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A processual exploration of Airbnb:

Facets of user governance, platform processes, and placemaking

Addie McGowan



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ABSTRACT

The sharing economy has the potential to challenge highly corporatized methods of exchange, yet its dominant players operate within the logics of platform capitalism. Burgeoning literature across the social sciences shows that Airbnb can gentrify neighborhoods, create new touristic actors and places, and embed itself in policy that perpetuates its success. But scholarship largely treats Airbnb as single, black-boxed entity, obscuring its complex system. My research both looks into and beyond this opacity to deepen our understanding of Airbnb's social, digital, and economic qualities. This thesis offers a new creative lens through which to investigate platforms as complex, evolving systems, which operationalizes science and technology studies' biographies of artefacts and practices framework (Pollock and Williams, 2009) with several empirical sociological facet studies. These generate "flashes of insight" (Mason 2011) into the entwined components of Airbnb's multifaceted system: its social, digital, and material configurations. My netnographic research draws on four years of platform walkthroughs, 26 interviews with Airbnb hosts, guests, producers, and subject matter experts, and participant observation in Edinburgh to explore facets of Airbnb's user governance, platform processes, and placemaking.

I begin by embedding a critical discussion of how Airbnb makes users and what those users make within an account of Airbnb's historical development, introducing a mutually constructive and processual relationship between users and technology. I then describe the components of its platform and the infrastructures it relies on, from the micro level entities and associations to its meso level placemarkets, knowledge graph, and platform. Situating Airbnb within the macro ecosystems of the sharing economy imaginary and the semantic web connects the parts and the whole of Airbnb with broader social, technical, and economic phenomena. This thesis ultimately attempts to theorize three substantive facets of what Airbnb facilitates. First, hosts are governed by both the platform's affordances and the relationship labor of its employees and users. This embeds Airbnb's power throughout its system, shaping the content and use patterns of the platform to support its corporate aims. Second, Airbnb's platform processes of standardization, classification, and association making order the cultural content of the platform to create the desire to travel with Airbnb. Third, Airbnb makes place in both mediated and lived experiences of Edinburgh, illuminating how its constant engagement with the city and users is an ongoing process of production and meaning making. When considered collectively, these facets make visible the processes that Airbnb facilitates and advances our broader understanding of what platforms *do*. This work ultimately contributes to our sociological platform literacy, advocates for a multifaceted approach to social digital research, and contributes to a processual turn in empirical platform studies.

LAY SUMMARY

This thesis advances our *platform literacy* by offering a deep dive into Airbnb's technological, social, and cultural qualities. Airbnb is a peer-to-peer travel platform used by over 150 million people across 191 countries. Since its founding in 2007 it has been taken for granted as one of the most disruptive innovations of our time. However, Airbnb's success has not come from its genius alone, but rather its ability to strengthen and evolve its technical, social, and cultural system. This perspective allows us to move past considering major platforms as simply the result of technological progress and toward a better understanding of the processes they rely on to sustain themselves. To do this, my research draws on four years of spending time in the platform, 26 interviews with Airbnb hosts, guests, producers, and subject matter experts, and participating in Airbnb Experiences in Edinburgh.

I first produce a history of Airbnb, showing the work necessary to make people try the concept, use the platform, and produce enough listings to make other users in turn. By considering its biography I articulate an essential Airbnb process: it must make users, and those users must produce content and relationships with each other that strengthen the platform. In conversations with Airbnb hosts, I find that Airbnb must keep order in its massive, messy, social system by ensuring that users follow certain rules and guidelines when interacting with each other and creating content. It does this with a process I call user governance, done both by the design, censorship abilities, and automated rankings built into its platform and with the help of employees who work with users directly, keeping them using Airbnb successfully.

Airbnb's platform is made up of entities, like Homes and Experiences, and their associations with each other. At a global scale, this necessitates a massive data structure called a knowledge graph, which powers Airbnb's platform and connects its information in a readable way to the wider internet. To ensure its diverse parts work well together, it must engage in several platform processes: standardization, classification, and association making. These reshape user generated content like Homes and Experiences listings to uphold the goals and logics of the company. Both user governance and platform processes work together to power Airbnb's final process of placemaking. This represents place on the platform in a way that creates the desire to travel with Airbnb. Finally, as people travel with Airbnb, certain material adaptations to homes and communities around the world are required to make guests happy and coming back to the platform, shaping physical place as well.

In short, Airbnb makes users and governs them to use the platform in certain ways, shaping how Homes and Experiences are created, ultimately making places to meet Airbnb's business goals. As other platforms like Google, Facebook, and Amazon continue to be the main providers of our digital connective infrastructure, it is increasingly important to develop an understanding of the processes, like these and others, that sustain them. My work offers an example of both how to study platforms and identify these processes that endure through change.

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*Monique Nezwazky (1932-2013), Frank Nezwazky (1925-2002),
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And to my parents, for their unwavering love, support, and example:

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Chapter 1: Introduction

What is Airbnb?

It's a way to Stay

This spacious, welcoming two bed flat
Tastefully decorated, near iconic attractions
Captivating, elegant, blending history and modernity,
Your key to the Royal Crescent Neighborhood,
Boasting Scottish cuisine, fine whisky, and friendly locals.

It is a system of technology

That puts Homes and Experiences
In relation to landmarks and neighborhoods
Creating a mutual, changing definition of them all
Expressed by each association,
Defined by their relationships to each other.

It's a platform to Experience

The Ultimate Harry Potter Walking Tour
So you can fly, apparate, and travel by Floo Powder
Around Edinburgh's must-see landmarks
Guided by a collective of Edinburgh creatives
Who offer "cultural immersion" in the city.

It is a social system, too.

Creating ties, guiding use, laying relational pathways,
Made by how its producers see the world.
Governing representations of Experiences, Places, and Homes
Input by users
Creating inventory unique to each destination
But familiar enough to be trusted worldwide.

These systems are continuously being built,
Somewhat architected, carefully planned,
Somewhat assembled, responsively manifesting,
Ever evolving to meet economic demands.
Paradoxically diffusing home around the world
To generate, extract, and contain value.

It is a governance tool, a cultural orderer.

It is a social network, a travel guide.

It is a money maker, a marketplace.

It is a knowledge producer, a placemaker.

1. Processual Questions

In *Processual Sociology*, Andrew Abbott advocates for a lyrical approach to social science (2016). He outlines several requirements for this. One is an engaged stance of the writer, both emotionally invested in the subject and located in a proactive current consciousness. Another is a mechanical approach to writing that invokes imagery and experience over narrative. The heart of his lyrical sociology is an “insistence in the moment” (p. 104), which is a tool to maintain a “dispositional quality of the object of analysis” (p. 114), describing what something is and how it is experienced in its present state without regard for historical context. Over time, Abbott posits, attending to these moments sustains a processual ontology. Freezing instances of the present can help us stabilize, and therefore begin to better understand, patterns of processes that occur throughout change. The vignette above attempts a lyrical introduction to Airbnb’s state of being; a “poetic version” of my “appreciation of the transitional” (Abbott, 2016, p. 78). Throughout my research, I kept a lyrical journal to articulate creatively what I was finding interesting, puzzling, and challenging about Airbnb. The above excerpt comes from this journal, structuring verbatim descriptions of two Airbnb listings in Edinburgh, a two-bedroom flat and a Harry Potter walking tour, in conversation with a description of the current technical and social systems that power these listings. This creates snapshots in time of present front-end manifestations of Airbnb’s back-end processes, both in Abbott’s lyrical sense and in the quite literal documentation of descriptive place on the platform at the time of this writing.

