, I wanted to learn how domain experts think about the scenarios and the more generalized spaces of concerns and possibilities they represent—namely, location-based surveillance, location-based recommender systems, and surveillance capitalism.** As prior researchers have pointed out, technology professionals have a significant amount of agency to drive change within their workplaces. This work is increasingly relevant as legislation remains unpassed or weak and ineffective when passed nationally. Surveillance capitalist practices have not gone away, worsening since the writing of Shoshana Zuboff’s work of the same title, *Surveillance Capitalism*. Large technology companies such as Alphabet, Amazon, and Meta are joined in the chorus by telecommunication giants AT&T, Verizon, Sprint, and T-Mobile in the harvesting and capitalizing of users’ personal location data (the latter only being fined \$200 million each) [67]. This lackadaisical response provides a compelling motivation to understand the perspectives and feelings towards these systems by those in the industry.

Second, I wanted to learn about the opportunities and limitations of participatory and empirical uses of speculative scenarios, particularly critically speculative video scenarios. There has been a comprehensive and ongoing discussion (and critique) of speculative design practices [2,7,36,37,41]. In separating the strands of current discourse, I set two goals: 1) to determine whether, how, and why participants engage with these speculative films and 2) to explore participants’ views on speculative design forms, uses, and methods in general.

Breaking this down further, **I outline four specific uses of speculative design scenarios within empirical interview or participatory design studies:**

1. Engage the attention, intellect, and imagination of domain experts, consumers, and citizens [12,17,35,40,59].
2. Elicit reflection, debate, or critique on current situations, future possibilities, trends, and extrapolations connecting them [23,55,63].
3. Reveal personal preferences, understandings, and past experiences [19,43].
4. Inspire generative imaginative responses, such as envisioning future possibilities, preparations, and interventions [3,33,50,54].

This project investigates what designers can learn using our speculative video scenarios to engage domain experts, elicit reflections, reveal their perspectives, and envision change and action. **I make two contributions. First, the research draws out findings specific to location-based surveillance and recommendation systems.** I highlight critical tensions raised by industry professionals: a recognition of their potential for instigating change and moral responsibility, their feelings of constraint by the capitalist structures that prioritize profit and rigid hierarchy over transformative impacts, in line with Richmond Wong’s, findings in his paper *Tactics of Soft Resistance* [2021], where he writes,

“Tools like codes of ethics or frameworks of ethical decision making presume that individual technology workers have the agency and authority to make or contest values and ethics decisions. This is not always the case. Design decisions may be made by management or other organizational stakeholders, or an individual’s invocation of a shared value might be disputed by someone else’s interpretation of that value. Even the individual decision to not work on a project for ethical reasons might result in the company firing that worker and assigning someone else to do the work instead.” — Richmond Wong [60]

Professionals speculated on boundaries and public perception, applying their work knowledge to the scenarios depicted and unpacking the required technology and hardware. They assessed the narratives personally and applied their value judgments.

Second, I critically assess the use of speculative design and video scenarios as research and design tools. Design fiction films are very engaging, drawing participants’ interest and attention. However, compared to other forms of design fiction, they are time-intensive to create.

This thesis makes a contribution regarding the form and topic of my design fiction films. I highlight the fact that high-fidelity design fiction films work. These scenarios work well to engage, elicit, reveal, and inspire professionals with domain expertise. I gained specific, useful insights from participants’ reflections, preferences, and understanding of agency. The most relevant findings are:

Concept Realism: Participants apply a lens of ‘realistic thinking’ when speculating, speaking to inevitable futures marked by increased surveillance and reduced personal agency. They share a fatalistic view that sees such realities as inescapable and highlights the deep entrenchment of surveillance capitalism, shaping individuals’ ability to imagine alternatives.

Policy, law, and regulation: Participants frequently emphasize the need for policy change, identifying regulation as often the ‘only hope.’

Change from the inside: Participants rationalize their way out of taking any harm-reducing actions, viewing potential outcomes as often negative.

Overall, I raise awareness about two potentially significant trends: **1) an understanding of responsibility and change with little material action, and 2) a fatalistic worldview limits the imagination of alternative actions, resulting in a technologically**

deterministic mindset. Additionally, I consider high-fidelity design fiction films as tools that facilitate emotion-driven speculation and offer multiple layers of interpretation—emotional, technical, and societal. These films serve as building blocks for reflection and speculation, drawing on multiple perspectives and revealing the ambiguity and uncertainty inherent in the films and the broader topic, moving beyond authorially imposed critical tones

DESIGN AND THE FUTURE

Speculative Design

There are many, often contested, approaches designers employ for futuring. Speculative design, coined by Anthony Dunne and Fiona Raby [2013], aims to address current realities by imagining alternative futures. In this sense, speculative design questions current practices, world views, social norms, economic systems, and emerging technologies to encourage a dialogue on imaginative futures, often through embodied artifacts. These artifacts invite the audience to imagine specific worlds where these artifacts are used in everyday life while being presented in a gallery-like setting [30].

Speculative design sits outside the product-oriented sphere of contemporary design. As Dunne and Raby note in their 2013 manifesto [14], speculative design is about problem-finding, asking questions, designing for debate, and, most importantly, designing in the service of society. Speculative design is inherently a critical design practice. Critical Design was a prior concept defined by Dunne and Raby in the early to mid-1990s, gaining prominence with their influential 1999 publication *Hertzian Tales* *Electronic Products, Aesthetic Experience, and Critical Design*. Per the 'Critical Design FAQ,' Dunne and Raby write, "Critical Design uses speculative design proposals to challenge narrow assumptions, preconceptions and givens about the role products play in everyday life. It is more of an attitude than anything else, a position rather than a method" [15].

Critical and speculative design sit within the broader definition of Discursive Design, as described by Tharp and Tharp in their book *Discursive Design* [52]. Critical and speculative approaches both work to drive public discourse. Critical speculative approaches

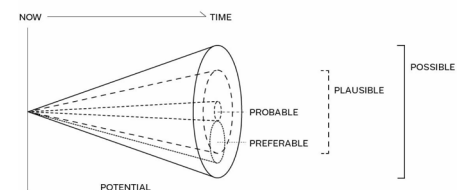
Background

are fundamentally scenario-driven within the discursive design category. Scenarios do not need to be the primary driver in the case of artifact-led inquiries; however, the role of worldbuilding is critical to the act of reflecting on our current point in time.

Design Fiction and World-building

Design fiction is a still-emerging design-futuring practice that has garnered wide popularity from both design and HCI practitioners. Design fiction is an embodiment of speculative, critical, and discursive practices. Its goal is to imagine future or alternate realities through worldbuilding or "making things that tell stories." [4,14,52]. As described by Julian Bleeker, design fiction "imagines into" possible futures through material culture, including tangible artifacts that represent the symptoms and implications of change [4]. The artifacts of this practice exist within an imagined speculative world or narrative. Narrative elements are fundamental to the process of worldbuilding in design fiction [9]. Shifting the focus away from creating a singular, representational artifact but rather embedding the speculative artifact into a world, story, or fictional reality. These worlds are often critical, raising awareness and putting contemporary (or future) issues at the forefront of social or HCI discourses.

Design fiction practices take many forms, from imaginary abstracts to critical fabulations, including textual approaches and short films. Existing HCI work has leveraged design fictions as probes to elicit participants' critical reflections on fictional technologies in private and public spaces. Using design fiction enables designers and researchers to envision and present specific futures discursively, stimulating imagination and eliciting value judgments, tensions, fears, and concerns [23,27,63].



Futures Cone, Haoqian Lolo Zhang, 2015
Captivism: New Regimes for the Modern Reader
© MICA Design

Methods of Futuring in Design Utilizing Video

The moving image has long held a recognized role in interaction design [29]. From eager technologists appropriating once speculative designs and concepts created by artists and designers working on film and television shows (often science fiction, see *Star Trek*) to early demos showcasing the power of networked computers and collaboration, future realities were demonstrated and depicted via film and video [26]. Culture has continued to evolve, as have the avenues of public speculation that influence critical thought. New touchpoints of speculative design have emerged in the form of *Black Mirror*, Sorren Iverson tweets, the occasional *Saturday Night Live* skit, and *Apple Concept Videos*, setting tonal and genre expectations of what speculative design is today for the general public [61]. The current and historical aesthetics of design fiction videos are essential to consider in crafting narrative-driven, critical, speculative design fictions especially given the current relevance of visual storytelling in mainstream culture.

Video is a more accessible creative format than ever before--both in terms of production and distribution. It used to cost thousands of dollars to make a concept video. Now, anyone with skill and a computer and a phone or entry level prosumer DSLR or cinema camera can do it. Furthermore, video is increasingly a desired and expected format for communicating early to late to final stage designs. We should expect these trends

Background

to continue (Video now makes up 82% of all internet traffic) [6]. At the same time, designers need to develop better technical and conceptual skills for making video scenarios. This project contributes to developing and sharing practical knowledge for concept video design, especially but not limited to speculative critical video scenarios.

Current critical design practitioners have been moving in parallel to current trends. From design fiction to critical and adversarial design, designers leverage video-based tools to engage the public and raise awareness about critiques of current industry and societal norms [13,44]. These tools push beyond social or traditional media industries. The design agency SuperFlux, most notably with *Our Friends Electric, 2025: A Better Care Future, and Uninvited Guests*, embodies this modern approach of utilizing a grounded documentary style, filming futuristic realities [45,70,71]. Working in a similar area, the Everyday Design Studio crafts more object-oriented videos, reinterpreting our relationships with objects [25,32,72,73]. Building on prior HCI practices, these two studios bridge a unique gap between contemporary trends in film production and disseminating HCI discourse and research.

In this thesis, I leverage design fiction as my primary methodological approach. I utilize design fiction films as interview probes to elicit three primary categories of knowledge: assessments of possible-plausible futures, value judgments of near-future extrapolations, and perspectives on agency and moral responsibility to bring about change. By leveraging speculative design's ability to foster debate, create parallel worlds, and raise ethical questions, I aim to stimulate reflections and discussions that reconfigure dominant realities and envision desirable futures.

Participation and Collaboration in Design

Participatory design grew out of socialist worker movements in 1970s Scandinavia [47]. Participatory principles were sought to democratize workplaces, empowering workers to participate in joint decision-making on the potential tools, technologies, and systems that would impact their daily lives. Designers have appropriated participatory design in recent years, broadening its application to both industry and HCI research. This version of participatory design calls out two specific values: the moral and pragmatic efforts. Participatory design, as a practice, embodies the ideal that those affected by a design should be able to participate in the design process [7].

Co-Design

Co-design is a participatory design approach that incorporates participants, experts, or broader groups at various steps throughout the design process (with emphasis often placed on the exploratory phases). This results in what Sanders and Stappers define as “collective creativity as it is applied across the whole span of a design process” [48]. Co-design leverages participants' lived experiences, treating them as experts of their experiences. In this fashion, designers and participants work collaboratively, disrupting the traditional paradigm of “end users” to compatriots or accomplices in the design process. In co-design-led approaches, designers transfer control and ownership to participants, deviating from the traditional paradigm of the designer as a ‘prescriber.’

Speculative Design Meets Participation

Building on participatory design ethics and considering how those impacted by design might participate in the design process, a similar approach has been taken to futuring. Futures, by their nature, impact all of our lives. The future is unpredictable and unknown, yet actions, aspirations, and visions held today hold premises for any number of possible futures. An individual's surroundings shape their worldview, as does their lived experience. Visions of the future may impact someone just as powerfully, shaping their actions or decisions made today. Shared, pluriversal visions of the future enable concrete actions that can realize a different future, one that currently exists only in the margins of imagination [18].

Who gets to speculate? Who gets to decide what steps are actively being taken?

Scholars within design, anthropology, and HCI have often queried this topic, pointing toward people occupying positions of power or financial freedom: entrepreneurs, policymakers, innovation labs, and design labs [36,37,49,53]. Applying our participatory lens to the act of futuring, we find co-speculation. Co-speculation bridges the gap between speculative design and participatory design practices. Wakkary et al. define co-speculation as “the recruiting and participation of study participants who are well positioned to actively and knowingly speculate with us in our inquiry in ways that we cannot alone” [55]. **In my approach to research, I utilize co-speculation to describe the nature of my qualitative research approach.** Utilizing the existing definition of co-speculation, I frame my inquiry within a participatory nature—combining critical, speculative approaches with collaborative acts of futuring.

HAPPENING NOW!

My work in this thesis builds on past connections in HCI research between co-speculation, design fiction, and futuring.

Past work has leveraged text and image-based workbooks and written design fiction narratives as elicitation devices and tools to understand participants' critical reflections. As Schulte et al. write, "design fiction probes' critical narratives to elicit open-ended responses from potential future users of proposed technologies." As earlier defined, researchers have leapt beyond text-based fictions, today utilizing speculative artifacts in public installations, short films, concept videos, and other forms of experience prototypes. Hauser et al. have utilized design fiction to envision a sustainable university campus in the future through five short documentary films aiming to "unlock people's imagination, encourage reflection, and inspire action toward a more sustainable reality" [24]. Gilardi et al. call for design fiction videos used in the early stages of a technology life cycle, calling out video's ability to illustrate the context and "emphasizes the relevance of experiences created by the technology in the user's everyday life." Design fiction has already been repeatedly used in participatory or co-speculation to understand the values and ethics of professionals. Researchers have used design fiction to elicit value reflections, understand and interrogate sensing technologies, and analyze UX professionals' values and work practices [33,59,60]. I extend these existing methods by situating my design fiction films within participatory co-speculation sessions.

On Recommendation

This case study primarily focuses on the use of location data to inform contextual recommendations. It explores the ontological impacts of these systems on the day-to-day lives of individual users, along with the ethical tensions and considerations regarding the use of this data.

Recommendation algorithms have been an active and contemporary topic in the Social Sciences, Science and Technology Studies (STS), Media and Communication Studies (MCS), and Computational Science and Engineering (CSE). A wide body of literature exists with landmark works like Eli Pariser's 2009 book, *The Filter Bubble: how the new personalized web is changing what we read and how we think*, in which he defined the term "filter bubble"—entering it and the ontological impacts of recommendation systems into the cultural lexicon [42].

Countless works have built upon Pariser's foundations and the researchers that came before. In his 2013 essay, *The Relevance of Algorithms*, Tarleton Gillespie of Microsoft laid a conceptual map to aid in the understanding of where and in what ways the introduction of algorithms into human knowledge practices would have political ramifications. Gillespie highlighted six dimensions of public relevance algorithms that have a political valence, including 1) Patterns of inclusion, 2) Cycles of anticipation, 3) The evaluation of relevance, 4) The promise of algorithmic objectivity, 5) Entanglement with practice, 6) The production of calculated publics [22:3]. These contributions begin to frame this work—highlighting how recommendation systems (and their underlying algorithms) can alter an individual's way of being in the world, impacting their worldview, relationship to content, and how the information presented shapes the information itself in new ways. These ontological impacts framed by Pariser and Gillespie lay the foundation for my inquiry. Current works have explored technology-mediated reflection, pushing designers to consider broader possibilities regarding the results and outputs that may emerge from their systems [34].