From the earliest stages of my research, my data suggested that Airbnb has a much more dynamic and multifaceted nature than considered in existing literature. Although its size (over 150 million users) and its breadth (operating in 191 different countries¹) have motivated burgeoning social science research, its depth of offerings and pace of change have been relatively unacknowledged. It is most famously considered a platform for travel accommodation, where hosts can list their homes for guests to rent. However, hotels are also available to book through the platform, as are more traditional bed and breakfasts, entire vacation homes and shared rooms in myriad property types from “earth homes,” “castles,”

¹ Source for both statistics: <https://www.matthewwoodward.co.uk/work/airbnb-statistics/>

“islands,” “shepherd’s huts,” “boats,” and “treehouses.”² In addition to offering places to stay, Airbnb offers “things to do” in the form of Experiences. Users can book offline and online activities “hosted by locals” around the world, including traditional touristic experiences like walking tours and cooking classes and more alternative ones like pottery workshops, nature runs, and Instagram photo shoots. Airbnb’s interface offers Neighborhood Guides in certain locations and digital Guidebooks created by hosts, which create listings for landmarks, restaurants, parks, and countless other entities on the platform. Products like Airbnb Plus offer managed interior design and photography services to hosts. Communities of Superhosts, or users categorized as meeting the highest hosting standards of the platform, create and share collective use practices. This world of offerings varies by location and is always evolving. Change is such a quality of Airbnb that when CEO Brian Chesky was asked to contribute to the book *The Airbnb Story*, he replied by saying, “the problem with a book, is that it’s a fixed imprint of a company at a particular moment in time... Where everyone thinks Airbnb is today, is where we were two years ago” (Gallagher, 2017). Expansive dynamism is the nature of the platform yet this quality, and its consequences, is under explored in research.

Despite opening with a poetic exploration of “What is Airbnb?” this thesis is not written lyrically; rather, I experiment with how this approach can offer insight alongside other practices. Although Abbott advocates for lyrical sociology to reject narratives, the following chapters instead take a largely narrative approach. They include a chronological account of the history of Airbnb, stories told with multidimensional datasets, and explorations of how my research subjects are embedded and defined by their broader social contexts. I argue both the lyrical and narrative can work together to explore complex phenomena over time (Watson, 2022). Therefore, my work sustains a *type* of lyrical rigor by leveraging insight from fixed moments to understand longer term processes. I deeply describe present interactions between users and technology, producers and data, and myself and an “Airbnb-i-fied” Edinburgh. At times these moments are charged with emotion, and I explore them with a lyrical appreciation. Experiences of user frustration with the interface, betrayals of trust between hosts and guests, delight with the corporate culture of Airbnb, joy as people meet from around the world, and anger toward

² These categories and many others are listed on Airbnb’s UK homepage at the time of this writing in June 2023.

the proliferation of keyboxes throughout Edinburgh enliven my discussion. I position these as manifestations of wider social contexts while still finding insight in the “sociology of moments” (Abbott, 2016, p. xii) they bring to my work.

Asking “What is Airbnb?” became the first step to my broader research aim to investigate how Airbnb shapes cities. Determining what Airbnb’s components *are* and how they are in constant flux then opened pathways to explore what they *do*. My central argument is that to research just *what is going on* (Mason, 2017) with platforms we must consider the dynamic processes that make them and that they facilitate. My funding’s invitation for this work is to “*examine, evaluate and explore the complex and dynamic behavior of the urban system using innovative and diverse methodological approaches.*” Specifically, this project acknowledges “sharing city economy systems and their attendant technologies change at a rapid pace and inevitably influence cities³,” and recognizes that this is likely to remain the case for the foreseeable future. I investigate Airbnb’s role in shaping cities, exploring what its technology does, who is involved, and how this is experienced. By focusing closely on the case of a particular platform⁴, my work surfaces broader questions about the interplay of platforms and place. It explores how we as social scientists can study and theorize change, process, relations, and the social shaping of technology within such a lively context.

This research puzzle applies to the wider platform society (van Dijck, Poell and de Waal, 2018), situating Airbnb as an exemplar for unpacking processes at play in the major platforms of today: Google, Facebook, Amazon, and others. Methodologically, *how* can we examine the fast-paced changes that not only define but sustain the evolution of platforms? Practically, *what* are the processes of these changes that form patterns worthy of analysis, and will these patterns endure through future change? Do foundational structures or relationships emerge as stable, or do they reconfigure constantly? Sociologically, *who* gets to make these platforms, populate them with and determine their “data,” and therefore craft their corresponding epistemological processes? Theoretically, *how* does this generate knowledge about the “real world,” what are the qualities of this knowledge, and how is this knowledge encountered and experienced in our

³ Excerpt from the Share City project prompt, my specific project within the Future Cities group of funded projects

⁴ I will define and explore my use of the term “platform” in subsequent chapters

platformed lives? While these questions are too big to explore exhaustively in this thesis, I consider them an orienting set of considerations in which to situate my work on and with Airbnb.

The remainder of this introduction will review the current state of Airbnb literature, acknowledging the opportunities it leaves open for a processual contribution to our understanding of Airbnb and other platforms. It will then introduce the subsequent chapters, which continue engagement with thematic literature and theoretical discussions alongside my findings. This begins in Chapter 2 by embedding a critical discussion of how Airbnb makes users and what those users make into an account of Airbnb's historical development, setting up a mutually constructive and processual relationship between users, producers, and technology. This historical grounding of how Airbnb came to be contributes a biographical account to platform scholarship that makes a case for what a historical consideration can help us understand about other platforms as well. Chapter 3 then describes Airbnb's technical components, from what I call the micro level of its entities and associations, to the meso level structures of its placemarkets, knowledge graph, and platform. It then situates Airbnb within the macro ecosystems of the sharing economy imaginary and the semantic web to connect the parts and the whole of its system with broader social, technical, and economic phenomena. Breaking Airbnb down into these sociotechnical components contributes to our overall platform literacy by detailing its specific parts in sociological terms and then connecting them to the wider contexts in which Airbnb operates. Chapter 4 details my multifaceted research design which operationalizes a biographies of artifacts and practices framework (Pollock and Williams, 2009) with facet methodology (Mason, 2011). I argue that these can work together to help scholars make sense of what platforms do from a rich sociotechnical perspective. I use this framework to strategically structure my pilot studies and ongoing netnography which included platform walkthroughs, participant observation, and interviews.

This thesis then theorizes three substantive facets of processes that Airbnb's system facilitates. First, Chapter 5 explores how Hosts are governed by both the platform's design and affordances and the relationship labor of employees and unpaid users, offering empirical depth to our understanding of how platforms enact governance over users both socially and

technically. These practices embed Airbnb's market power throughout its system, shaping the content and use patterns of the platform. Then, Chapter 6 deeply describes Airbnb's platform processes of standardization, classification, and association making that work to order the cultural content on the platform to create the desire to travel with Airbnb. This contributes a detailed understanding of the implications of mundane classification work done by platforms and their producers which is currently missing from platform studies scholarship. Finally, Chapter 7 discusses how Airbnb makes place in both mediated and lived experiences of Edinburgh, illuminating how its constant engagement with the city and users is an ongoing process of (co)production and meaning-making. This chapter draws from each previous chapter to show how user governance and platform processes work together to shape place both on and off the platform, contributing a holistic sociotechnical understanding of Airbnb's impact on cities. When considered collectively, the facets explored in Chapters 5, 6, and 7 make visible Airbnb's system as a case that advances our broader understanding of what platforms do.

2. State of Airbnb Literature

2.1 Overview

My research questions stand on the shoulders of an expansive body of scholarship that explores Airbnb's impact, controversies, disruptions, and user practices. This interdisciplinary literature shows that Airbnb can, among other things, gentrify neighborhoods, create new touristic actors and places, and involve itself in policy development that perpetuates its success. This section will begin by giving an overview of the current state of literature focused on Airbnb and outline the prominent themes that emerge from its inception in 2010 through 2023. While Airbnb literature does not constitute a field in itself, reviewing a body of scholarship that studies the platform specifically creates a multidisciplinary amalgam that offers insights into how it is more widely considered. It also offers a foundational understanding of its qualities and components.

I first discuss the development of Airbnb literature, including a review of several literature reviews to provide a thorough but manageable look at Airbnb scholarship to date. I then explore several themes to carve a path for my own work: literature focusing on Users,

Airbnb Experiences, placemaking and commodification, impact on cities, regulation and power, and methods. Subsequent chapters put these themes in conversation with broader literature that grapples with the social shaping of technology (Chapter 2), platformization and digital knowledge production (Chapter 3), science and technology studies and sociological methodology (Chapter 4), platform users and governance (Chapter 5), the sociology of standardization (Chapter 6), and placemaking (Chapter 7). I argue that existing research largely treats Airbnb as single, black-boxed entity, obscuring its complex system, and point out theoretical and methodological opportunities for my work left open in the literature. I conclude with an outline of the following chapters.

Early Airbnb scholarship began in the 2010s within business disciplines, including a case study (Lassiter and Richardson, 2012), a look at its local economic impact (Byers *et al.*, 2013), and an analysis of the construction of its brand from a marketing management perspective (Yannopoulou, Moufahim and Bian, 2013). As its use and notoriety grew, academic research kept up, and publications in hospitality and tourism, urban studies, and information technology rose from 2015 onward (Guttentag, 2019). Shortly after sociological approaches to researching Airbnb took off as well, from an ethnography of host home commodification (Borm, 2017), to its economic sociological considerations (Ključnikov, Krajčák and Vincúrová, 2018; Arcidiacono, Gandini and Pais, 2018), and attention paid to its role in platformization (van Doorn, 2019; van Dijck, Poell and de Waal, 2018). Most scholars consider Airbnb a poster child of the sharing economy, focusing on it above other peer-to-peer or short-term-rental sites (Guttentag, 2019). The majority of research on Airbnb is conducted in Europe and North America, by researchers in disciplines ranging from planning, geography, and tourism. As I started this research in 2019, the previously limited Airbnb scholarship across the social sciences began to surge (Andreu *et al.*, 2020). By the time of this writing, I've considered several hundred articles that address Airbnb directly. To help navigate this growing landscape of work, I first discuss various Airbnb focused literature reviews in tourism and hospitality to introduce and contextualize macro findings.

The first dedicated Airbnb literature review was conducted by an early academic adopter of Airbnb research, Daniel Guttentag (2019). A hospitality and tourism scholar, Guttentag's work is the first peer reviewed research focused on Airbnb (Guttentag, 2015). His 2019 literature

review articulates six emerging topics in peer reviewed scholarship dedicated solely to Airbnb: guests, hosts, the platform's impact on destinations, hospitality, regulation, and the company itself. In another review, Andreau et al. use a bibliometric natural language processing approach to understand themes across studies (2020). They reiterate the topics articulated by Guttentag but trace their development in phases: Airbnb research began with a focus on the sharing economy, consumer behavior, and interactions between guests and hosts, and then progressed to explore value co-creation and impact on hotels, then began to consider impact on destinations in 2019. Yet another review by Hati et al look at 282 documents that explore research on Airbnb stakeholders from 2009 to 2020, identifying unbalanced power dynamics between guests, hosts, employees, communities, competitors, and policymakers (2021). They found guests have the most influence over both Airbnb as a company and hosts as a user group directly because they drive revenue via bookings and are afforded power over hosts in the review system. As hosts and Airbnb employees strive to keep guests happy and coming back to the platform, their influence is compounded within other stakeholder relationships with communities, competitors, and policymakers. They conclude that the relationship between Airbnb and communities and policymakers is "one of conflict rather than one of cooperation," ultimately implicating guests as influential in this conflict (Hati *et al.*, 2021, p. 15). This macro look at power dynamics of stakeholders provides a foundational understanding of the relationships between social groups, and my research adds a technological consideration to our understanding of these dynamics.

More recently, Negi and Tripathi give an updated review of Airbnb hospitality and tourism literature in 2022, adding further research on user motivation and framing insights to better help Airbnb succeed against traditional hotels. They also include studies from outside the American and European context, including India, Singapore, China, Korea and Taiwan (Negi and Tripathi, 2022). In 2023, Ding et al. published the most recent Airbnb literature review to address challenges of the "sheer volume" and "diverse themes" of the current state of research (p. 14). Their contribution leverages text mining techniques, enabling them to consider and synthesize a massive body of 1021 articles published between 2015 and 2021 in journals ranging from hospitality, travel, tourism, business, and management disciplines. They argue that

this method gives a more thorough overview than the qualitative reviews that came before, but they still found similar themes to Guttentag's 2019 work, including host-guest interactions, motivations to use Airbnb, and user experience. Which journals they chose to include in their sample impacts their findings, and they observe that "articles in non-hospitality and tourism journals cover a more diverse range of topics, reflecting the interdisciplinary nature of Airbnb research" (Ding, Niu and Choo, 2023, p. 15). Nevertheless, their work reiterates that the majority of Airbnb scholarship from 2019 – 2023 continues to focus on the same themes, which I consider an invitation for more diverse research.