Data & Prediction

In cultural studies and MCS scholarship, recommendation systems have been researched for their impact on cultural taste. In their paper, *Towards a Theoretical Approach for Analysing Music Recommender Systems as Sociotechnical Cultural Intermediaries*, Jack Webster et al. examine the recommender as a new cultural intermediary building on Latour's notion of distributed labor and competencies to explore how human and non-human actors contribute to these specific social effects. They highlight digital music services' innovation in the use of context-aware recommendation and the curation of content around specific moods and activities [56].

More recent works have focused on the role of big data in algorithmic recommendations (Thatcher, 2014). The shift from recommendation to prediction has been well-discussed [66]. In 2018, Luke Stark contributed to the rising discourse, furthering concepts described by Pariser, Gillespie, and subsequent researchers in his paper *Algorithmic Psychometrics and the Scalable Subject*; he terms the 'scalable subject'. Arguing that a quantifiable psychological subject position has been translated, via 'big data' sets and algorithmic analysis, that a fusion of psychology with algorithmic techniques has created a new paradigm for under-

standing and influencing user behavior, necessitating. Stark calls for a further study and scrutiny, especially given its real-world implications as evidenced by the aforementioned controversies [51]. Location and spatial data play core roles in the development of the data profiles used.

Summary

Utilizing Design Fiction's narrative-oriented approach, along with the novelty and vitality of short films, I effectively convey fictional worlds to an audience and elicit their reactions through my own four narrative short films regarding the use of location data and everyday surveillance. These films extend current debates and trends raised in STS, MCS, and CSE discourses. Building on autobiographical experiences with location-based recommendation systems, implications of new technology from peer-reviewed research, and emerging technology reported in news media, I apply existing HCI research methods to unpack, probe, and elicit reactions to speculative futures involving location-based recommendation systems.



TRY THIS METHOD AT HOME!

Phase 1: The Conceptual Composition

I developed the conceptual framework across two phases. Instead of committing to an extensive literature review of the specific topic, I chose to draw research-based inspiration for the scenarios. Due to the films intended use (as probes for elicitation), this literature survey enabled me to discern specific trends and technology that would be readable by professionals in the field. The first phase consisted of a literature search, drawing inspiration from grounded research and timely news media articles. As part of this effort, I conducted a comprehensive search cataloging local and emerging national stories in the news media, capturing just-breaking news stories that existing HCI papers had yet to catch up to. Additionally, I surveyed computer science journals and publications on recommendation systems, audited existing forms of recommendation in apps, and surveyed the ACM Digital Library for publications in the domains of privacy, surveillance, location, and recommendation systems. With this portion of the survey complete, I created a list of areas where these emerging technologies could have future impacts (in both positive and negative ways).

The second phase of the framework development then drew on existing theory and work regarding critiques of Surveillance Capitalism, Critical Race Theory, and historical precedents regarding the technology industry and gentrification. Based on these existing works, I created a catalog of critiques and technologies that embodied them, considering areas of impact and existing trends. This comprehensive survey of location-based recommendation systems and emerging technologies facilitated the development of my future scenarios. Due to the framework's

application, the scenarios present realistic, near-future speculations of products, services, and technologies rooted in theoretical critiques

Phase 2: Scenario Development

With the conceptual framework developed, I then began using the framework to develop possible scenarios. I developed twenty initial scenarios covering a broad range of futures and technologies. The scenarios included a logline (one-to-two sentence description of the scenario, setting, and characters), which critiques, and which trends they were responding to. With each scenario, I included a three-frame storyboard, using the digital service ShotDeck to pull stills from films, visually and thematically linked to the logline, creating a combined mood and storyboards.

These scenarios were then critiqued by other designers, fellow researchers, and one subject matter expert. This feedback was pivotal in the process of downselecting the final four scenarios that would later be adapted into short films. When downselecting, I balanced the subject matter of the video, the way in which location-based recommenders manifest, and the critique being leveraged. Over a period of rapid iteration, I took each scenario and diagrammed out possible alternatives, encompassing a range of positive and negative implications. The final four scenarios consisted of 1) *Avoidable Inconveniences*, 2) *December 26th*, 3) *Evidence of Insurability*, and 4) *Routine Repetitions*. With these scenarios locked, I moved forward with pre-production.

Phase 3: Pre-Production-Production-Post-Production

Once the scenarios were locked in, I moved on to the pre-production phase. Due to the project's condensed timeline and the number of films I aimed to create, I began a rolling production schedule. For each of the four films, I would write a script on Monday, create a storyboard on Tuesday, and send it to my talent on Wednesday. I would assemble a skeleton crew, including a gaffer, onset sound, and myself (camera operating and directing). Each week (often Thursday and Friday), I would assemble a rough cut of what had been shot the week before, doing a rapid color grade and making other minor adjustments. Occasionally, if I were not able to find help, I would record motion without sound (MOS) adding all audio in post-production. While I sacrificed greatly on lighting quality, camera stabilization, and a layer of refinement that might otherwise have been there, this approach allowed me to be incredibly flexible (shooting alternate versions, coming up with shots on the fly, etc.) in a more documentary style.

Once the films were edited (often a fast one to two-day process), I began to approach screen replacements. Artistically, I was opposed to text overlays on screen. While they provide greater flexibility, I prefer the naturalism and realism of showing UI on-device. This was debated heavily throughout due to the time on-screen text and UI graphics would save. However, I decided that the extra effort would pay off, not breaking the illusion of an alternate reality. To this end, each screen was replaced using Davinci Resolve's built-in Fusion compositing tools. While I was initially able to replace all of the phone screens, due to some of them looking poorly (often due to difficult tracks and complex rotoscoping work), I

Optimizing For You Via The Group

Surface Streets 5

A woman on her way to a concert with a friend notice that their friends are being taken on a longer route, despite leaving from the same place at the same time.

A future where: Google merges it's AI with city traffic flow data. It is random if you are on the best route or being routed a longer route in the service of reducing traffic congestion.

Trend: Smart Cities Integration With Personalized Data

Observable Bodies In Space

Avoidable Inconveniences

A waitress leaving work avoids potential street harassment after choosing the "Safe Route Option" in Google Maps, being routed around any loitering or unhoused individuals.

A future where: Maps implements a safe route feature, routing late-night walkers through only "Safe" routes, avoiding dangerous streets and neighborhoods.

Trend: Smart Cities Integration With Personalized Data, Mass Surveillance

Observable Bodies In Space

Can You Recall?

A man receives a letter stating he must appear at his local police precinct after his mobile device was registered within 200 feet of a mugging.

A future where: cities are able to use device proximity location data as a new form of witness selection—speaking to all people in a certain proximity to a victim or suspect.

Trend: Smart Cities Integration With Personalized Data, Mass Surveillance

Observable Bodies In Space

12.16.2026_48min

A woman visits the site of her husband's suicide on the anniversary of his death. Throughout the following week she is consistently routed by it while being advertised to by E-Therapy Companies.

A future where: Location recommenders recommend or routing past emotionally sensitive locations or recommendations to introduce emotional instability and target ads.

Trend: Predictive Targeting, Combined Data Streams, Emotional Manipulation

Stepping Outside Of The Light

Here, But There

A 60 year old woman wants to go to the dispensary for the first time—without messing up her google maps algorithm.

A future where: Live location-spoofing services are as readily available as VPNs. Simulating her movements, you're able to go off the grid while never going off the grid.

Trend: Predictive Targeting, Mass Surveillance, Consumer Resistance

Overt Algorithms

Lunch Hour

An queer office worker notices that he only gets push notifications for restaurants with pride flags in their windows.

A future where: Data is leveraged along with new object detection and image recognition technologies to enhance recommendations. Systems no longer must rely on text descriptions and are able to analyze when, who, and what at locations to predict compatibility.

Trend: Predictive Targeting, Personalized Surveillance, Surveillance

Opt In

9_C_Evidence Of Insurability

A widow takes out a life insurance policy on herself, naming her niece and nephews as beneficiaries. To get a higher face amount, she opts into a program letting the insurance company recommend her routes and activities.

A future where: Insurance companies now let you share your Location Data for better insurance rates. Let them recommend routes, and in app recommendation for lower rates.

Trend: Predictive Targeting, Personalized Surveillance

Overt Algorithms

Routine Repetition

A runner gets a new fitness training app that leverages biometric data and AI to create fitness plans—he notices his runs take him by numerous coffee shops owned by the same chain.

A future where: Apps

Trend: Predictive Targeting, Personalized Tracking, Priming, Nudging

Manufactured Consent

Sixth Sense

After updating her apple watch with a new update championing an integration with Seattle EMS—a woman begins to grow increasingly concerned with the amount of crime around her.

A future where: EMS providers can designate a spatial zone as an active scene—happily notifying people of their proximity to the emergency incidents and modifying all recommended routes.

Trend: Priming + Manipulation, Nudging

Contextual (Everything's)

Significant Concerns

A woman getting picked up from work by her girlfriend is startled when her partners phone notifies her of the time to her co-workers house.

A future where: "Significant Locations" and contextual recommendations are the ubiquitous way to navigate to everyday locations + locations frequented often at specific times.

Trend: Predictive Targeting, Data Privacy

The original twenty scenarios I created. Each concept is presented with a list of critiques, a log line, and a three frame storyboard that depicts the tone and style of the short.

Recommending Locations

What Am I Feeling? Where Should I

A woman having a bad day asks her smart device where to go for lunch, she looks into the eye of the device and becomes frustrated as it fails to read her emotional state correctly.

A future where: Online + Location tracking technologies have surged with AI integrations, leading to powerful predictive technologies leveraging biometric responses to predict better.

Trend: AI, Optimizing For Us, Manipulation

Observable Bodies In Space

Open Interpretations

A man receives a date, a time, three unrelated images, and a passage from 1978's The Sea, the Sea. He struggles to make sense until 10 minutes before.

A future where: Recommendation engines have diverged from didactic recommendations—resulting in interpretation oriented outputs.

Trend: Techno-Spirituality

Intentional Openings

Letting It In

A couple places their phones on a flat device. Their location, browsing, and purchase histories are examined. A restaurant and activity are recommended.

A future where: Recommendation engines have diverged from didactic recommendations—resulting in interpretation oriented outputs.

Trend: Techno-Spirituality

Witty Actors

Alterations In Formal Planning

An algorithm struggles to recommend a place to eat to a man who died of a heart attack two weeks ago.

A future where: Recommendation models live or die depending on user follow through.

Trend: Manipulation, System Breakdowns, Machine Learning, AI Training

Reimagined Encounters

Past Places In Space

A recommender sends a woman on a series of seemingly disconnected journeys to empty lots, abandoned buildings.

A future where: A glitch in the system drastically alters the recommendation criteria for a small group of users—sending them anywhere and nowhere.

Trend: Manipulation, System Breakdowns, Reimagined Encounters

Reimagined Encounters

Chance Encounters

A woman attends a series of events recommended to her, meeting another woman who's been also been receiving strangely similar recommendations.

A future where: Recommenders are intertwined with users mental and physical health, priming them to make the most of social connections, acting as a digital matchmaker.

Trend: Manipulation, Agency, Surveillance + Tracking

Reimagined Encounters

Your Past, Your Future

A man is mailed a image of a place from his past along with his predicted itinerary and behaviors for the week based on prior location data.

A future where: User agency is prioritized through data transparency and interpretation.

Trend: Interpretation, Agency, Surveillance + Tracking

Reimagined Encounters

Our Future _together

After getting a new phone, a woman explores her sense of self performing for her algorithm. From playing hard to get, to gifting it data, she navigates her relationship with surveillance.

A future where: Conversational AI is leveraged in Mapping Applications allowing for new avenues of reciprocity, understanding, and recommendation experiences.

Trend: Agency, Surveillance + Tracking

Reimagined Encounters

Preferred Futures

A man discusses his location recommendation preferences with a conversational Voice Assistant, delving into philosophy and personal satisfaction.

A future where: Conversational AI is leveraged as a avenue of intentional self improvement through behavior modification via what is recommended and when.

Trend: Self Improvement, Agency, Surveillance + Tracking

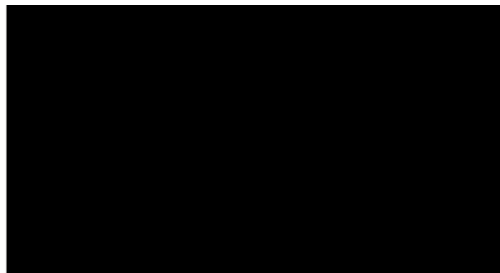
Reimagined Encounters

Digital Fluctuations

A woman is setting up a new recommendation assistant. She trains algorithm by showing it a number of cards, shaping it's approach to reasoning.

A future where: Human-AI Algorithm relationships have been re-designed, focusing on a hyper-individual customization practices rather than paternalistic approaches.

Trend: Human-Agency, Surveillance + Tracking, Machine + Human Collaboration



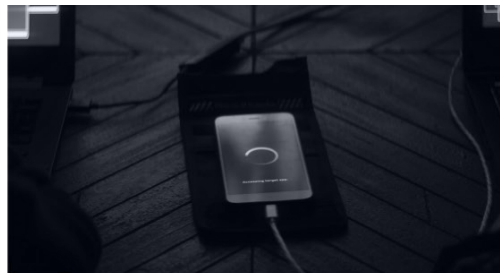
INTERIOR - MS - EYE LEVEL - S

An empty backroom of a restaurant. The sounds of a busy night can be heard. It's clearly night time.



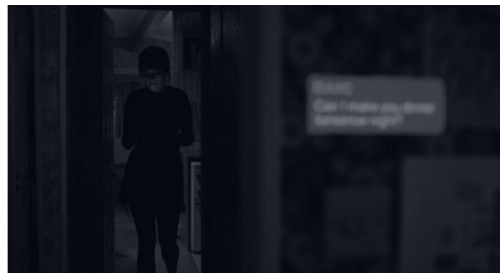
INTERIOR - MS - EYE LEVEL - S

A woman walks on screen and changes removes her personal belongings from her locker.



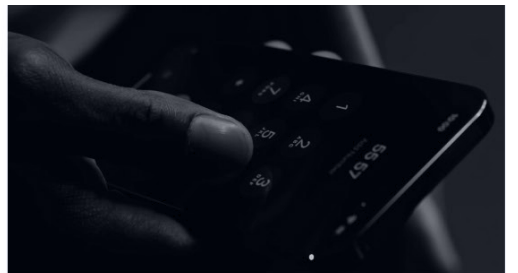
INTERIOR - CU - EYE LEVEL - HH

She unplugs her phone.



EXT - MWS - EYE LEVEL

She is exiting the restaurant from the back.



EXT - CU - EYE LEVEL - HH

She unlocks her phone and launches Maps. She taps on 'Home', chooses the walking option and waits for the app to load.. sharing her location.with her roommate.



EXT - MWS - EYE LEVEL - HH - TRACKING

She is walking home crossing through a park and sees a group of people standing near a streetlight.



EXT - CU - MED ANGLE - HH

She receives a notification on her apple watch from maps updating her route.



EXT - MWS - EYE LEVEL - HH - TRACKING

The group nearby turns out to be a group of people minding their own business./subject to change/could be Laura?



EXT - MWS - EYE LEVEL - S

Exiting the park, she texts her friend that she will be home soon.