2.2 Airbnb Users

A large proportion of Airbnb research is concerned with users, or the platform's hosts and guests. Big picture findings from this work provide a helpful introduction to Airbnb users and platform dynamics. A major focus of tourism, management, and hospitality research is what motivates hosts and guests to use Airbnb, finding low prices for guests and income potential for hosts to be the primary motivators (Ding, Niu and Choo, 2023). In addition to economic reasons, perceived authenticity and brand values are also strong motivators, with several studies finding social interactions and perceived cosmopolitanism to be important to some hosts as well (Guttentag, 2019). Another group of research explores how guests choose which Airbnb listing above others, finding value, trust, ratings, quality of photos, and Superhost accreditation to be factors (Guttentag, 2019). Further work shows Airbnb users to be loyal to the platform, with several studies demonstrating repeat use after the first booking (Guttentag, 2019).

Scholarship recognizes several types of Airbnb Homes hosts, mostly professional hosts who own more than one listing and "co-habiting" hosts who live in the space they Airbnb (Farmaki, Stergiou and Kaniadakis, 2022), who I call residential hosts throughout this thesis. Only a small number of studies focus on Experience hosts (Capineri and Romano, 2021; Norum and Polson, 2021), which I will discuss shortly. Hosts are mostly consistent in how and to whom they market their listings, for example hosts with shared rooms target younger, more budget conscious travelers and those with larger, higher end listings boast of cleanliness and amenities (Guttentag, 2019). Studies find that pricing patterns correlate to host reputation and specific

practices. For example, listings with more and positive reviews are usually priced higher, and attributes such as number of bedrooms and bathrooms, proximity to city centers, photo count, and if the host is a designated “Superhost” correlate to higher prices as well (Guttentag, 2019).

A growing body of more sociological research dives deeper into these patterns, looking at the experiences, practices, strategies, and identities of hosts. Themes of commercializing the home (Roelofsen, 2018) and balancing front- and back-stage presentation of self with paying guests (Roelofsen and Minca, 2018; Wilkinson and Wilkinson, 2018) are a focus of this work. Within this context, processes of “host responsabilization” drive a shift in hosting identities away from home-sharing sentiments and toward “re-defining themselves as hosting practitioners and entrepreneurs” (Kaniadakis and Farmaki, 2022, p. 17). The moral identity of hosts shifts with their typology, seemingly motivating their hosting practices; for example, ‘non-professional’ hosts identify with strong moral behavior, and professional hosts are connected to the “immoral” practices that cause Airbnb controversies (Farmaki, Stergiou and Kaniadakis, 2022). These hosting behaviors have been found to have performative qualities within wider contexts. For example, Christensen finds that as Hosts develop their use practices, which include complying with certain guidelines, subverting others, and engaging in workarounds, “socio-institutional frameworks develop along such performances,” co-producing legislation, taxation, and new community dynamics (2022, p. 965).

A handful of scholars critically explore the way Airbnb produces and governs hosts, which I will explore in depth throughout this thesis. The commodification of home, community, and bodies are central concerns of this work. Bucher et al. explore how Airbnb, along with other “sharing economy” platforms, “actively encourages” users to perform emotional labor (Bucher, 2016). This is done through a variety of governance tactics, from platform designs and affordances to community guidelines. Bruni and Esposito take an actor-network perspective that traces how “users are not just configured and produced, they are progressively infrastructured in that they are turned into elements of the platform itself” (2019a, p. 227). This, they argue, creates a cycle of production and domination that sustains the logics of the platform. Using Superhosts as a focus, Roelofsen and Minca reflect on ways the platform mechanizes affective labor, care, and hosting practices to make a category of ideal hosts,

paradoxically privileging “calculative rationality” (2018, p. 171). Research on user governance extends these digital sociological themes. From an accounting perspective, Leoni and Parker discuss how Airbnb exercises user governance via compliance checks in the form of platform surveillance, building economic power worldwide (2019). Tornberg’s work on Airbnb has led to his theorizing of urban digital platforms as tools of power, challenging notions of user “self-organization” (Törnberg and Uitermark, 2020) and exploring their new affordances of social regulation (Törnberg, 2023). My work explores these themes of user governance empirically with a look at micro-interactions between users and Airbnb, contributing a deeper understanding of the experiences and mechanisms of this process in Chapter 5, and connecting governance beyond an experience of users and into a process that shapes the content of the platform in Chapters 6 and 7.

Guest research to date is more limited, less critical, and primarily focused on investigating their purchase and repurchase intentions, satisfaction with, and loyalty to the platform (Hati *et al.*, 2021). Guttentag, Smith, Potwarka, and Havitz surveyed over 800 tourists online to investigate and segment their motivations for using Airbnb (2018), finding the highest motivation was its “low cost,” followed by “location convenience” and “household amenities.” Lalicic and Weismayer conducted another online survey of 557 Airbnb guests that linked their perception of authenticity in Host interactions to their satisfaction with the platform (2018; 2017). These two studies suggest that cost and convenience motivate people to *use* Airbnb, but that warm welcomes and performances of hospitality by Hosts lead to Guests feeling *satisfied* with the platform. Nathan et al find that value-for-money was (once again) the top predictor of people’s intention to use Airbnb, followed by “social influence,” or how their social relationships think they should use the platform (2020). These limited studies on Guests invite my thesis’ exploration of the platform’s role in their trip planning, expectations of place, and experiences since arriving, which I discuss in Chapter 7.

Several studies explore how trust develops between users and Airbnb, primarily from the perspective of how to coopt this trust to grow users and therefore perpetuate platform success. Guttentag points to a body of research that has explored Airbnb as a company, finding patterns in its branding and storytelling that evoke emotional attachment to using Airbnb,

promoting a sense of belonging and building this trust with users. These themes are both celebrated within business and tourism studies and criticized in sociological literature (Guttentag, 2019). Research in business and tourism studies recognizes that for Airbnb to grow, it needs to develop trust between users to not only keep them returning to the platform but to fundamentally change their travel behavior. Barbosa et al. ran trust experiments on thousands of Airbnb users to develop a framework to measure how trust develops between users and to advise on which platform affordances can deepen trust between users (2020). Another study by Zhang et al. uses a large-scale text analysis of host descriptions on Airbnb and how they impact user trust and ultimately purchase behavior, finding hosts who cite family ties, good service, openness and a positive tone see more bookings (2020). Song et al. extend research on trust and Airbnb to other stakeholders, including residents and governments, arguing for a more multifaceted approach to understanding trust development in the sharing economy (2023). These studies aim to understand how Airbnb and similar platforms can build deeper trust, and therefore more loyal and satisfied users. I include them to point out the non-critical nature of most Airbnb research, drawing attention to the need for scholarship to interrogate ethical and social issues associated with trust building. This thesis contributes a critical view to the limited scholarship on Airbnb guests, and I interrogate Airbnb's focus on building trust further in Chapter 2.

Several scholars have focused on important themes of discrimination, racism, and social inequalities amongst Airbnb users. The earliest study to articulate Airbnb's digital discrimination is Edelman and Luca's Harvard Business School case (2014). They found the same affordances that facilitate trust between users, such as personal details and profile photos, lead to booking discrepancies along racial lines. In a dataset of New York City listings, they found Black hosts charge 12% less than their non-Black counterparts for equivalent properties, contributing to a racialized division of earning potential on the platform. Expanding and updating these findings, Jaeger and Slegers analyze over 96,000 listings across 24 cities in 14 countries, finding that listings of non-White hosts are priced 2.5%-3% lower than similar listings by White hosts (2023). Of non-White listings, those hosted by Black users are priced the lowest when controlled for type of listing, at 5%-7% less than White listings. In addition to perpetuating racial pay gaps and

therefore life chances, it has been found that racial discourse on Airbnb maintains colonial cultural dynamics. In looking at Airbnb listings in New York City several years later, Tornberg and Chiappini used computational discourse analysis to compare how White and Black users market and review listings in majority Black neighborhoods (2020). They found that White hosts promote their listings “through a form of colonial discourse: exoticizing difference, emphasizing foreignness, and treating communities as consumable experiences for an outside group” (p. 553). White guests then perpetuate this discourse, reviewing their stays and experiences as adventurous in these areas. Tornberg and Chiappini therefore position Airbnb as simply the next player in colonial tourism of the “urban frontier.” While my research does not explore these themes directly, it unpacks Airbnb’s power dynamics and governance in a way that deepens our understanding of these platform processes.

2.3 Airbnb Experiences

While most Airbnb scholarship focuses on the accommodation offerings of the platform, only a small body of research explores Airbnb Experiences, which this thesis contributes to in depth. As mentioned earlier, Experiences are guided activities, such as tours, workshops, dinners, and more hosted by “locals” and bookable by guests through the platform. These are a culturally significant offering of the platform that should be considered when exploring Airbnb’s impact on placemaking and relationship with users. From a tourism perspective, Pung et al. explore motivations for booking Airbnb Experiences, finding guests are drawn to their “authentic” nature, novelty, and “sharing economy philosophy” (2019). During the COVID-19 pandemic, Airbnb launched Online Experiences in April 2020 to provide “a new way for people to connect, travel virtually and earn income during the COVID-19 crisis⁵”, inspiring and enabling several academic studies during lock downs around the world. Zhu and Cheng found Online Experiences to be a source of entertainment and a temporary replacement for in-person tourism during pandemic times (2022). Adding meaning to our understanding of this phenomenon, Cenni and Vasquez found that food oriented Online Experiences provided a sense

⁵ Quote from Airbnb’s announcement of Online Experiences on April 8, 2020, accessible here: <https://news.airbnb.com/enjoy-the-magic-of-airbnb-experiences-from-the-comfort-of-your-home/>

of “virtual travel,” connectedness, and community to participants during COVID (2021). Norum and Polson theorize how Online Experience hosts became “interactive digital placemakers” during the pandemic via their affective labor and narrative practices (2021). They discuss how Online Experiences contribute to the creation of “placemarkets” in the experience economy, a term which I will leverage and expand on in subsequent chapters. I further develop this term, extending it to help us understand an output of the placemaking processes of Airbnb’s technical platform in Chapters 6 and 7. This contributes to our wider understanding of how the platform’s logics reproduce place boundaries that are experienced by residents and visitors in tangible ways.

In 2021, Capineri and Romano conducted the first and only to date social science exploration of in-person Airbnb Experiences, aiming to investigate themes of place, commodification, supplemental income, and qualities and practices of Experience hosts. They employed “geographic information system, text mining, and social network analysis” to investigate where Experience listings are across Italy, what types are offered, who is hosting, and their price points (p. 3). They found Experiences to expand Airbnb’s geographic, economic, and social footprint well beyond city centers and homeowners, and they aim to raise awareness of Airbnb’s growth strategies as important areas for future research. As mentioned, I explore Experiences extensively in several chapters of this thesis through a variety of methods including participant observation, Experience host interviews, and platform walkthroughs, contributing an in-depth exploration of this under-researched yet prominent product of Airbnb.

2.4 Placemaking and Commodification

An emerging theme in Airbnb research is its role in placemaking, which has provided a fruitful and continuously developing source of insight for my own exploration of how Airbnb shapes place. Some studies focus particularly on the de-centralized framing of place online in relation to previously centralized destination management organizations (DMOs) and typically touristic central areas. In 2018, Stors and Baltes “argue that urban tourism space is (re-)produced digitally and collaboratively on online platforms such as Airbnb” (p. 1), illustrating this shift. Through the descriptions of Airbnb listings in two Berlin neighborhoods, they

conceptualize Airbnb hosts as co-producers of new tourist destinations, contributing to a “discursive image construction of a neighborhood” (p. 16) in opposition to how place is presented in DMO material about Berlin. They further implicate hosts in placemaking beyond descriptions, finding that hosts advise guest behavior and activities, ultimately influencing how “space is enacted” as well (p. 24). Tamajon and Perez add Airbnb to the research on an array of social media platforms that decentralize tourism recommendations and narratives from DMOs to user generated content (2022). However, they find that rather than promoting a “new” form of tourism, this content simply perpetuates the “expansion of mass tourism... camouflaged as an authentic experience” (p. 389). Similarly, Celata, Capineri, and Romano explore how most Airbnb reviews in Florence focus on proximity to the city center, rendering peripheral listings in less touristic areas “invisible” (2020). They theorize this co-produced “tyranny of distance” as contributing to the “further shrinking of the tourist city,” retreating into traditionally touristic and affluent areas, calling into question Airbnb’s discourses of traveling “like a local” (p. 129).

Some studies articulate Airbnb’s potential for facilitating sustainable urban regeneration and meaningful tourism. In a study of Naples, Cerreta, Mura, and Muccio find that Airbnb plays a role in producing the “Neapolitan imaginary” by making “waste properties” attractive to tourists (2022). They argue this process encourages investment in areas undesirable for locals, framing it as an opportunity for urban regeneration that does not displace residents, elevating the entire city. Paulauskaite et al. found social connections with residential hosts lead to an “authentic” touristic experience for guests facilitated by meaning made in social relationships (2017). This offers a deeper look at the “right” type of hosting⁶, which I will explore more in Chapter 5. As discussed throughout this section, this requires emotional labor from hosts and could lead to exploitation and emotional burdens, although that was not a focus of their study. On a micro level, Steinmetz uses place theory in her autoethnographic exploration of living in an Airbnb in Tel Aviv, adding her positive experience of making home in someone else’s home and feeling the sense of belonging she felt to the conversation on Airbnb placemaking (2022).

⁶ This is a common phrase used by residential hosts, found both in my interviews and in more casual conversations with friends and family who host.