EXT - MS - EYE LEVEL - S

She continues walking down a city street. Glancing towards alleys as she walks past them.



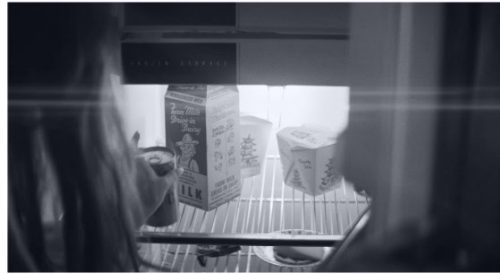
EXT - WS - EYE LEVEL - S

She turns and enters into a restaurant. A moment later we see her exit with takeout and continue onward.



INT - WS - EYE LEVEL - SLIDING

We see her wipe frame in a parking garage.



INTERIOR - CU - EYE LEVEL - OTS - S

She grabs two ciders from the fridge.



INTERIOR - MS - EYE LEVEL - S

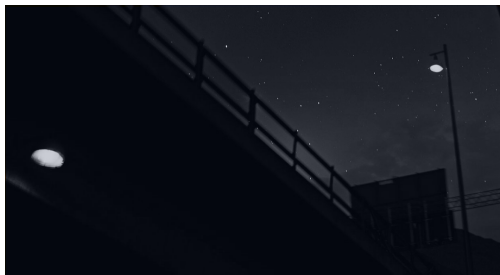
She sits on the couch with her roommate and they begin eating she leans forward to place her phone down.



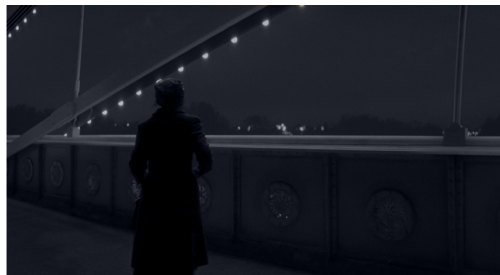
INTERIOR - CU - EYE LEVEL - S - PULL BACK

A Maps notification pops up on the phone asking her how she felt during her trip.

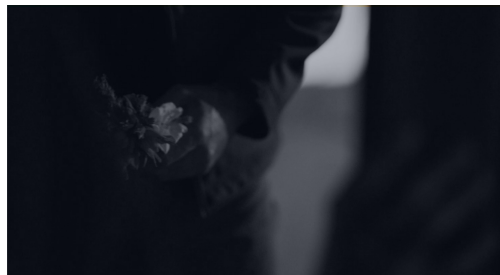
The storyboard created for *Avoidable Inconveniences*.



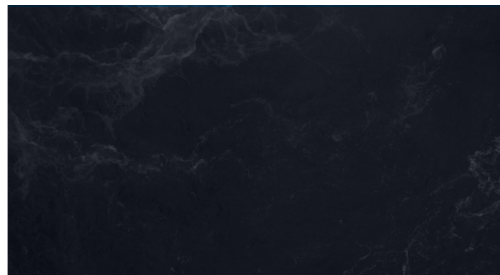
EXT - WS - LOW ANGLE - S
The silhouette of a bridge.



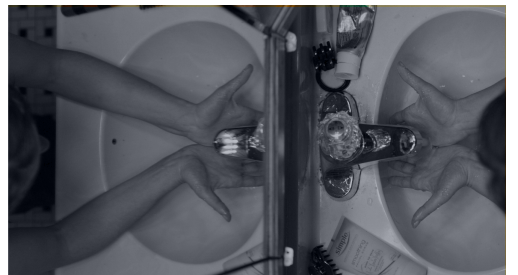
EXT - WS - EYE LEVEL - S
A woman walks to the center of the bridge and looks over the railing.



EXT - CU - EYE LEVEL - HH
We see she is holding a bouquet of flowers.



EXT - WS - OVERHEAD - DRONE?
View of the water beneath the bridge.



INT - MS - OVERHEAD - S
Match cut to her doing her nightly routine.



INT - MCU - EYE LEVEL - HH
She is finishing her routine—we can visibly see the night was hard on her.



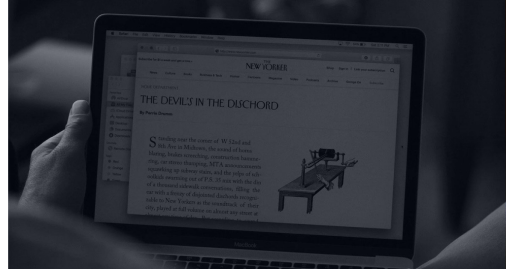
INT - MS - EYE LEVEL - S
She is about to go to bed. We see her scrolling on her phone—we see the first ad on screen here.



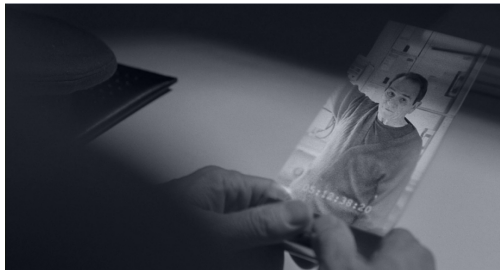
INT - CU - EYE LEVEL - S
The coffee machine drips as she begins her day in the background.



INT - MS - LOW ANGLE - HH
She is on the phone with ____ as she continues her morning routine.



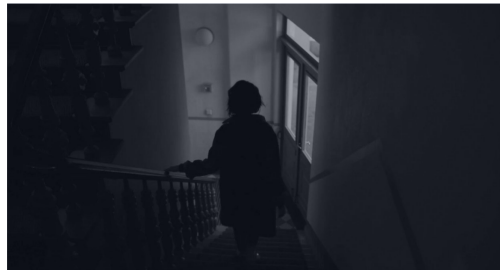
INT - CU - POV - HH
She is reading the news on an online website and the majority of ads are for mental health care. She makes a comment to the voice on the phone.



INTERIOR - CU - POV - HH
She is looking at a photo of her husband on her phone. We see it is a Google Photos Memory. It is showing photos from a trip years earlier.



INT - WS - EYE LEVEL - S
She is working at her home office.



EXT - WS - POV - HH
She leaves her home in the afternoon.



EXT - CU - MED ANGLE - HH
At a coffee shop she digs through her phones settings and disables emotion-based recommendations in her Maps profile.



EXT - CU - MED ANGLE - HH
She places her phone face down and we cut.

The storyboard created for *December 26th*, 4:36pm.



INT - MS - EYELEVEL - S

She receives a notification regarding her billing.



INT - WS - EYE LEVEL - S

She puts her phone down and goes to sleep.



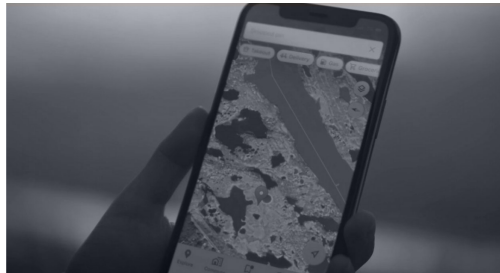
INT - CU - EYE LEVEL - S

Its morning.



INT - MS - LOW ANGLE - HH

She is trying to reach the insurance agency to no avail.



INT - MS - LOW ANGLE - HH

She gives up and completes the setup of the app.



EXT - WS - EYE LEVEL - PAN

We see her exiting a grocery store. She walks across frame to her car.



INT - MCU - HIGHANGLE - HH

We see her launch the app—and tap 'home'. We hold on the phone until the route is chosen.



EXT MONTAGE - WS - OVERHEAD - //

The car leaves the lot and heads off. After a few moments the vehicle clearly deviates from its intended route.



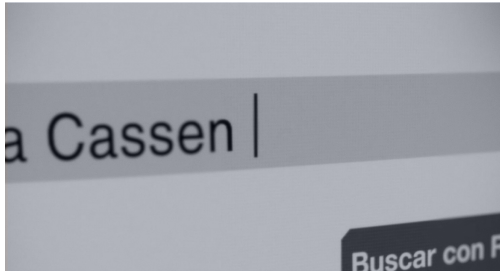
INT - MS - EYE LEVEL - S

She pulls in to a parking lot and walks towards the water.



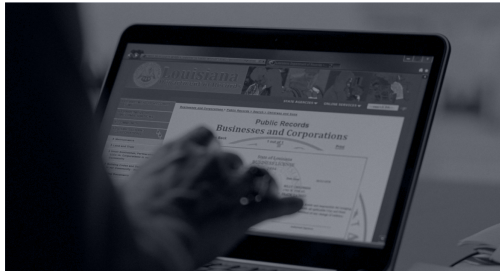
INT - MS - EYE LEVEL - S

She smokes while looking towards the water. Frustratedly looking at her phone.



INT - ECU - EYE LEVEL - S

We see a close up shot of a search bar as "Safeco RightTrack cancel" is being typed in.



INT - MCU - EYE LEVEL - S

We pull out as she skims through reddit threads and the Safeco website before finding a number to call.



INT - MS - EYE LEVEL - HH

She attempts to call Safeco and is met by a seemingly broken automated phone/interactive voice response system which leads her to dead ends.



INT - MCU - EYE LEVEL - S

She is starting her car and has purchased a windshield mounted holder for her phone. Seemingly giving in.



EXT - MCU - EYE LEVEL - HH

Reverse/reaction shot as she taps start on the phone and resigns herself.

The storyboard created for *Evidence of Insurability*.



INTERIOR - CU - EYE LEVEL - S
A close up of running shoes being laced up.



INTERIOR - ECU - POV - OTS - HH
A close up of STRAVA App and the recommended route being chosen.



EXTERIOR - WS - EYE LEVEL - HH
A wide shot of a runner jogging towards the camera. He is a good distance away.



EXT - MWS - LOW ANGLE - HH
He is jogging at a good pace closer to the cameras.



EXT - WS - EYE LEVEL - HH - TRACKING
We pan past a coffee shop in the city.



EXT - MS - EYE LEVEL - HH - TRACKING
We pick up the pan on him again-- he is tired now



EXT - MWS - EYE LEVEL - HH
He is tired out, he collapses to with his hands on his knees taking deep breaths.



INT - MS - EYE LEVEL - HH
Hard Cut/ into the shower. He is backlit adn the water is hitting his face. b



INTERIOR - CU - EYE LEVEL - S
A close up of running shoes being laced up.



MONTAGE - INTERIOR - ECU - POV - OTS - HH
A close up of STRAVA App and the recommended route being chosen.



MONTAGE - EXT - MS - EYE LEVEL - HH - TRACKING
We pick up the pan on him again-- he is tired now being chosen.



MONTAGE - EXTERIOR - WS - EYE LEVEL - HH
A wide shot of a runner jogging towards the camera. He is a good distance away.



EXT - MWS - LOW ANGLE - HH
He is jogging at a good pace closer to the cameras.



MONTAGE - EXT - WS - EYE LEVEL - HH - TRACKING
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MONTAGE - INT - MS - EYE LEVEL - HH
Hard Cut/ into the shower. He is backlit adn the water is hitting his face. b



EXT - MWS - EYE LEVEL - HH - TRACKING
We see two people walking in a reflection



EXT - WS - EYE LEVEL - HH - TRACKING
We pan to two people walking, one mentions grabbing coffee. The MAN says "Lets try this place."



INTERIOR - CU - EYE LEVEL - S
A close up of running shoes being laced up.



EXT - WS - EYE LEVEL - HH - TRACKING
"I keep seeing them" as the camera pans to the coffee shop from the montage.



EXT - WS - EYE LEVEL - HH - TRACKING
We see him purchase a drink and exit the shop.

The storyboard created for *Routine Repetitions*.

pivoted to taking the interface I'd created for the screen replacements and using them in a series of reshoots. I reshot nearly every scene from *Avoidable Inconveniences* and *Evidence of Insurability*. In the end, 50% of the interfaces were replaced in post production as originally intended, and 50% were reshot with stand-in actors.

Phase 4: Pre-Pilot & Pilot

After completing the initial versions of the films, I conducted a preliminary screening with two colleagues who specialize in data and privacy. This was less a traditional pilot and more akin to a test screening aimed at evaluating the clarity of the narrative, the critique being applied, and the depiction of algorithms within each film. The feedback was critical: the narratives lacked clarity, leading to misinterpretations of the plots; the role of recommendation systems was obscured; and the interfaces failed to effectively convey their intended messages.

In response, I revised each film, focusing on strengthening the narratives through strategic edits—including shortening the duration—to enhance narrative clarity. I also reshot and updated the user interfaces, ensuring each was of higher fidelity and more effectively communicated within the story's context. Upon completing these revisions, I conducted another pilot with a subject matter expert in location data, privacy, and security. The revised films elicited fewer questions about the narratives and the roles of recommendation systems in the story. Instead, they sparked visceral reactions, indicating a high level of engagement with the themes presented. This feedback was encouraging as I proceeded to engage with my main study participants.

Phase 5: Participants + Recruiting + Study Design

This project poses a critical inquiry about our roles within the field of HCI and technology, questioning how we might drive change and envision alternative futures. Reflecting this, a diverse group was recruited for participation. I conducted five 90-minute ethnographic interviews with professionals from the tech industry who are either directly involved with or adjacent to projects concerning location data or recommendation systems. Additionally, three interviews were carried out with HCI researchers specializing in recommendation and surveillance systems. Employing a grounded theory approach, I further expanded the participant pool to include one professional artist with a focus on surveillance themes, one community activist engaged in philanthropy and nonprofits, and one assistant city attorney dealing with public data, culminating in a total of eleven interviews.

The primary aim was to gauge the reactions of tech industry professionals to the films, especially considering their implications on individual agency. However, to deepen the discourse on key issues like policy, legislation, and public awareness, I intentionally recruited a broader array of voices. These participants were likely to provide additional insights into the research questions and helped evaluate how well the films communicated complex ideas to non-experts. Each participant engaged in a detailed viewing and speculation process. During our meetings,

we watched the four films together. Following each video, I conducted semi-structured interviews to discuss their thoughts and gather feedback, repeating this process for each video.

Participant Profile

PARTICIPANT NUMBER	ALIAS	POSITION
P.1	Sara	Surveillance Researcher at a large university
P.2	Albert	Software Developer at a large multi-national tech company
P.3	Paul	Lead Software Developer at a small technology start-up
P.4	Haris	Assistant City Attorney for a large US city focused on public data.
P.5	Alan	Software Engineer at a smaller AI-driven company, previous: large social media company
P.6	Ava	Surveillance Oriented Artist
P.7	Sofia	Recommender + Productivity Researcher at a large university
P.8	Tân	Non-profit-Philanthropy oriented Community Activist
P.9	Mira	Designer at a well-known design consultancy, working on AI-driven projects
P.10	Michael	Software engineer at a large e-commerce company
P.11	Ashia	HCI Researcher Studying Predictive Policing and Public Safety : Large Tech Company

Phase: 6. Analysis

Once the interviews had been completed, I began analyzing the data. Approaching this process from a constructivist perspective, I began the process of open coding. I worked through the eleven interviews tagging and developing tag groups. Once this process had been completed, I began to draw connections between the codes I had developed—placing them into larger thematic groups. From this point I began grouping similarly tagged quotes and developing formal, written observations, which were then translated into findings.