Other research points to Airbnb's ability to displace residential narratives with touristic ones, commodifying "the local" while promoting contradictory anti-tourism rhetoric. Tornberg offers the concept of "platform placemaking," exploring "Airbnbification" as how the platform's descriptions and review discourses frame and reshape areas of New York City (Törnberg, 2022). This reshaping stages cosmopolitanism and "authentic" place as consumable, devaluing the "cultural and spatial capital of long-term residents" in the process (p. 1). Roelofsen and Minca point out Airbnb commodifies "the local" by claiming to reject mass-tourism and instead offer "hosts" who are encouraged to enhance the local experiences of guests (2018). They challenge the rhetoric of "community" that the platform uses to quantify performances of users and recognize the "superhost" as an algorithmically awarded accolade within a biopolitical framework. They problematize Airbnb's narratives about "community," "travel," and "home" that pervade the social interactions on the platform and infiltrate the rhetoric of users with their findings that they merely perpetuate commodification of place. Extending our understanding of "home-sharing" to the neighborhood, Spangler points out the emotional labor required of neighbors who are not Airbnb hosts in sustaining the platform's success (2020). He found Airbnb leverages the "human infrastructure of emotional labor as a technique for value production," contributing to feelings of displacement and exploitation amongst residents who live near Airbnb listings (p. 575).

Further exploring the tension between Airbnb's promotion of alternative travel and commodification of place, Xie and Young investigate the contradictions between Airbnb's marketing distinctions from traditional hotels (2021). They find Airbnb listings that tout hotel-like features such as instant booking and generic interiors have superior financial performance over listings that are less professional, undermining the anti-hotel narrative of Airbnb (2021). Bringing an interior design perspective to the discussion, Loder explores the "condition(ing) of the interior" as digital intimacies via photographs of Airbnb listings, articulating a "datafication of the interior" of homes (2021, p. 283). These studies exemplify what Monahan calls the "platformization of infrastructure" that normalizes the "market- over rights-based orientations to city spaces and services" (2021). Airbnb's contrasting positive and negative placemaking abilities show its impact is highly dependent on both local circumstances and Airbnb hosting

typologies, and I take these contexts and complexity into account in my research. Chapter 7 contributes the concept of the Airbnb Utility and Airbnb Imaginary to articulate the tensions present in its role in placemaking found in my empirical research. I also extend the discussion of Airbnb's impact on place by focusing on both how it frames place digitally and requires material adaptations of place offline as well. I discuss placemaking as the culmination of Airbnb's other processes, enabled by how it makes users, governs users, standardizes, classifies, and makes associations between its content. My work therefore implicates the wider sociotechnical system of Airbnb in its placemaking capabilities.

2.5 Impact on Cities

A wide range of research explores Airbnb's disruption to housing markets and the hospitality industry (Ding, Niu and Choo, 2023). Many studies find that Airbnb is a catalyst for converting long term housing to short term rentals, causing higher rents and lower availability of housing for residents (Ding, Niu and Choo, 2023; Cocola-Gant and Gago, 2021; Robertson, Oliver and Nost, 2022). Cocola-Gant was the first to sociologically look at Airbnb's role in perpetuating cycles of tourism gentrification, first in Barcelona (2016) and then in Lisbon (2021). He found that tourism gentrification begins with converting long term housing into short term rental units, displacing residents. This process is rarely reversed, as the proliferation of new touristic accommodation then makes new urban conditions that support visitors, not residents. He calls this process "collective displacement," (2016) inviting more research into the social injustices it creates (2021). In addition to recognizing Airbnb as an agent of gentrification, scholars also acknowledge varying additional other local factors across markets (Weissenrieder, 2023). For example, Stewart articulates the dual processes Airbnb facilitates of the loss of affordable housing via neighborhood gentrification and the preserving of "elite enclaves" by making them available to tourists when not in use by residents (2022). She finds the cultural representations in host neighborhood descriptions to promote "authenticity" in gentrifying neighborhoods and "safety" and "family values" in affluent neighborhoods. The positive correlation between rising housing prices and prevalence of Airbnb listings is found in cities around the world, from Madrid (Marque *et al.*, 2023) to New Orleans (Robertson, Oliver and

Nost, 2022), Sydney (Gurran and Phibbs, 2017) to London (Benítez-Aurioles and Tussyadiah, 2020).

Beyond gentrification, Airbnb is linked to a variety of other positive and negative impacts on neighborhoods. Research finds Airbnb's economic contribution to cities can be greater than hotels because of its longer-term and more geographically dispersed placement of visitors to cities (Guaita Martínez *et al.*, 2023). Interestingly, patterns of solidarity have been found between residents who themselves use Airbnb to travel and guests staying in their neighborhood and neighbors who host, leading to a higher perception of community well-being amongst Airbnb users (Suess *et al.*, 2021). A survey of residents living in high Airbnb concentrated areas in Lisbon found they had positive attitudes toward tourist interactions and Airbnb's role in supporting business and job creation (Petruzzi *et al.*, 2020). However, the same study reported negative perceptions as well, citing noise issues, loss of local "authentic" culture and traditions, and (like other research) rising rent prices.

Other studies also attribute declining livability and general degradation of cities' cultural identity to Airbnb's perpetuation of over tourism in traditionally non-touristic areas (Weissenrieder, 2023). Scholars find this process permeates touristic areas as well, converting city centers into non-residential zones at snowballing rates. For example, Carvalho et al. use Porto as a case to argue Airbnb is the main agent of urban change in the city, its prevalence of listings in the city center causing residential services to relocate and be replaced with touristic ones, making the area undesirable for residential life (2019). Monahan's exploration of community resistance to Airbnb and other short term rental platforms paints a vivid picture of how they can negatively impact communities, inspiring location action to curb their growth through regulation (2021). Martin-Martin et al. point out that economic sustainability relies on social sustainability, arguing that "guaranteeing social cohesion and the permanence of a fixed resident population in tourist neighborhoods is essential" for the health of a city (2023). Considering the myriad ways Airbnb impacts neighborhoods is important to the economic health of cities, and I will explore this within the context of Edinburgh in Chapter 7. This interesting body of scholarship contributes an understanding of *what* Airbnb does to cities, and

my work unpacks the social and technical details of its system to articulate *how* its components work together to create this impact.

2.6 Regulation and Power

There are numerous studies that explore Airbnb's relationship with regulation, many finding that the company works with local policy makers to shape it in the company's favor (Guttentag, 2019). Several scholars recognize Airbnb's power in influencing regulation (van Doorn, 2019) and perpetuating platform capitalism (Pasquale, 2016; Srnicek, 2017), contradicting narratives of the sharing economy (Spangler, 2020; Smigiel, 2020) and using it as a case to explore platform urbanism (Barnes, 2018). Continuing her critical work on Airbnb, another piece by Roelofsen argues that platforms like Airbnb rely on governments to create and enforce the local conditions in which they can operate (Roelofsen, 2022b). Leveraging empirical evidence from Sofia, Bulgaria, she connects how Airbnb's relationship with regulation perpetuates existing socio-economic disparities in the city by directing more resources to desirable areas. Although not focusing solely on Airbnb, van Dijck, Poell, and De Waal were early in using it as a supporting example of how "platforms construct new value regimes and economies," fundamentally shaping how various social, political, and economic actors relate to each other (2018, p. 24). They show how Airbnb, along with other platforms, embed themselves in civic practices, shaping regulation to favor their use, growth, and success. They contribute a general discussion of platform mechanisms such as datafication, commodification, and selection to connect technical processes of platforms to their successful infrastructuralization in the platform society. In Chapter 3 I explore the relationship between infrastructure and platforms (Plantin *et al.*, 2018) and how each perspective is helpful in my exploration of its processes with a close look at Airbnb's qualities and components Chapter 6 offers an empirically detailed look at Airbnb's specific technical affordances and data structure, furthering our understanding of this with an empirical case.