On-set filming *Avoidable Inconveniences*.



On-set filming *Avoidable Inconveniences*.



On-set filming *Routine Repetitions*.



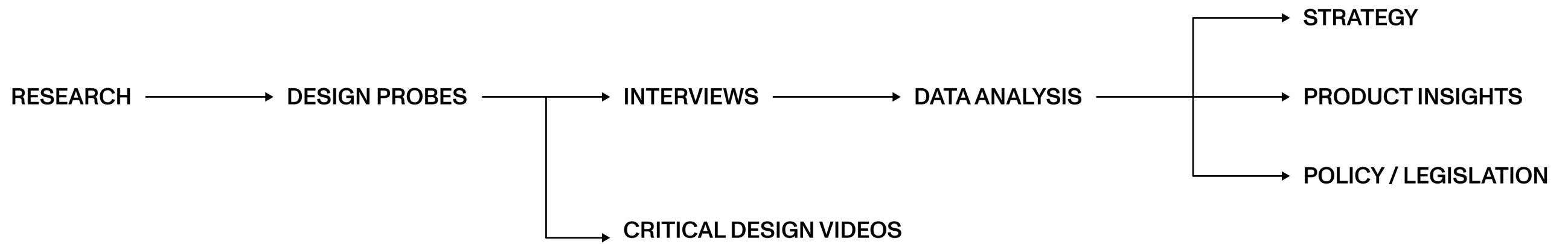
On-set filming *Routine Repetitions*.



On-set filming *Evidence of Insurability*.



On-set filming *December 26th, 4:36pm*.



An early project visualization.

FACING INTANGIBLE SYSTEMS

I report how participants perceived and reacted to the design fiction films, speaking towards engagement, elicitation, as well as what the films revealed and inspired.

In what follows, I report my qualitative findings and supplement them (where relevant) with the most notable quotes that emerged through my analysis of the qualitative responses. To protect anonymity, participants are referred to by using an alias for each participant (as defined in the methods section). I present the results in two primary sections: Form and Topic, respectively.

Form: I start by providing a general overview of participants' attitudes and reactions across all four films. I then discuss two key findings, supported by qualitative evidence, the films' abilities to create empathy, and the films' abilities to show intangible systems effects on characters' lives.

Topic: I explore the major concepts that emerged from viewing the four films, discussing attitudes toward surveillance, highlighting both the tensions and (perceived) qualities of the concepts and how participants reacted and understood them. I then report the findings and speculations on the topic of change.

On Form:

Participant domain experts reacted positively to viewing the films, expressing their amazement and surprise at the quality of the videos, with multiple participants referencing popular film and television shows (The Bear, Parts Unknown, and Black Mirror).

Most participants were able to view the films and draw immediate unprompted connections to their work experiences, often in addition to

professional practice based speculations. All participants were able to draw connections to their personal, cultural, and family experiences. Best summed up by Ashia, speaking towards *Avoidable Inconveniences*: “there’s like my researcher mind and then there’s like my woman mind and I know a lot of people who feel unsafe, do this: sharing locations.” When asked for their general initial reactions, participants would immediately connect with professional knowledge, or personal stories relating to both the theme and content of the film

Participants described the ways in which the films leveraged conventional filmmaking techniques to create feelings of anxiety, unease, or uncertainty, drawing participants closer into the points of view depicted onscreen. Described by Haris:

“I don’t know if this is what you’re really going for, but the simple act of filming a woman walking home is like—it created a sense of danger and discomfort. Even though I, the viewer, the cameraman, was not, voyeuristic in its pursuit of the waitress. It was really just to tell the story, but I thought from a cinematic perspective, it was really—I don’t know, it sort of, like—immediately I sort of got, like, this clench in my chest. Even though I knew the waitress was going to be fine, like, I was like, ‘oh, god, what’s, what’s happening?’ These are dark streets, and we’re following her very closely.’ You know, I’ve watched enough movies that I thought I knew what was going to happen next.” — Haris

Participants praised the films for illuminating the background workings of larger, more intangible systems, using them as jumping off points to speak about incentives, ethics, and potential actions that legislators and policy makers could and should take. Participants also reflected on the films as a methodological approach. As Ashia states:

“[Compared to] the written scenario where some things I imagined by myself, I put it in my perspective—about my life—my everything, and I speculated through that, but I missed out on a lot of things like I didn’t think about clothing ‘til I saw the video where I saw the woman put the overcoat on then I was like, ‘oh yeah, she’s doing that.’ The video showed me the man was just lying on the bench and I could read the [overlay] text. It was a different version I imagined, than what is shown in most movies, like someone silently walking down that alley and smoking something—it’s the image that is created in my mind giving me that ability [and] can lead to a different set of critiques and speculations and benefits even.” — Ashia

I report three high-level conceptual findings about participants' engagement with the films. First, I highlight how people often had varying reactions and assessments and of values, I then explore how empathy informs emotionally driven speculation. Then, I discuss the concept of digital permanence.

There is a Developer Inside All of Our Heads

The films' authorial imposed critical tones did not constrain participants. While many viewed the films as dystopian, multiple participants expressed excitement about the proposed concepts and considered what would be needed to make them a reality. Other participants argued both sides, often expressing remorse or fear in the act of doing so, revealing ambiguity and uncertainty present in the films and the topic at large.

Paul displayed a general optimism throughout many of the films in response to *Avoidable Inconveniences*, stating:

“Yeah, I mean, I think that that type of thing would be really cool, and there’s worse kinds of incarnations of that around, just in regards to, like, Google, and you can say, like, different route or something like that, but it doesn’t really have any kind of safety metric.” — Paul

Alan echoed a similar sentiment, saying “Personally, I’m very open minded, and I might not use the technology, but someone else might find it useful. So for me, I think it could be cool to be built.” Sofia expressed a similar sentiment, changing perspectives in her response to *Avoidable Inconveniences*:

“That actually, like, weirdly made me feel excited. I was like, yes. Because it could have framed it as, I guess this is a problem because it’s the exact same thing, but it could have been like, there’s a crime, we want you to avoid the criminal. Or it could be like, you know, keep you away from the police. And I’m like, okay, I feel much better about the second option because I think many people don’t want to be around the police because it’s potentially not safe for them. So I was like, oh, the framing of the police is not safe was really interesting. I didn’t know if that was intentional or not, but that’s kind of what I was thinking about. And then I was like, okay, that’s another kind of safety that I do.” — Sofia

In response to *December 26th*, Haris unpacks the concept from multiple perspectives, talking through his thought process, saying:

“I mean, on a micro scale? It’s what I said with the actress and that the iPhone and the Apple Watch know that this is a point of vulnerability, like, a literal point of vulnerability for her and, and all of the things that could come from that and then you can see it from another perspective, right? Like, your phone might see that you’ve been standing on the side of a bridge for 30 minutes and they, you know, your phone could then alert the local police department to come send someone out to make sure you’re doing okay. Like, there’s good and bad that could come from this type of location-based tracking. And again, that second example, there could be evidence and data of your search history, you know, suicidal ideation or depression, anxiety. Like, someone could know that you’ve been searching for all of those things, and then all of a sudden they could sense increased anxiety from your watch, and then all of a sudden you’re at the side of a bridge. And so that might be a really good opportunity to send someone to intervene to help you in that moment. So, like, oh, no, damn it, Wyatt, you’ve got me arguing the other side now. So I just. [unintelligible expletive]” — Haris

Participants espoused a wide range of perspectives, reactions, and speculations. While the films cannot be detached from the embedded ethic and tonal critiques, they remain ambiguous enough to be read in many different ways. In many cases, participants were able to see positive and negative aspects, often projecting their own fears or views onto the concepts. In all cases, participants identified unsavory aspects of the futures presented and considered their own solutions.

Participants viewed the videos as realistic portrayals of alternate presents or near futures, using them as springboards to speculate about what might come next. Their engagement represented a form of grounded trend forecasting, where speculations transitioned from realistic capitalist alternatives to utopian visions. These discussions ventured beyond

techno-solutionist principles, contemplating societies that confront wicked problems through radically different approaches. With considerations to decentralized technology as described by Ava, who, along with Sofia and Tân described defunding the police and prioritizing community-oriented approaches.

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Empathy informing emotion-driven speculation

As participants viewed the videos, they formed relationships with the characters while simultaneously seeing the surveillance and recommendation apparatus functioning in the background. This juxtaposition elicited a deep emotional response; the protagonists were relatable, their struggles palpable, making the system’s constant observation all the more unsettling. This, in turn, seemed to cause participants to reflect on their own relationships with everyday surveillance, evaluating it in a new visceral way.

After viewing *December 26th*, Albert speaks about the immediate connections he drew to the film, a personal connection to his parents, specifically his mother—recognizing how the film drew out that response. Albert calls out the emotional impact and speaks to an informed apathy elicited alongside saying:

“Yeah, because, I mean for me, like I said at the end of the video, I definitely had an emotional reaction that, I mean this is a subject that I’ve considered before, but even if it hadn’t, it does upset me. And I mentioned, watching the video, I thought about my parents, specifically about my mom, the video leads you right there. And so in terms of an effective delivery method, yeah, I think it would definitely get, it would sort of have to either get people thinking about it, or I think the other reaction would be, again, sort of overwhelmed apathy, you know, which just sometimes you’re just not going to overcome that. Somebody’s just like, look, I’ve heard about all this tracking and sales stuff for the last ten years.” — Albert

Participants drew on personal experience and applied their lived experience with and against the characters’ experiences onscreen. They projected their own world onto the characters of the film, ascribing histories, feelings, and emotions to them, allowing them to speculate about the role of technology in the world. Paul speaks to his personal experience of loss, relating memory and emotion to inform his speculations about the use and application of collected data:

“I think that I definitely felt it was gross in some ways, you know? It isn’t the same thing exactly, but, when I had a friend that, you know, committed suicide, like, the next day, people like that just sort of tangentially knew him and knew I was friends with him were messaging me, being sort of, like, what happened? You know, like that

sort of thing. I thought that was super gross and in bad taste, and so [the video] kind of had that kind of vibe to it, of, an impersonal way of attacking something that's very personal, you know? And so, yeah, I certainly didn't think that the feeling was that this is a positive thing, you know? And then otherwise, it was just sort of like, a feeling of, oh, of course, that's just what happens. You give them some information, they use that information to sell something back to you." — Paul

Both Paul and Albert expressed sentiment about the emotions elicited by viewing the films. Connecting with the character's reality, participants were widely able to imagine themselves in the situation of the character on screen, experiencing the emotions, ideas, or opinions of that person, then drawing connections to their own lives, as expressed in the previous quotes. The medium of film has historically excelled at this, from its use as propaganda to advertising. Best summarized by Roger Ebert's [2005], often cited 'Empathy Machine' quote about the medium of film:

"For me, the movies are like a machine that generates empathy. If it's a great movie, it lets you understand a little bit more about what it's like to be a different gender, a different race, a different age, a different economic class, a different nationality, a different profession, different hopes, aspirations, dreams and fears. It helps us to identify with the people who are sharing this journey with us." — Roger Ebert [14]

Film has found its use again in design fiction as a vessel for building empathetic connections. I use the medium of film to prompt participants to recognize the narrowing divide between digital and physical realities.

Digital Permanence

Viewing the films, participants reflected on the historical separation between the internet and real life. The unseeable nature of recommendation systems—and the system's constant collection of data happening at all times. Witnessing realistic portrayals of digital surveillance and location tracking in the physical world heightened their awareness of the permanence of digital data. This sparked visceral reactions, including feelings of disgust and exploitation. The blurring of physical and digital boundaries in the films (through the use of overlays) prompted participants to reassess and recategorize their everyday experiences, moving away from feelings of normalcy.

The idea of digital permanence is best described by Michael as he reflects on viewing the four films:

"Well, you feel like you're being watched. And in [December 26th], it's very clear that there's a profile being built of this person. And I think, really, that sort of thing is already happening with Google or Facebook or wherever. They already have their profiles of people, but you can't see it. And so I think seeing the things that are going into that feels very invasive, because when I go and, I don't know, visit somewhere with my phone on me, I feel like it's between me and the people who see me there, but it's really not. Or when I buy something online, it's between me and the seller, but it's really not. And I think seeing it all spelled out on the screen, it said, like, oh, this person bought, you know, sleeping melatonin and wine and flowers or whatever at this time and then went to this location and did these things. And that's why we think they're more likely to buy our stuff. It feels invasive, even though I don't think any of those things are not happening right now." — Michael

This self-psycho-analysis reflects feelings shared by many partici-

pants across disciplinary boundaries. Seeing the system onscreen illuminated much of the darkness, intentionally packed away in proprietary black boxes—or spreadsheets of weighted values. In realizing the impacts of abstracted components of these large systems on screen, participants were able to engage with the mundane in a new, unfamiliar way, allowing for new connections, ideas, or insights.

On Topic:

I now discuss the four major findings that arose from participants' viewing of the design fiction films, covering the idea of "Concept Realism"; describing participants largely fatalistic world views; shining light onto participants ability to see both sides and unpacking the tensions of 'both-sides-ing'; and applying 'work hats' to ethically ambiguous situations.

Concept 'Realism':

Participants projected their own feelings onto the films, speaking from their lifeworlds about a future that felt unavoidable. Participants applied a lens of 'realistic thinking' when speculating, speaking to inevitable futures where surveillance increases in prevalence and personal agency and autonomy are reduced. This shared sense of determinism is interpreted as an imminent reality—one that is not able to be fought—and highlights the deep influence/entrenchment of surveillance capitalism on individuals' abilities to imagine alternative futures.

Speaking towards the films, participants identified specific elements, comparing these concepts to their personal realities. Their acceptance of the 'Real' centered on projected futures characterized by increased surveillance and reduced personal agency. Alan draws out the trends in his prior workplace, leveraging their past experience to point out that this issue, evident in platforms like Instagram and Facebook ads, is intensifying as companies frequently sell location data to one another. This chain of transactions, Alan argues, could lead to potentially harmful uses of personal information, stating:

"I do think it's already kind of happening, with like Instagram ads, Facebook ads. It is already kind of happening. My biggest concern is how far spread out it is. I'm not saying it's fine if one company does it. But it's worse when one company sells your data to another, and you sell it to another and then to another, and then it's just a chain and domino effect of kind of like your location being sold and that being used for possibly nefarious uses." — Alan

Paul utilizes a similar frame when viewing the world projected by the films—writing off alternatives as unrealistic due to a number of factors, most notably the way in which internet technologies are embedded as pervasive and inescapable.

"But I think it's already at a point where there's not much we can personally do to avoid it. Like with the app from the first video [Avoidable Inconveniences], people can just not use it. With this app, it's like people are going to use the Internet. So, if these big tech companies decide that they do want to shove those types of ads in people's faces, then [consumers are] not going to not use the Internet or not use Chrome or whatever

it is, like, they're going to need a really big push to boycott something that is central to so much of their own interacting with the world as it is." — Paul

Both Alan and Paul express a matter-of-fact sentiment that this future is already here, or at least inevitable, so it is unrealistic to imagine alternatives—at best, we need societal outrage. To build on the premise of *December 26th*, the fact that an AI system manipulates and emotionally triggers users to sign up for monetized services is less significant; given that we are already deeply entrenched in surveillance capitalism, it is seemingly impossible to reverse these practices, and this is the natural evolution. This sentiment was echoed or expressed by nearly all participants across every grouping.

Fatalism: From Radical to “Realistic”

Participants perceived the extrapolations in the films often as dystopian visions of the future, grounding their analysis in existing technologies, current trends, and underlying motivations. When viewed as dystopian, this reflection often spurred a visceral reaction, leading to declarations of wanting to live off the grid or revert to simpler times. However, these initial reactions were quickly dismissed as unrealistic. Consequently, participants reluctantly adopted a fatalistic worldview, resigning themselves to the belief that meaningful change was unachievable.

Speaking towards resistance, Michael outlines the methods by which users might counteract current and future forms of location tracking and surveillance, assessing their potential effectiveness and ultimate fruitfulness:

“You can try fighting it, there are people who use, VPN’s or whatever to browse the Internet, and they set up their browser privacy settings to not accept any cookies or whatever they want to do. And then they just keep getting hit by captchas when they try to go to every site, and then they solve the captcha correctly, and it’s like, here’s another one. It’s impossible to use the Internet anymore, which makes life very difficult in society today. And so I think to some extent, it is hopeless if you want to truly try and be anonymous and private online. But, I don’t know. There’s also the other side, like, there’s a reason there’s captchas on things because people do nasty things when there’s no captchas or whatever. So I do think it’s a bit hopeless to try and resist the machine, but maybe that’s okay.” — Michael

A more succinct version of this sentiment is described by Albert. Speaking about how one might exist “off the grid” in an effort to escape the impact of the concepts and speculations presented in the films, he stated:

“[This system] only works at scale. I don’t think that as an individual in 2024, unless you’re living in a cabin in the woods and only paying for your groceries in cash, like, there’s no off-the-grid life where you’re not giving away your data that looks anything like modern life. I mean, there’s no, like, ‘oh, I didn’t sign up for Facebook, so I’m good.’ Well, you have a credit card.” — Albert

Many of the participants spoke towards or held a distinctly fatalistic mindset. Existing between exhaustion and anger, in a futile state of inaction (self-imposed or structurally imposed, or both). Participants who viewed the concepts as generally positive presented a distinct counter-narrative. When prompted with the question, “what might be done to

avoid the futures onscreen?” three major themes arose throughout our interviews. The first and most concerning, regards participants perceptions of being actors to drive internal change. The topic of personal agency, moral or ethical responsibility, never rose naturally, outside of questioning. I place it first in this hierarchy to frame participant later responses.

On Change from the Inside

Participants highlight a critical tension within the design and development process: while they recognize their potential for instigating change and moral responsibility, they feel constrained by capitalist structures that prioritize profit and rigid hierarchy over transformative impacts. They rationalize their way out of taking any harm-reducing actions, viewing potential outcomes as often negative (blowback from supervisors, retaliation from ethics boards, failing to meet product targets).

Mira describes life at a consultancy as handicapped by their market positionality, as prescribers, at best offering a recommendation, stating, “I guess in consultancy, like, agency life, it’s like, you can make a recommendation, but ultimately it’s up to a few select high up there people to determine whether it’s like a green light or a no-go. I think a lot of things are driven by revenue and engagement and numbers, so we’re maybe motivated by the wrong things.” — Mira

Michael speaks about his own experience as a software engineer, highlighting the tensions in the workplace environment that restrict actions from being taken.

“In my experience, they might not even get to decide how it’s built. If it’s a very large team, some senior engineer might be like, ‘okay, we’re going to do it this way.’ And then a junior engineer does it, and then it’s done, and it’s done the way that it’s said. And of course, you can give feedback to the senior engineer as a junior engineer about like, ‘oh, you know, have you thought about this?’ But that’s very intimidating. You might be talking to someone who has been working at a company for 15 or 20 years and who is an expert at what they do. And you might be one or two years out of school trying to fight with someone like that.” — Michael

Albert mirrors this mindset, highlighting a resignation and apathy visible amongst his peers who recognize an ethical dilemma, yet continue to participate in the system they don’t believe in, saying:

“As a code pusher, you know, not the guy who’s making the executive bonus checks, but the guy who shows up and makes pull requests every day...I mean, I know multiple people who’ve worked at Meta, and that’s their mindset. It’s like, if I don’t do it, somebody else is gonna, so I might as well take their money and I’ll go donate it for some good.” — Albert

Tân adds additional perspective to the picture, describing not only the economic draw that disincentivizes workers but also the cultural and social systems at play in the teams that create and distribute these technologies. He argues that viewing personal agency to make a change often comes with an understanding or thought process that identifies issues absent in many design and development teams, stating:

“In economics, capitalism and so on, that’s one thing. But also, like, who do we have in tech? It’s mostly white dudes. Right? Or communities that are more white adjacent, I

think, like Asian communities who oftentimes will try to emulate the white communities because of internalized racism. So if that's who we mostly have in tech, then, yeah. That's going to affect the algorithms that are being developed and what is not being considered as well. Right? Because you have a lot of privilege and you don't think about these issues as often and oftentimes it's not necessarily conscious to not think about racism, but if you're privileged, then you probably don't think about it as much as other people do, and that does affect things." — Tân

Sofia represents a nihilistic perspective, sharing her experience from IBM, which backed out on its promise to avoid involvement with AI. "Like IBM, they were like, 'we're not going to make [our own] facial recognition stuff.' And the employees that I worked with there were really happy about that. And then later, they started to make exceptions, but they were like, 'oh, it's not, it's not technically facial recognition.'"

While participants did speak about harm reduction and small actions developers could take, this was often undercut or overshadowed by an existential factor. I next unpack participant responses regarding policy, law, and regulation, followed by the closely related topic of public awareness, and perception of data.

Policy, Law, and Regulation

Participants frequently emphasized the need for policy change, identifying regulation as often the 'only hope.' They viewed state intervention—at local, state, and federal levels—as the essential means to outmaneuver the capitalist imperatives and fiduciary duties that companies owe to their shareholders. While this reliance on policy solutions is logical, it also revealed a "filter" in participants' thinking: they struggled to envision possible alternative solutions beyond external governmental intervention as "realistic" or achievable.

This sentiment is best summed up indirectly in Sofia's and Michael's answers to the question, "What personal responsibility exists to not bring these futures about?"

Sofia:

"I guess this is not really about personal responsibility. So maybe not an answer to your question, but I'm assuming, like, to prevent certain things like this existing, I would assume we would need some policy. Not that policy can fix everything...I could see companies overriding their employees if they could justify it in some way. That's not just about making money, which I think there would be a lot of narratives about that." — Sofia

Michael:

"The reason I brought up regulation is because I think it's difficult to make that happen. I think the people who build these systems don't often have the autonomy to say no, like, I don't want to do it this way. You know, if I was working at Google on maps and I said, no, I don't think we should do this thing that would make Google more money. I think that wouldn't go over well; or do this thing that takes longer so that maybe someone else releases their version of this before us without—this safeguard that we could put in place that might take us three months. So educating people and encouraging the people who work on these systems to think about their impact to society is important,

but I think it's not enough to actually make it, you know, not shit...I think it's going to take some kind of bigger, like a government regulation or law to have anything like that happen." — Michael

When asked the same question Alan abstracts towards his current employer as an example, stating,

"Nothing really. I think if one company decides, well, we can take like, [Redacted], for example. So [Redacted] is a huge AI company and their mission is to be a sustainable AI and an AI that's safe for humanity. And so they try to be very sensitive about data. They also try to be as aware as they can and be pioneers of a kind of safe AI. There will always be companies like that, but there's always going to be companies that take advantage of people. So I think it's not really going to be possible. I think it is up to policy regulations to keep those in." — Alan

This was a common trend across nearly every interview. The concept or need for policy would override other aspects of the discussion (see personal agency), yet definitions of policy would often be loose.

Speaking towards what potential policy might look like, Alan highlights the flaws in the conceptualization of AI Regulation in 2024, stating,

"Nobody can actually understand AI, to be honest, to its fullest, because nobody knows what it does in the background. Really. All those values that are being set are just the computer setting them. Humans have no comprehension of it." — Alan

He goes on to speak about what regulation would look like:

"I think we can definitely put regulations on all these types of things. It's just that AI and recommendation systems are just such a whole new world, right, that we haven't or the mass public hasn't really learned about until recently, so there just hasn't been that much interest or like, eyes on it. But I think now that AI is so prevalent, we will definitely see more regulations that come into play about what kind of data can be used by AI, how much access does AI have to the Internet, have to our data and whatnot. I do think these regulations are currently being discussed. I'm sure it will play a role in the future as well." — Alan

Albert echoes a similar sentiment, speaking towards current recommender algorithms as well the future integrations of AI systems, further abstracting intent and developer action from accountability.

"We have a general idea of why it does the things that it does. I mean, at a high level, like things talk to each other inside the box and then answers come out, but there is no inspection. So, like your professional going in and looking, inspecting the different weightings and stuff that are actually written out in a file and trying to read greek and figure out what the fuck's, that's not possible...I know this is a primary concern in AI safety right now because we are developing systems and handing over control of other systems to those systems and we don't have any way of looking inside them. But fundamentally, not just technologically, like right now, fundamentally, we have no way to look inside them and understand what's happening." — Albert

Tân advocates for the true enforcement of such policies, questioning the validity and enforceability of laws that protect us.

“We just don’t realize it. And we gotta be in this space to discuss, like, is this okay, is this, just normal now? And if that’s the case, then maybe the laws need to be brought up to speed, because right now, I don’t think that the laws have caught up with technology yet. So we’re still using ancient laws for something that is extremely quick to evolve. So that’s what I would be really concerned about is, like, what is being done to protect this woman’s privacy here?...I think the law is going to have to change and people are going to have to focus more on developing and passing these laws. And our country, the US, is not very good at passing very quick laws. And so that’s going to be a challenge. We’re going to have to elect better people who are, I don’t know, I guess not to be crass, but younger.” — Tân

Concerns regarding the age of US legislators were reiterated by many other participants. Referencing progress made in Europe with the GDPR, Haris states:

“I don’t think it’s wishful thinking. I think that if you look at [other] places; the European Union has really, really strict data privacy laws and Apple and Google and all of the huge tech companies are extremely limited in what kind of data they can collect there as opposed to here. And so I think it’s just like a cultural difference between the governance between the EU and the United States. For instance, the reason why Apple ditched their proprietary charging port is because of the EU. The EU said, we’re not fucking doing that. Everyone has the same charging port now. And so you see that much more consumer-minded type of legislating happening in the EU as opposed to the United States, where it’s kind of like, get as much as you can, give as much data as you can, and maybe our 80-year-old legislators can stay awake for a hearing with Mark Zuckerberg and then nothing happened, really. Part of it is that the legislators are too old. They just don’t get it.” — Haris

While often advocated for by technologists and broader communities in HCI, policy-makers and adjacent participants struck a “more realistic” view of US-American legislators’ abilities to react quickly enough to current trends in the tech sector.

Public Awareness and Perceptions of Surveillance

Participants saw public awareness as crucial for driving substantive change, noting that a general lack of understanding about the effects of recommendation systems, exploitation, and surveillance practices hampers individual action. They criticized the way surveillance is often implicitly accepted as the price paid for the convenience of having all services centralized. This perspective highlights the need for a deeper public understanding of the ontological impacts of recommender systems and their role in everyday digital interactions.

Albert speaks towards a widespread apathy, embalmed in a surface-level understanding held by most everyday users, stating, “If they want to pay me indirectly by virtue of giving me this service for free, for use of my data, I have the sensation that they have it anyway. Therefore, what does it matter? So I think there’s a lot of widespread burnout and apathy in thinking about data protection.” Other participants also spoke about this apathy—Haris adding on, “If something is free, you’re not the

user, you’re the product, because you become the thing. Your behaviors are the thing that they monetize and that they can collect and sell and, I don’t know how we break it because we live in a very convenient world right now, but the trade off is that we’re always watched.”

Along the same line of perception and apathy was the potential for significant change. Participants drew on professional experience and knowledge to speculate about any company’s greatest fear: public outrage. Speaking about lost capital, public perception, and outrage, participants highlighted outrage as the greatest—and possibly only—driver of change in an entrenched capitalist system.

“There always has to be financial pressure against something like that to prevent it from happening. And so if that financial pressure can take the form of enough customer backlash, which can be helped along or created entirely by an independent effort. It can be a PR effort by a concerned individual or group who rallies support against it because that support then turns into money for the corporation, well, turns into negative money, but that’s what then makes those decisions get made that, ‘hey, we’ve run all the numbers. We found that we’re getting enough negative feedback and losing enough customers to our competition who are not doing this, that we’re going to pull this feature. We’re no longer going to be doing this thing.’ So that is still in the hands of not even just the consumers of that service, but people who are aware of it and want to convince others that they shouldn’t engage with it because they see it as being like, ‘hey, well, if it works here, then it’s going to spread more. So let’s raise awareness that maybe this is a bad thing to be doing.’ I absolutely think that that can make a difference.” — Albert

This sentiment, highlighted by Albert and many others, was a common topic of discussion amongst nearly all participants. Awareness and external financial pressure by customers and everyday users united participants across all disciplines. Participants spoke towards awareness and a public perception of surveillance that is manufactured. Haris, after viewing Evidence of Insurability, continues on to say,

“But you can see a company justifying that by saying, ‘hey, we’re just trying to keep you safe. We’re trying to save you money, and you keep on taking the riskier, the riskier option. And we know it’s riskier because we have all this data that says so.’ So it’s like, the data is cold and calculating, and their use of the data is cold and calculating, again, because their motivation and their incentives are to pay out as little in claims and make as much profit as they can from your premium. And if they have the data and they see that you’re ignoring their suggestions, you know, it’s not, it’s not. It’s completely believable that a company would do that.” — Haris

The encapsulation of public relations, marketing, and the intentional downplaying of surveillance practices, highlighted by participants’ reflections and speculations, highlight multiple areas of impact on public outreach. In my discussion, I reflect on opportunities presented by participants’ reflections and speculations. I continue on to reflect on the critical design fiction film as a meta-approach for activism amongst professional technologists and its role in validating speculative design fictions.

SURVEILLANCE REALISM

My work contributes to broader ongoing discourse regarding critical speculative design. There exists a historic and well discussed gap between traditional art and gallery exhibitions of Critical Speculative Design and traditional views of academic research. This drift encapsulates professional and pragmatic traditions of design, as well—most notably the use of product metrics to evaluate success. Breaking out of the existing traditions of speculative, critical project, I highlight an opportunity for the high fidelity design fiction film to illuminate and elicit responses to realized futures in more empirically driven ways. In design, we sit between art and engineering oriented disciplines. Interrogating our positionality, we find we are in unique position to bridge research and creative practice.