Van Doorn was the first to position Airbnb as a "regulatory entrepreneur" that has come to power via its relationships with regulatory bodies, and works to shape not only urban housing and tourism policy but also "the very fabric of city life" (2019, p. 2). His work urges

scholars to consider Airbnb's institutional nature and take seriously its participation in local policy making. To do this, van Doorn traces the regulatory power of Airbnb from its origin to where it is now, demonstrating the need to explore platforms histories, biographies, and evolution to understand their current role in society (2019). He extends this exploration with a deeper look at how Airbnb engages in local partnerships to further entrench its power in specific locations (van Doorn, Mos and Bosma, 2021). To operationalize this, Smigiel outlines how Airbnb "combines a complex mix of socio-spatial imaginaries and politico-economy materiality" to gain structural power "as a new urban institution" (2020, p. 253). Like other critical scholars, he deconstructs myths around Airbnb's positioning as a "sharing economy" player, which I will discuss further throughout this thesis. My work adds empirical depth to these explorations of Airbnb's power, expanding these concepts beyond policy and regulation to micro, meso, and macro processes of the platform in Chapters 3 and 6. The long-term analytical view afforded by a biographies of artefacts and practices (Pollock and Williams, 2009) approach to studying Airbnb is particularly fruitful in my contribution to this conversation. Furthermore, structuring my strategic facet studies (Mason, 2011) that explore specific social and technical entry points enables a comprehensive yet manageable exploration of Airbnb's power via the processes it facilitates.

2.7 Approaches to Researching Airbnb

With multiple user groups and stakeholders and a plethora of publicly available data, research on Airbnb spans a diverse range of both quantitative and qualitative methods. Guttentag 2019 found over half of Airbnb research (61%) used quantitative methods, and many studies regardless of research methods used primarily publicly available data from Airbnb. Text mining for computational analysis (Törnberg, 2022), social network analysis (Capineri and Romano, 2021), and data scraping (Stors and Baltes, 2018) are commonly used to see large patterns of relationships, descriptions, and reviews on the platform. Other studies rely on generating data from users, including surveys (Guttentag *et al.*, 2018; Lalicic and Weismayer, 2018) and qualitative singular methods such as interviews (Kaniadakis and Farmaki, 2022; Spangler, 2020). Although each of these approaches give a helpful orientation to researchers

and a foundational understanding of the platform, I advocate for expanding the use of qualitative and experiential methods in conversation with each other. These approaches can provide insight in platform use and attend to the dynamic mix of stakeholders and components of the Airbnb system.

A small number of studies recognize the complexities of Airbnb and seek to understand them holistically through a mix of methods. Celata, Capineri, and Romano acknowledge the need to go beyond quantitative analysis toward a qualitative exploration of the meaning of reviews to truly theorize their power (2020). Perez-Vega et al. compare how various stakeholders in London and Barcelona “perceive and understand” Airbnb in each city (2019). They do this with a mix of interviews, participant observation, and focus groups, finding that this “triangulation of different methods” gives a needed holistic approach to studying Airbnb. Their article focuses more on the challenges of research rather than the findings and offer suggestions on how to navigate these problems in future research: offering rewards for participants, building first a familiarity with the area before reaching out to stakeholder groups, and understanding that the first interviews with elites will be the hardest to schedule (Perez-Vega, 2019). Makkar and Yap use ethnography to explore the blurred line between social relationships and commercial motives in the host and guest relationship (2022). They found the combination of informal discussions, participant observation, in-depth interviews, and the consideration of archival data to be an effective way to explore tensions between sharing and commercial interests present in Airbnb.

Using a rich combination of InsideAirbnb geodata, online questionnaire responses, residential focus groups and diaries, and auto-ethnography, Rozena and Lees are able to articulate certain intricacies, emotions, and rhythms of “living with” Airbnb in London (2023). Their focus on daily life finds micro evidence of how Airbnb supports gentrification, and they advocate for more research to be done that focuses on everyday lived experiences of long-term residents of areas with a high prevalence of Airbnb listings. Carvalho et al. also leverage publicly available quantitative data, this time from AirDNA, putting it in conversation with qualitative analysis of policy documents and the “economic and social dynamics” of Porto (2019). Monahan explores the “platformization of infrastructure” by looking outside specific platforms, toward

the way communities resist and therefore (re)shape the meaning of them as exploitative and detrimental to local cultures (2021). Within a communication studies framework, he conducts an expansive platform ethnography that analyzes documents, generates maps, observes community resistance and interviews key informants in “industry, government, academia, community groups, and non-governmental organizations” (p. 948), generating a broad view of local responses to Airbnb in San Francisco, Austin, and Boston.

Other studies leverage singular methods to consider an array of stakeholders, recognizing the need to consider various perspectives. Cheng et al. highlight the importance of considering a spectrum of stakeholders in understanding the impact of Airbnb as each bring their own complex interests and experiences to our understanding of this phenomenon (2022). Wilson et al. also recognize that the “complex and ever-shifting” nature of platforms like Airbnb necessitate a broader look at stakeholders involved in debates, as well as Airbnb’s corporate strategy, to build an understanding of the underlying debates in specific locations (2022). I also advocate for a multi-stakeholder approach. My research interviews Airbnb Homes Hosts, Experiences Hosts, past employees of Airbnb, Guests, and industry experts to explore the various facets of socio-technical construction and encountering of Airbnb.

Only a limited numbers of studies consider the user interface in their research. Roelofsen and Minca are some of the few Airbnb scholars who spend time in the platform as users, evaluating the “Airbnb machinery” and how its “technologies and calculative rationalities” produce the Superhost firsthand (2018, p. 171). They conducted a long-term qualitative analysis of Airbnb’s native platform over 3 years, noting how the platform changed and updated during their fieldwork. They also actively engaged as guests and hosts on the platform and interviewed hosts and guests throughout their travels. This approach enables them to explore a tension that emerges from how the platform configures hosts and guests, on the one hand promoting community and belonging, and on the other privileging individual experience via quantifying, ranking, and putting users in competition with each other. Their in-depth research is unique in Airbnb scholarship and invites further development. I take inspiration from their platform walkthroughs, interviews, and long-term approach, arguing that this site of user experience is best understood and analyzed in situ. They encounter micro

interactions between nudges, messages, and suggestions in the platform that enable their theorizing of users and the technology. I extend their work with a deeper exploration of user governance within a social construction of technology framework, centering the platform in interviews with Hosts and my own netnographic experience. Along these lines, Pettersen advocates for considering the platform affordances of “sharing service” platforms and gives a framework for considering the features, design, and business goals of platforms (2018). Bruni and Esposito also spend time in the Airbnb interface, putting their firsthand experiences in conversation with Host interviews (Bruni and Esposito, 2019a). They argue that scholarship has not considered the co-production that occurs between users and technology, advocating for more work to be done in this space. My work answers this call with a deep consideration of Airbnb’s user interface, not only exploring it in platform walkthroughs, but using it as an interview elicitation tool. I argue key insights can be missed by considering data that has been removed from a platform’s user interface.