Bringing together practitioners with domain expertise and critical speculative design artifacts, in this case short films, are able to be utilized as credible stimuli. Eliciting responses that are congruent with similar work in the field, while simultaneously extracting visceral emotional responses from participants. I believe this is useful for two reasons:

1) It allows for speculative design fiction probes to be utilized to expand designers' understanding of possible futures, guided by participants with specialized expertise. This allows for designers to become aware of new issues, concerns, fears, trends, and industry insights, than they may have previously encountered. In turn, this new awareness, allows for a reorientation of the 'now'. The now is able to be designed for with a grounded pluriversal understanding of possible, plausible, futures and a redefined 'now' (participants rarely stayed only in the future). Films ability to worldbuild, convey multiple layers of information, and depict characters that participants are able to empathetically connect to, help in the guiding of participant speculations. This aspect saves

time and answers many participants' questions before they are asked—setting a well defined platform to build off of in the act of speculation.

2) In addition to generating qualitative data, viewing the film acts as a mode of dissemination. This flips the traditional critical speculative design process; as a result, I created critical speculative design and used it in design fiction films, which I then used as probes in the research. By bringing outside perspectives (in my case, largely technologists) to view the videos, an inherent byproduct of this process is sharing my critiques with individuals who might not have ever seen them otherwise. Using this project as an example, the 11 participants to whom I spoke, would have never otherwise engaged with my films, or taken the time to reflect and ponder the larger implications. Although relatively niche, since HCI studies typically do not involve incredibly large numbers of participants, some quantifiable engagement with targeted audience is better than none. Additionally, if videos are combined with alternate methods of dissemination, such as web presences (project sites, Vimeo pages, etc.) a form of dissemination is able to be enacted. If the critical speculative works are effective, in that they stick with the participants after viewing them, there is the possibility that they may be shared (in my case amongst the workplace). Design fiction videos have the pragmatic benefit of being (often) easier to engage with and share.

Propaganda / Priming / Digital Inkblots

There is an inherent risk in the use of fictions as tools to elicit data. This is compounded in the entanglement of empirical methods and generative-participatory methods. Infusing critical techniques adds additional complexity, for the designer and researcher. What becomes of bias, point of view, and vision? Does the film's use in one area impede its use in another?

Films are unable to be entangled from the directorial hands that shape and craft them. Yet much has been said about the death of the author in regard to how a film is read. In the case of this project—the films demonstrated the ability to be read in a wide number of ways. Participants were able to hold competing views in-subject and out of subject. Participants would read films one way, and then, in the act of reflecting on the film, read it a different way. Simultaneously, the films were able to pull out participants' existing worldviews and understandings, acting as a digital inkblot test. In this way, participants ascribed values, intents, and reasonings to the often un- or ill-defined companies and motivations behind each of the services shown onscreen. Crafted intentionally this way, speculative films, and videos, hold use as tools for debate. Future use cases might extend these videos to workshops or focus groups. Drawing in multiple participants into the act of speculating together, furthering critical design approaches.

HCI, Policy, & the Act of Pointing Fingers

Often surfaced across my in-depth interviews was the generalized call for policy, law, and regulation. As noted in the findings, policy was often utilized akin to a get-out jail free card by technologists. While I don't discount policy's ability to enact valuable change, we need better policy, the 'policy only' mindset is troubling. It highlights two related but discrete ideas. The first, as described by the late Mark Fisher, Reflective Impotence, which he defines in his book, *Capitalist Realism* [2009]:

“Yes, they know things are bad, but more than that, they know they can't do anything about it. But that 'knowledge', that reflexivity, is not a passive observation of an already existing state of affairs. It is a self-fulfilling prophecy.” — Mark Fisher [18]

It is this self feeding mindset that clouds visions of personal or collective action, shifting the responsibility away from any action. In the interesting, yet anecdotal experience, the two policy-focused participants held the least amount of faith in the US-American legislative system. Calling out elder legislators and policymakers, as unfit to enact substantive change in time. In their good faith, they discounted the very real impacts of lobbyists, and other corporate interests acting to hold off regulation in the service of innovation.

This act highlights a tension in this project as well as broader HCI discourse. In the turn from techno-, optimistic, chauvinistic, and solution oriented approaches, policy is seemingly the direction to turn towards[9]. It would be easy to summarize this project as highlighting the need for updated policy (of which it does). Yet, at the same time, the agency, organizing power, and collective capability to engage in, as defined by Richmond Wong's, *Soft Resistance* [53], or by my participants Sofia and Michael's definition of, “Harm Reduction” must be accounted for. In this context, technologists point towards policy, while those connected to policy direct their attention towards technologists and ethicists, resulting in reduced action being taken. HCI occupies a critical juncture, yet only a few researchers are actively working to bridge the gap [56,57,59]. Speculative critical works hold potential to tackle these challenges, promoting reflection and community-oriented actions without merely offering solutions.

On Video & A Second Life

My final treatise in this document is an argument for videos continued use in HCI futuring work. **Specifically high fidelity video.** The tools are now accessible, industry grade editing, coloring, and compositing software are available for free or low-cost one time payments. Compelling, critical, and exploratory visions of the futures can be realized with relatively low overhead cost. In an era characterized by short attention spans and the prevalence of 'second screen content,' creating visually engaging and well-produced content is a basic requirement to capture attention and engagement. A core tenant of critical speculative design is the ability to reach greater publics. This engagement compounds both interest and dissemination values. If action is not taken through broader dissemination practices, what then becomes of these projects? What future visions get to then be depicted? The corporate concept video dominates discussions, whether it was the ill-fated Google Glass, or the better received Microsoft Holo-

Lens or Apple Vision Pro videos. Inspiring public thought, imagination, and debate no longer has to be left to individuals or corporations with unlimited budgets. Simultaneously, design fiction videos can hold two lives. A life in the study, and a recontextualized existence outside, as a continuation of the project and an alternate research outcome, open and accessible to the public.

END CREDITS:

This thesis underscores the transformative potential of high-fidelity design fiction films in critical speculative design, effectively bridging the gap between speculative academic research and public engagement. By employing these films as tools for elicitation, I have successfully provoked deep reflections on privacy, surveillance, and the ethical use of technology, contributing to the ongoing discourse within the HCI community. The findings highlight the dual role of policy and personal agency in shaping technological futures, challenging the prevalent 'policy only' mindset, and advocating for broader, more inclusive approaches to addressing complex societal issues. Moreover, the participatory nature of this research, involving professionals from various domains, has demonstrated the value of interdisciplinary perspectives in enriching our understanding of technological impacts. The emotional and intellectual responses elicited by the films confirm their effectiveness as digital inkblots, revealing underlying biases and perspectives of participants, and fostering a critical examination of future technologies. As we move forward, it is imperative that we work to foster a more informed and engaged public, capable of participating in meaningful debates about technological trajectories. High fidelity design fiction films, therefore, not only serve as a methodological tool but also as a platform for public discourse, empowering individuals to envision and advocate for preferable futures. Ultimately, this project exemplifies how speculative design can act as a catalyst for change, challenging the status quo and encouraging a collective reimagining of our technological landscape.

FIVE TECHNOLOGISTS
THREE RESEARCHERS
ONE ACTIVIST
ONE ARTIST
ONE LAWYER

P
A
R
T
3

ELEVEN VOICES
DISCUSSING THE
FUTURE

ASHIA

“there’s like my researcher mind and then there’s like my woman mind and I know a lot of people who feel unsafe, do this: sharing locations.”

(1)

HARIS

“I don’t know if this is what you’re really going for, but the simple act of filming a woman walking home is like—it created a sense of danger and discomfort. Even though I, the viewer, the cameraman, was not, voyeuristic in its pursuit of the waitress. It was really just to tell the story, but I thought from a cinematic perspective, it was really—I don’t know, it sort of, like—immediately I sort of got, like, this clench in my chest. Even though I knew the waitress was going to be fine, like, I was like, ‘oh, god, what’s, what’s happening?’ These are dark streets, and we’re following her very closely.’ You know, I’ve watched enough movies that I thought I knew what was going to happen next”

(2)

ASHIA

“[Compared to] the written scenario where some things I imagined by myself, I put it in my perspective—about my life—my everything, and I speculated through that, but I missed out on a lot of things like I didn’t think about clothing ‘til I saw the video where I saw the woman put the overcoat on then I was like, ‘oh yeah, she’s doing that.’ The video showed me the man was just lying on the bench and I could read the [overlay] text. It was a different version I imagined, than

what is shown in most movies, like someone silently walking down that alley and smoking something—it’s the image that is created in my mind giving me that ability [and] can lead to a different set of critiques and speculations and benefits even.”

(3)

ALBERT

“Yeah, because, I mean for me, like I said at the end of the video, I definitely had an emotional reaction that, I mean this is a subject that I’ve considered before, but even if it hadn’t, it does upset me. And I mentioned, watching the video, I thought about my parents, specifically about my mom, the video leads you right there. And so in terms of an effective delivery method, yeah, I think it would definitely get, it would sort of have to either get people thinking about it, or I think the other reaction would be, again, sort of overwhelmed apathy, you know, which just sometimes you’re just not going to overcome that. Somebody’s just like, look, I’ve heard about all this tracking and sales stuff for the last ten years”

(4)

PAUL

“I think that I definitely felt it was gross in some ways, you know? It isn’t the same thing exactly, but, when I had a friend that, you know, committed suicide, like, the next day, people like that just sort of tangentially knew him and knew I was friends with him were messaging me, being sort of, like, what happened? You know, like that sort of thing. I thought that was super gross and in bad taste, and so [the video] kind of had that kind of vibe to it, of, an impersonal way of attacking something that’s very personal, you know? And so, yeah, I certainly didn’t think that the feeling was that this is a positive thing, you know? And then

otherwise, it was just sort of like, a feeling of, oh, of course, that’s just what happens. You give them some information, they use that information to sell something back to you.”

(5)

HARIS

“It was like that feeling of being watched and being known and perceived without knowing that. And that’s just a very vulnerable, very uncomfortable thing to be presented with.”

(6)

TÂN

And I think [the videos] are creepy because they’re a reminder that these things are already happening and we just don’t pay any attention to it...so I think that’s their power more so than creating a new fear, but it’s kind of reminding us of fears, what we should be having already.”

(7)

SOFIA

“I would feel very violated if that happened to me. Also, I want to support smaller businesses when I can. So, that would also frustrate me that it’s routing me to a chain, but compared to the other things that we saw, that seems less dystopian, but still not good.”

(8)

ALBERT

“We like to think, like, ‘well, I always have decisions over my choices, and ultimately I get to choose whether to engage with things or not.’ And that’s true, but

MEET THE PARTICIPANTS:

Eleven participants selected for their domain expertise and knowledge of complex systems, proximity to location data, and or recommendation algorithms.

SARA:

Surveillance researcher at a large university.

ALBERT

Software developer at a large technology company.

PAUL

Lead software developer at a small technology company.

HARIS

Assistant city attorney for a large US city focused on public data.

ALAN

Software engineer and developer at an AI-driven company, previously: large social media company.

AVA

Artist, with previous focus on surveillance and marginalized bodies.

SOFIA

Algorithm, data, infrastructure researcher, previously: large tech company.

TÂN

Non-profit-philanthropy oriented community activist.

MIRA

Designer at a well-known design consultancy, working on AI-driven projects.

MICHAEL

Software engineer at a large e-commerce company.

ASHIA

HCI researcher studying predictive policing and public safety, previously: large tech company.

also we think that our brains are so much more unflappable and stoic than they are. I mean, they're just predictable. Predictable meat juice computers. And with much more investment in malicious psychology research, we know how to make those meat computers do the things that give people money."

(9)

PAUL

"I think that it's just sort of gross to capitalize on somebody's misery in that way... It just seemed like it was a bunch of companies that know that, if they hit people at their emotionally lowest points, they'll be able to get them to buy stuff because what they're looking for is some sort of relief or respite from what they're going through."

(10)

HARIS

"I don't like that even in a state of grief, that grief can be monetized. And the grief within that grief, there can be data that can be mined. I hate that idea. We let these companies into our lives through our phones and through our computers and they make our lives more convenient to some extent, but it is the transaction. And they Hoover up as much data as they can."

(11)

ALBERT

"It constitutes mental and emotional manipulation. And whether someone has consented to give their data for use in that way or not, I think it's still wrong, because I think that nowadays, it's like, 'do you consent to give your data?' Like, I don't know what this means."

(12)

ALBERT

"I think about my parents. I think about me, like, who knows how Apple Photos decides when to give you those little, 'hey, remember this event?'"

(13)

MICHAEL

"Well, you feel like you're being watched. And in [December 26th], it's very clear that there's a profile being built of this person. And I think, really, that sort of thing is already happening with Google or Facebook or wherever. They already have their profiles of people, but you can't see it. And so I think seeing the things that are going into that feels very invasive, because when I go and, I don't know, visit somewhere with my phone on me, I feel like it's between me and the people who see me there, but it's really not. Or when I buy something online, it's between me and the seller, but it's really not. And I think seeing it all spelled out on the screen, it said, like, oh, this person bought, you know, sleeping melatonin and wine and flowers or whatever at this time and then went to this location and did these things. And that's why we think they're more likely to buy our stuff. It feels invasive, even though I don't think any of those things are not happening right now."

(14)

PAUL

"Unless I had known what this was about, I'm not positive that if you were like, 'what was the purpose of this video?' that I would have, like, specifically said, 'this is for route tracing or whatever. Like, sort of

like route optimization for safety and all that.' But it also is hard to convey that without as much talking. One thing that might have helped is that the phone and text and everything, and maybe it's just on my screen, but it was a little bit blurry. Like that seems like it was an important aspect of what she was doing to interact with things. Like, plugging it into the phone and having text messages go back and forth and all that. And in not knowing what was going on there, I didn't know if that was something that was important for me to see. Like, I was able to read it at times and kind of see what was going on."

(15)

MICHAEL

"Well, you feel like you're being watched. And in that video, it's very clear that there's a profile being built of this person. And I think, really, that sort of thing is already happening with Google or Facebook or wherever. They already have their profiles of people, but you can't see it. And so I think seeing the things that are going into that feels very invasive, because when I go and visit somewhere with my phone on me, I feel like it's between me and the people who see me there, but it's really not. Or when I buy something online, it's between me and the seller, but it's really not. And I think seeing it all spelled out on the screen, like this person bought sleeping melatonin and wine and flowers or whatever at this time and then went to this location and did these things. And that's why we think they're more likely to buy our stuff. It feels invasive, even though I don't think any of those things are not happening right now."

(16)

ALBERT

"And so in doing that [emotionally targeting ads], the crux here, of course, is that they show in the overlay text, basing these recommendations, basing this data on purchase history and location history. And I don't know if the algorithm knew this person had died or if it inferred it from the other factors, which is honestly more realistic and, again, more frightening."

(17)

SOFIA

"I'm just trying to think about why did it feel that way? I think it was partially in terms of how the video had the overlays. It made me think of Google Glass, and I was like, 'oh, that's so futuristic and dystopian.'"

(18)

SOFIA

"And I know it had that overlay where she bought these things, so presumably she's grieving, but that part didn't feel totally realistic to me. But, the rest of it, like, targeting ads based on someone's emotional state and location, that felt very real."

(19)

ALAN

"I do think it's already kind of happening, with like Instagram ads, Facebook ads. It is already kind of happening. My biggest concern is how far spread out it is. I'm not saying it's fine if one company does it. But it's worse when one company sells your data to another, and you sell it to another and then to another, and then it's just a chain

and domino effect of kind of like your location being sold and that being used for possibly nefarious uses.”

(20)

PAUL

“But I think it’s already at a point where there’s not much we can personally do to avoid it. Like with the app from the first video [Avoidable Inconveniences], people can just not use it. With this app, it’s like people are going to use the Internet. So, if these big tech companies decide that they do want to shove those types of ads in people’s faces, then [consumers are] not going to not use the Internet or not use Chrome or whatever it is, like, they’re going to need a really big push to boycott something that is central to so much of their own interacting with the world as it is.”

(21)

SOFIA

“When I was watching the video, I felt like, a little bit like, ‘oh, God, this is, like, plausible.’ And this does feel like—I’m not trying to be, like, techno-determinist, but I did feel like, ‘oh, gosh, is this sort of inevitable that we will get to this point in terms of location data being used as, like, in conjunction with surveillance?’”

(22)

MICHAEL

A lot of that is actually not that far off from what happens in the kind of hyper targeted advertising. Obviously it’s not reading your face yet, but if you’re searching about, you know, dealing with loss and about stages of grief and about that sort of thing, Google knows to show you ads for therapists because when [people] go to put an ad on Google, you can choose what type of searches you want. And so the people running these

things know that if you’re searching for, you know, does therapy actually work?”

(23)

TÂN

“I think it’s kind of inevitable now at this point. And I think we’ve actually been there for a while. I mean, sometimes I’m just, like, talking about something, and then suddenly an advertisement appears. I’m like, what? What the heck? Why? How?”

(24)

MIRA

“I feel like it’s bound to happen. Like, I feel like this is where we’re headed. Even the content that I get in my feeds are so personalized to me. Like, I was like, ‘oh, I’m gonna start running.’ And now I’m getting all these, like, marathon line runners and all their tips. Or I realize, ‘oh, I want to start making bread.’ And it just immediately knows once I do a few searches. And honestly, it is kind of nice. Like, on the flip side, if it wasn’t about someone mourning the loss of someone, but if it was trying to, run a marathon or get into a certain thing; I feel like this could be helpful.”

(25)

MICHAEL

“You can try fighting it, there are people who use, VPN’s or whatever to browse the Internet, and they set up their browser privacy settings to not accept any cookies or whatever they want to do. And then they just keep getting hit by captchas when they try to go to every site, and then they solve the captcha

correctly, and it’s like, here’s another one. It’s impossible to use the Internet anymore, which makes life very difficult in society today. And so I think to some extent, it is hopeless if you want to truly try and be anonymous and private online. But, I don’t know. There’s also the other side, like, there’s a reason there’s captchas on things because people do nasty things when there’s no captchas or whatever. So I do think it’s a bit hopeless to try and resist the machine, but maybe that’s okay.”

(26)

ALBERT

“[This system] only works at scale. I don’t think that as an individual in 2024, unless you’re living in a cabin in the woods and only paying for your groceries in cash, like, there’s no off-the-grid life where you’re not giving away your data that looks anything like modern life. I mean, there’s no, like, ‘oh, I didn’t sign up for Facebook, so I’m good.’ Well, you have a credit card.”

(27)

HARIS

“I’ve been having the feeling like I want to go back to 2004 where you still had flip phones or, maybe a world where I had one of those phones that you could slide out, and then you had a keyboard, but that’s all you could do. Phone texting and shitty pictures on a two-megapixel camera. I’ve been sort of nostalgic for that time. And I think other than going back to that, I don’t know how we put the rabbit back in the hat. I just don’t.”

(28)

TÂN

“And it just seems really gross that they would know this much about her. I’m also concerned that AI and the lack of regula-

tion mean that artificial intelligence would be used to scour her social media, for example, and know exactly why she’s there. Targets, you know? And so the combination of AI along with location-based services, apps, and so on, satellite GPS-type stuff, is a pretty potent way to advertise to people. Well, thanks a lot, Wyatt. Now I’m gonna go off grid for a while. Okay.”

(29)

MIRA

“Yeah, and then there’s this tension of I like it, but I’m terrified of it. But the alternatives are you either live remotely in a forest or, like... [trails off]. Yeah, that’s why I love that book, Jenny O’Dell’s *How to Do Nothing*, where you kind of have to be in the system in order to know how to change it. You can’t just remove yourself completely. But it’s hard to make meaningful impact, but, yeah.”

(30)

PAUL

“I thought that it was cool that the technology had a user ID and sort of had what seemed like user specific things. I think the concept is cool. Even if you have Google Maps or something with a way to have a profile of the driver there might be different routes based off of places that they don’t want to go near or places that have a high incidence of crashes. There are different ways that that kind of personalization can be a really cool way to handle that type of thing. The software dev side of things—I thought that it was cool that it gave you a feel that it wasn’t like a cheesy computer breakdown.”

(31)

ALAN

“Now, what do I think of it as a whole? I think it’s not terrible. I guess for running, your main goal is just to run, right? It’s cool trying a new place out. But if it keeps generating the exact same route every single time, then, that’s probably where the problem kind of occurs, I think.”

(32)

HARIS

“They could put out information, publications and stuff and say, ‘these type of street designs are the most dangerous for drivers, for pedestrians, for kids. Cities should not utilize these street designs.’ That would effectively be narrower streets, lower speed limits, frankly, less car dependent communities because people would still want to get places in a reasonable amount of time so things would get closer together. Fewer parking lots because so many fender benders happen in parking lots. So I can see that that conceivably could be a positive, but at the same time, that also means fewer people driving because the communities become smaller and more walkable. But, like here in [major city], there’s a push for 20 miles per hour speed limits across the city. That’s something that an insurance company could advocate for at a state capitol or something like that. They could say, ‘hey, these are the streets, these are the road designs, these are the type of communities that create the fewest accidents, the fewest emergency room visits, the fewest deaths’, and then those things could be rolled into how cities plan and build and renovate and refurbish existing spaces. So that’s actually kind of interesting. I’m kind of coming around again. You got me arguing both sides.”

(33)

PAUL

“Yeah, I mean, I think that that type of thing would be really cool, and there’s worse kinds of incarnations of that around, just in regards to, like, Google, and you can say, like, different route or something like that, but it doesn’t really have any kind of safety metric.”

(34)

ALAN

“Personally, I’m very open minded, and I might not use the technology, but someone else might find it useful. So for me, I think it could be cool to be built.”

(35)

SOFIA

“That actually, like, weirdly made me feel excited. I was like, yes. Because it could have framed it as, I guess this is a problem because it’s the exact same thing, but it could have been like, there’s a crime, we want you to avoid the criminal. Or it could be like, you know, keep you away from the police. And I’m like, okay, I feel much better about the second option because I think many people don’t want to be around the police because it’s potentially not safe for them. So I was like, oh, the framing of the police is not safe was really interesting. I didn’t know if that was intentional or not, but that’s kind of what I was thinking about. And then I was like, okay, that’s another kind of safety that I do.”

(36)

HARIS

“I mean, on a micro scale? It’s what I said with the actress and that the iPhone and the Apple Watch know that this is a point of vulnerability, like, a literal point of vulnerability for her and, and all of the things that could come from that and then you can see it from another perspective, right? Like, your phone might see that you’ve been standing on the side of a bridge for 30 minutes and they, you know, your phone could then alert the local police department to come send someone out to make sure you’re doing okay. Like, there’s good and bad that could come from this type of location-based tracking. And again, that second example, there could be evidence and data of your search history, you know, suicidal ideation or depression, anxiety. Like, someone could know that you’ve been searching for all of those things, and then all of a sudden they could sense increased anxiety from your watch, and then all of a sudden you’re at the side of a bridge. And so that might be a really good opportunity to send someone to intervene to help you in that moment. So, like, oh, no, damn it, Wyatt, you’ve got me arguing the other side now. So I just. [unintelligible expletive]”

(37)

MIRA

“I guess in consultancy, like, agency life, it’s like, you can make a recommendation, but ultimately it’s up to a few select high up there people to determine whether it’s like a green light or a no-go. I think a lot of things are driven by revenue and engagement and numbers, so we’re maybe motivated by the wrong things.”

(38)

MICHAEL

“In my experience, they might not even get to decide how it’s built. If it’s a very large team, some senior engineer might be like, ‘okay, we’re going to do it this way.’ And then a junior engineer does it, and then it’s done, and it’s done the way that it’s said. And of course, you can give feedback to the senior engineer as a junior engineer about like, ‘oh, you know, have you thought about this?’ But that’s very intimidating. You might be talking to someone who has been working at a company for 15 or 20 years and who is an expert at what they do. And you might be one or two years out of school trying to fight with someone like that.”

(39)

ALBERT

“As a code pusher, you know, not the guy who’s making the executive bonus checks, but the guy who shows up and makes pull requests every day...I mean, I know multiple people who’ve worked at Meta, and that’s their mindset. It’s like, if I don’t do it, somebody else is gonna, so I might as well take their money and I’ll go donate it for some good.”

(40)

TÂN

“In economics, capitalism and so on, that’s one thing. But also, like, who do we have in tech? It’s mostly white dudes. Right? Or communities that are more white adjacent, I think, like Asian communities who oftentimes will try to emulate the white communities because of internalized racism. So if that’s who we mostly have in tech, then, yeah. That’s going to affect the algorithms

that are being developed and what is not being considered as well. Right? Because you have a lot of privilege and you don't think about these issues as often and oftentimes it's not necessarily conscious to not think about racism, but if you're privileged, then you probably don't think about it as much as other people do, and that does affect things."

(41)

SOFIA

"Like IBM, they were like, 'we're not going to make [our own] facial recognition stuff.' And the employees that I worked with there were really happy about that. And then later, they started to make exceptions, but they were like, 'oh, it's not, it's not technically facial recognition.'"

(42)

SOFIA

"I guess this is not really about personal responsibility. So maybe not an answer to your question, but I'm assuming, like, to prevent certain things like this existing, I would assume we would need some policy. Not that policy can fix everything...I could see companies overriding their employees if they could justify it in some way. That's not just about making money, which I think there would be a lot of narratives about that."

(43)

MICHAEL

"The reason I brought up regulation is because I think it's difficult to make that happen. I think the people who build these systems don't often have the autonomy to say no, like, I don't want to do it this way. You know, if I was working at Google on maps and I said, no, I don't think we should do this thing that would make Google more money. I think

that wouldn't go over well; or do this thing that takes longer so that maybe someone else releases their version of this before us without—this safeguard that we could put in place that might take us three months. So educating people and encouraging the people who work on these systems to think about their impact to society is important, but I think it's not enough to actually make it, you know, not shit...I think it's going to take some kind of bigger, like a government regulation or law to have anything like that happen."

(44)

ALAN

"Nothing really. I think if one company decides, well, we can take like, [Redacted], for example. So [Redacted] is a huge AI company and their mission is to be a sustainable AI and an AI that's safe for humanity. And so they try to be very sensitive about data. They also try to be as aware as they can and be pioneers of a kind of safe AI. There will always be companies like that, but there's always going to be companies that take advantage of people. So I think it's not really going to be possible. I think it is up to policy regulations to keep those in."

(45)

ALAN

"Nobody can actually understand AI, to be honest, to its fullest, because nobody knows what it does in the background. Really. All those values that are being set are just the computer setting them. Humans have no comprehension of it."

(46)

ALAN

"I think we can definitely put regulations on all these types of things. It's just that AI and recommendation systems are just such a whole new world, right, that we haven't or the mass public hasn't really learned about until recently, so there just hasn't been that much interest or like, eyes on it. But I think now that AI is so prevalent, we will definitely see more regulations that come into play about what kind of data can be used by AI, how much access does AI have to the Internet, have to our data and whatnot. I do think these regulations are currently being discussed. I'm sure it will play a role in the future as well."

(47)

ALBERT

"We have a general idea of why it does the things that it does. I mean, at a high level, like things talk to each other inside the box and then answers come out, but there is no inspection. So, like your professional going in and looking, inspecting the different weightings and stuff that are actually written out in a file and trying to read greek and figure out what the fuck's, that's not possible...I know this is a primary concern in AI safety right now because we are developing systems and handing over control of other systems to those systems and we don't have any way of looking inside them. But fundamentally, not just technologically, like right now, fundamentally, we have no way to look inside them and understand what's happening"

(48)

TÂN

"We just don't realize it. And we gotta be in this space to discuss, like, is this okay, is this, just normal now? And if that's the case, then maybe the laws need to be

brought up to speed, because right now, I don't think that the laws have caught up with technology yet. So we're still using ancient laws for something that is extremely quick to evolve. So that's what I would be really concerned about is, like, what is being done to protect this woman's privacy here?...I think the law is going to have to change and people are going to have to focus more on developing and passing these laws. And our country, the US, is not very good at passing very quick laws. And so that's going to be a challenge. We're going to have to elect better people who are, I don't know, I guess not to be crass, but younger."

(49)

HARIS

"I don't think it's wishful thinking. I think that if you look at [other] places; the European Union has really, really strict data privacy laws and Apple and Google and all of the huge tech companies are extremely limited in what kind of data they can collect there as opposed to here. And so I think it's just like a cultural difference between the governance between the EU and the United States. For instance, the reason why Apple ditched their proprietary charging port is because of the EU. The EU said, we're not fucking doing that. Everyone has the same charging port now. And so you see that much more consumer-minded type of legislating happening in the EU as opposed to the United States, where it's kind of like, get as much as you can, give as much data as you can, and maybe our 80-year-old legislators can stay awake for a hearing with Mark Zuckerberg and then nothing happened, really. Part

of it is that the legislators are too old. They just don't get it."

(50)

MIRA

"Just higher standards for everyone involved in this ecosystem to not share your data. I don't know, I feel like, there's a lot of cross pollination that just gives a lot of strength when you have all these other bits and you can formulate a story kind of like in that film—all the recent switches and your location data and your emotional surveillance. I think together, it can be very scary. So, I guess just maybe policy. Like, we needed better policy around that."

(51)

SOFIA

"I guess it would be based on a couple of things. It could be like, 'oh, you just can't use this kind of data to advertise to people, so you can't use location based data. You can't use their certain search history, something like that, but certain search terms. There could be just banning it. They could take another approach that would probably not be as good, but doing something like, 'oh, you have to get your software audited.' I'm not even sure what they would audit it for, now that I think about it. It's not like there's concerns about bias here or fairness. Yeah, that's, I guess, probably not an approach that they would take for this particular one, but, it's the only thing I can think of and maybe it's just because I'm not well versed in policy. It's just like banning the combination of certain data for the purpose of ads."

(52)

MICHAEL

"Well, I think anyone building a system like [Avoidable Inconveniences] has a, I

mean—you're building something that is going to change the way people use public spaces. So I think it's the same responsibility you have building. Honestly, any kind of app or any system with wide usage like that."

(53)

MICHAEL

"I think some kind of regulation or norm about being honest about how true your data is and about how you use data that people give you or that you take from people. So if you have cameras out in the street and you're using them to feed into this system, people should know and understand what they're for. And, I mean, it'd be great if you could opt out, but that kind of defeats the purpose of a system like this. If you could just say, no, thanks."

(54)

HARIS

"Like in Germany—at a lot of places in Europe, I think if you do Google Maps, and then you drop the little guy down on the street, sometimes whole houses will be blurred out because people have the option to write to tell Google to remove my home from Google street view. I don't want people online to be able to see into my garage, or whatever. I don't think you have this. I don't think you have the same ability here in the US. Maybe you do, but I know that that started in Germany."

(55)

MICHAEL

"In some jurisdictions you can actually tell them to delete it under, I think, GDPR. And I think in Cali-

fornia they have laws about that as well, where you can get all the information that a company has collected about you. And I know in Europe you can require that data that's being published about you is corrected. That's not really opting out, but I guess it feels like it's on the path to that. Because if you look and you see that, oh, all this kind of creepy stuff that is being collected about you, you're more likely to not want it to be collected."

(56)

TÂN

"Yeah. Well, with the way things are going, I'm not so sure many companies would be interested in enforcing or even starting something like this. And the state should be enforcing these things, right? They should be passing laws regarding diversity and discrimination and things."

(57)

TÂN

"But are these laws effective? Are they actually being enforced? Those are also things to take into consideration, I think. Again, with like crowdsourcing, it's still the same. I mean, there could be some really good stuff there because people actually bring up issues like, well, you know, this route seems to be kind of racist because it's avoiding certain neighborhoods and other people may disagree, but at the very least, it's brought up so people can think about it."

(58)

MICHAEL

"I feel like with something like suicide or any type of really emotional problem, you should be able to opt yourself out of being advertised about that because that's probably better for society. If you're an alcoholic, you shouldn't get ads about alcohol. Or, if you're dealing with loss

from somebody, I presume, jumping off a bridge, maybe don't give that person ads to go skydiving or something."

(59)

ALBERT

"And there's a lot of friction with companies that aren't trying to do things that are malicious, where it makes things more difficult for them, or even companies that are really trying to help people. It makes things more difficult for them because of the restriction on PII. And so, there's all kinds of additional things involved, but in my opinion, it's unquestionably necessary. Just like I think people question why do we need regulations on gambling? Why do we need regulations on controlled substances?"

(60)

MICHAEL

All of those things kind of feel like policy. More so to me than like a technology. Like, it's technology trying to solve somebody using technology to solve a problem that technology can't solve. But I think that means that the solution is not a technological solution, it's a policy solution."

(61)

ALBERT

"If they want to pay me indirectly by virtue of giving me this service for free, for use of my data, I have the sensation that they have it anyway. Therefore, what does it matter? So I think there's a lot of widespread burnout and apathy in thinking about data protection."

(62)

HARIS

“If something is free, you’re not the user, you’re the product, because you become the thing. Your behaviors are the thing that they monetize and that they can collect and sell and, I don’t know how we break it because we live in a very convenient world right now, but the trade off is that we’re always watched.”

(63)

ALBERT

“There always has to be financial pressure against something like that to prevent it from happening. And so if that financial pressure can take the form of enough customer backlash, which can be helped along or created entirely by an independent effort. It can be a PR effort by a concerned individual or group who rallies support against it because that support then turns into money for the corporation, well, turns into negative money, but that’s what then makes those decisions get made that, ‘hey, we’ve run all the numbers. We found that we’re getting enough negative feedback and losing enough customers to our competition who are not doing this, that we’re going to pull this feature. We’re no longer going to be doing this thing.’ So that is still in the hands of not even just the consumers of that service, but people who are aware of it and want to convince others that they shouldn’t engage with it because they see it as being like, ‘hey, well, if it works here, then it’s going to spread more. So let’s raise awareness that maybe this is a bad thing to be doing.’ I absolutely think that that can make a difference.”

(64)

HARIS

“But you can see a company justifying that by saying, ‘hey, we’re just trying to

keep you safe. We’re trying to save you money, and you keep on taking the riskier, the riskier option. And we know it’s riskier because we have all this data that says so.’ So it’s like, the data is cold and calculating, and their use of the data is cold and calculating, again, because their motivation and their incentives are to pay out as little in claims and make as much profit as they can from your premium. And if they have the data and they see that you’re ignoring their suggestions, you know, it’s not, it’s not. It’s completely believable that a company would do that.”

(65)

MICHAEL

“If people knew that that stuff was being collected, they probably wouldn’t ever have agreed to it. And so I think knowing is the first step. And that, I think it seems like there’s precedent for regulating that sort of thing. I wish you could universally opt out, but I think that would be very difficult because, like, okay, how do I know that I’m actually opted out when I opt out? Or maybe Facebook says, oh, if you want to opt out, we have to make sure it’s you. Send us a picture of your driver’s license and then we can validate your identity. That’s going to discourage a lot of people from doing that because they don’t want to send a picture of their driver’s license to Facebook, and then I have to go and do that. With however many hundreds of companies have collected my data, that’s not really, I’m not going to do that. So I wish I could opt out. And I think if more people knew the types of things that happens with their data, more people might want to opt out.”

(66)

MICHAEL

“And so I wish there was some kind of, like you could see the price when you went to go install something, whether it’s, oh, you don’t pay in money. You pay with, you know, constant location access. And this is the, this is all the people they sell it to. This is how they use it. But I feel like that would be overwhelming because there’s so many data broker companies. If you see that there’s a list of 10,000 companies all buying your data, you’re probably going to be like, ‘well, it’s too late. I’m screwed. There’s nothing I can do about this. I’d rather just save the \$20 a year and accept my data being used for this.’ But people like free, and I think a lot of people would not pay for a lot of apps that are free.”

(67)

MICHAEL

“I think something that explicitly feels like it’s tracking you like that is a lot more invasive than something like Google Maps, that kind of does it without being explicit about it. And since it’s been sold as something that explicitly tracks you, I think that’s going to be more difficult to make required than it is to make optional.”

(68)

MICHAEL

“But if you don’t know that it’s happening, like, you know, I doubt my parents really think that much about this. They’re a lot less likely to opt out if there was an option to opt out, and they’re a lot less likely to ask for an option to opt out if they don’t even know that these things really exist like that. I guess another example of that is the car companies that were tracking trips that people took

and raising your insurance if they thought your trips were risky. And people were like, I didn’t even know that this was a system in my car. I didn’t know I could opt out of it”

(69)

ALBERT

“I think it’s very feasible. I think that the financial side of that is not inherently different than what’s happening today with presenting curated ads in digital spaces orally. You’re still letting the highest bidder decide what to show to somebody. And, I mean, that’s already wrong, I guess, is the point.”

(70)

PAUL

“Insurance companies generally want to make money. Just like with health insurance, they want to know if you’re a smoker and if you exercise. They want to know these basic pieces of information about you. Especially when you have different insurance companies that are all kind of playing the same game and offering competitive rates relative to each other. It is just a way of them offsetting the risk that they take on with a person. It’s still messed up because it’s not necessarily information that you want to give. Like in the video, she just did a quick “I accept “ at some point—it wasn’t like some big hurrah. She wasn’t able to talk with an individual or anything.”

(71)

HARIS

“I think it was just this slow accumulation of more and more capability, and with that capability came

more opportunity to profit from it and to utilize it. And then the more they utilize it, the more capabilities they got. And the more capabilities they got, the more they could utilize it. And so it was just like this kind of feedback loop that got us to where we are now. Sometimes I feel like everything is free right now, but it's because you're selling yourself, and you're selling your data about how you use those free things, and maybe it's just worth paying for stuff.”

(72)

ALAN

“I guess that's kind of how humanity kind of is—you gotta make something, right? Capitalists definitely want to put out a product, and there's always going to be a group of people that vote for a certain ideology, and there's always going to be groups of people like that. So I think it is inevitable to come to fruition.

(73)

ALAN

People want to build technology and make our lives simpler, and if there is a way for you to see a safer route where you don't have to figure it out yourself, why not have something else figure it out for you?”

(74)

SOFIA

“They could make the argument that they're trying to protect people from themselves, basically. And so it could be a very paternalistic set of values, but also like neoliberal ideas, as well. It's the concept of people having to pay different amounts for their insurance, and paying a ton for their insurance. I just feel like they would be like, ‘oh, well, it's just about profit’. And no one would actually question that because everyone's like ‘insur-

ance companies suck and they're just trying to profit’, so they don't even necessarily need to make this altruistic argument. So I guess the values' sort of neoliberal, I don't know what to call it exactly. Or capitalist.”

(75)

ALAN

“But when it comes to recommendation models, I think there's so much data being fed in that they're more or less pretty accurate nowadays. I mean, they only really get better. So as a business owner, it's definitely a great tool to use and it definitely drives revenue. So I see why it was created. I do think that the ad at the very end was overboard. Like, typically Google Chrome has limits on what it can notify you on. I'm not sure how that notification went through, but in, I guess in a perfect world, you shouldn't see those ads unless you're on websites and whatnot.”

(76)

ALAN

“It is a huge game. Typically, people don't really even know what their [recommendation] models do.”

(77)

TÂN

“Well, I mean, that's hard because this is a very capitalistic society. And if this app is going to make money then that's what people are going to focus on. So I don't know, that is like an ideological paradigm shift in terms of getting people to see this and step outside of this capitalistic framework. And that is going to be challenging because

I think a lot of people are still very much bought into this. Maybe younger people can be like, ‘no, I'm not going to buy into this. That's terrible, I don't want a dystopian app because I'm fearful of homeless people, or whatever.’ That is going to require us to have more of these conversations with people and be more explicit about, is this okay? What does this say about our society? And I'm not so sure. A lot of tech people actually have these conversations right now.”

(78)

ALAN

“If you want to deal with it and get your data tracked, which it already is, you can deal with it that way. I think for me, I see the business reason for it, and I know why they would do it, and I know why they would continue to do it, and they won't stop doing it. So I'm like, I guess I'll have to pay for it. It's not the best thing in the world.”

(79)

MICHAEL

“Well, I think the goal of that sort of system is to make money. So, if I'm an app developer making the app for Safeco, I could say, ‘We can offer you this feature. It'll cost you an extra, whatever, \$5,000 for us to build this or something.’ I'm going to want to sell it as something that works really well. Maybe I say, ‘Well, State Farm has this feature, and consumers really like it. You should have it, too. And I can build it for you and sell it to you and everything's great.”

(80)

ALBERT

“I think a system like this would get built, most likely, with good intentions.

A big technological uplift is going to require a lot of engineers working really hard on it. And you're probably not going to find a gaggle of really smart engineers who all have the same hateful worldview. It's just more likely it would be seen as a, ‘we are solving a real problem’. You know, ‘we're giving, we're improving individual safety’. And, you put yourself in the shoes of an engineer. If my spouse is walking home or my kid is walking home late at night, I want them to have an option to be safer. And, you know, we already have all this surveillance, we already have all this tracking information, I'd like to at least harness that for some good and let it help keep my loved ones safe. Right? That's an easy pitch for an engineer to work on a product for an investor to invest in a product and for a user to use it. I think in terms of the genesis of something like that—if it were to come about, most likely that's where it would start.”

(81)

ALAN

“I do see the business model behind it, where you might want location as a parameter, as a part of your recommendation model to target ads, but I definitely do think there should be. The model should be smart enough to filter things. If it knows grief or whatnot, then I think it should filter those out, which it seems like in this video it has not.”

(82)

ALBERT

“There is an intrinsic moral good there. That's where I think if your middle ground is this service is

available, and it's entirely optional to use, and it is purely safety based, sure, that's great. I think, as with many things, the malicious side then comes in when money is involved, because then all the motivations change and you're no longer concerned for the individual, you're concerned for the corporation. And so the priorities change too."

(83)

HARIS

"There's good and bad from it and I still don't like it. I don't—just like it from a visceral level—because that's the story. The second one [this surveillance will help keep you safe] is the story that they will tell as to why all of this access—they need it- and they need all this data- and they need you to have the Apple Watch- and iPhone and the tablet- and they need to have access to your search and location history. That's the story they'll tell. It's the saving of vulnerable person. They're not going to tell the story of how they make money off of all of that. And I don't want to say that the second story isn't worth it. I don't want to say the second story doesn't justify all of that other stuff, but it seems like a very strong trade off. It's like a really unbalanced trade off in my view.

(84)

SOFIA

"It would be, oh, my gosh. We routed this woman through this very dangerous neighborhood, and a homeless person assaulted her. So we gotta make sure this doesn't happen ever again. So we have to make sure we're routing people through safe areas. It's a liability, but also, we're doing a social good. And we already have all this data from the police from some other technology, so we'll just partner with them."

(85)

ALBERT

"We need to use this, instead of helping to protect people, we need to use it to protect our money. And, yeah, that's then the investor pitch—we reduce our exposure by charging people much more closely to their actual risk, blah, blah, blah, and, you know, and investor returns. And that's from the side of who is paying to create this routing risk evaluation tool? Like, that's probably what happens.

(86)

MICHAEL

"I would be curious, because I'm assuming that you used something like Google Maps or Apple Maps and I think those two companies wouldn't add something like [Avoidable Inconveniences] because they feel like the public would not like it, there'd be—I think if they labeled a place negatively, they feel like there would be backlash, like negative news articles. And I'm also skeptical that someone could make a map app that competes with Google or Apple that enough people would actually use. So, yeah, I think it's technically feasible, but the societal want is not there"

(87)

ASHIA

[This would'nt be done now because of] The politics—bigger companies may not because of the whole—borrowing what that [large tech company] employee told me—they just may be afraid of backlash from activist critics. That could be one reason they may find it too hard

to validate the accuracy of this tool, which is what predictive policing is facing as well.

(88)

ASHIA

My friends working in tech, my family, my internships, all of them are just gears in this bigger system, trying to work towards whatever the folks at the top want. Them not doing it is getting them laid off, and laying off has a lot of impacts. I know international folks who are here and if they're laid off, if they don't have a green card or citizenship yet, they have to go back. They're struggling with so many things and going back to your country. It's not that it's inherently bad, but there are cases where people have family here, their kids have started going to school here, and it's just hard to change everything, especially their education. It has very real implications to not participate in this bigger system. So even if people may want to do good, they may just not be able to. They may not even have space to think about what they want to do because they're overworked. They don't want to do anything wrong to get them in the crossfire of this and laid off.

(89)

AVA

It's the ideology of control. The more control you have, the more power you have now, and then instead of having dissent and protests, and votes, you just control everything to go where you want it to go. Just now without having any trouble.

(90)

ASHIA

For some background, I actually interned at [large tech company] on the ads safety team. So I've seen like the other side of it—trying to make ads safer. They had participants—it was qualitative—there were folks who were trying to who actually felt ads were really helpful, and I can see that I'm starting with a positive here. Just so there may be times that you need help, and maybe just because you see something you seek out help, and it helps the person in question.

(91)

SOFIA

I think people at [large tech company] perceive the Memories feature as emotionally difficult for people, but in the long term, it's better for them to address their grief head-on or something. It'll improve their well-being in the long term. And so I could imagine a good company having that narrative around certain types of ads. Yeah. Like, oh, we're connected. We're just connecting people who need help with providers.

(92)

HARIS

I don't know what would do it. I think it would have to be some sort of, like, catastrophic tide, like society-shaking scandal where we would learn how the breadth and depth of all of this data—or some horrible instance of the data being used in a really disgusting way that would get people to really [to care], it would have to shock the conscience of the nation of millions and millions of people. But I don't know what that is. I don't know what that would be.

(93)

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