Finally, only a few studies confront Airbnb’s evolution and changes over time. Celata, Capineri, and Romano discuss the limitations of their work with static Airbnb data, recognizing how the platform is dynamic and ever changing (2020). They argue the limited scholarship done on Airbnb Experiences is both a specific pathway for further research and a reminder of the constant change and evolution of the platform (2021). Cheng et al. focus on Airbnb’s tourism processes over outcomes, arguing that this offers a more critical and sophisticated perspective (2022). Kaniadakis and Farmaki develop a “hosting practice architecture” to articulate and organize the process hosts go through to define themselves as “hosting professionals,” recognizing their current findings as a “snapshot in time” (2022, p. 16). They articulate a need to consider other offerings and products that constantly emerge and develop within Airbnb, like Plus and Experiences. After his review of studies, Guttentag gives several methodological suggestions for future research, positing that “it is time for more researchers to tackle their research questions in more ambitious ways” (2019, p. 834). He argues further work is especially important because of how quickly Airbnb changes, furthering the case for my processual approach.

My work introduces a multifaceted, processual approach to exploring and theorizing Airbnb by operationalizing a BOAP (Pollock and Williams, 2009) initiative with facet methodology, (Mason, 2011) which I will discuss in depth in Chapter 4. I argue this research design contributes important empirical depth and critical contextualization necessary to articulate Airbnb's enduring sociological processes over time. Beyond taking a novel approach by combining both research orientations, this multi-level, temporal perspective advances our understanding of Airbnb beyond its current configurations to enable a view of its enduring processes. The scholarship just reviewed gives a collective, foundational understanding of Airbnb that enables my work to build from. From this firm footing, I advocate for a processual approach to platform research that advances our understanding of how these systems operate in sociologically significant ways.

3. Toward a New Socio-Technical Exploration

As just discussed, there is no shortage of scholarship on Airbnb. To date, its major focuses are on users, placemaking and commodification, impact on cities, and regulatory power. A collective look at the wide-ranging literature on Airbnb shows it has power in several layers that work together, from micro interactions between hosts and guests, to varying meso level influences across markets, to macro brand power and widescale disruption to areas around the world. Because of this, literature demonstrates it is an important phenomenon to understand. However, most of this scholarship considers Airbnb as a single entity, perpetuating the opacity of its complex system; this leaves questions unanswered about how it came to be, how it is produced and continuously advanced by Airbnb employees and users, how it enacts governance over users, how it puts its user-generated content to work, and how it is encountered by end users and other systems that it connects to. There is no sociological research that directly explores the production of Airbnb, its history, or its technical architecture, which my work examines in detail. Science and technology studies would therefore consider Airbnb to be "black boxed" in literature, its technological components left unconsidered thus far in social research (Pinch and Bijker, 1984). My research contributes an exploration of Airbnb's sociotechnical system to advance our understanding of its social, digital, and economic components. It attends

to the social conditions that shape and influence it as well as its internal workings. In other words, I take seriously the relationship between the organization's social and technical subsystems in its production and workings (Griffith & Dougherty, 2001). In doing so I am able to connect its previously disparate qualities and fill in the gaps of how its processes work together to: make users, govern those users to use the platform productively, configure and create images of home and place in its knowledge graph, represent digital place and necessitate material adaptations of place.

A useful point of departure toward studying Airbnb as a sociototechnical system is to approach Airbnb through an infrastructural lens, used to both look inward at its components and to also explore its connectivity and integrations with other systems. This invites us to consider what infrastructures *do*. Scholars point out they *enable* things to happen throughout a system, are “fundamentally relational,” emerge “for people in practice,” and are made of “both static and dynamic elements, each equally important to ensure a functional system” (Bowker *et al.*, 2009, p. 99). Once infrastructures are in place, they become invisible and therefore taken for granted (Bowker and Star, 1998; Bowker and Star, 1999; Graham and Marvin, 2001; Barns, 2019), much as black boxed technologies do. Much of the literature just reviewed takes the infrastructural components and context of Airbnb for granted in this way, with a few exceptions that my work builds on. This thesis therefore contributes a more holistic understanding of what Airbnb does over time at various sites and levels, demonstrating what an infrastructural perspective can show us about platforms (Plantin *et al.*, 2018) with the detailed case of Airbnb. I extend the notion that Airbnb infrastructuralizes users and their data (Bruni and Esposito, 2019b; van Dijck, Poell and de Waal, 2018) by further analyzing how the content they create for the platform is shaped by mechanisms of user governance. I then position this as the first step in a system of content production and circulation that is used to frame place via the processes I explore. This adds depth to the scholarship that explores how Airbnb embeds itself into existing governmental and digital infrastructures to ensure its durability (van Dijck, Poell and de Waal, 2018; Roelofsen and Minca, 2018; van Doorn, 2019) by understanding the details of its processes.

Crucially, an infrastructural approach opens up pathways to identify the processes Airbnb facilitates. What is under-explored in the literature is Airbnb's always evolving technological platform, its expanding features and affordances, and the history and context of its company. Considering these elements and contexts adds a deeper platform literacy of Airbnb that I argue can be applied to platforms more generally. An infrastructural approach helps to better understand what Airbnb facilitates, how it continues to emerge as people use it, and consider how both its changing and static components work together. Beyond filling a gap in the literature, I argue that deepening our understanding of how platforms shape our social world begins with a consideration of their socially shaped nature and *processes* as part of broader sociotechnical systems (MacKenzie and Wajcman, 1999). Therefore, my work sits in the fruitful site of entanglement between the technology itself, the cultural ethos it co-constructs with users and producers, and its relationship to the material city. These social, cultural, and technical relationships engage in ever-unfolding processes, its constant change requiring further methodological and theoretical considerations to stabilize and understand them.

In addition to offering a processual and multifaceted approach to platform studies, this thesis contributes several specific offerings to the current state of Airbnb scholarship. First, it provides a critical history of the how Airbnb began and developed into the phenomenon it is at the time of this writing. Chapter 2 looks at the social becoming of Airbnb, embedding a critical discussion of how it makes users and what those users make within a chronological biography of the platform's development. It asks why Airbnb came to be the way it is, and who has been involved in its development. It offers a close, historical discussion of how Airbnb constructs productive users in conversation with a review of scholarship from science and technology studies (STS), which sets up my conceptual framework that Airbnb's relationship with users is co-constructive. It puts this literature in conversation with market studies and economic sociology scholarship (McIntyre, Srinivasan and Chintakananda, 2020; Pfothenauer *et al.*, 2022; Cooman, 2022), asking what it takes for platforms to make enough users to be profitable and gain dominance on a global scale. This calls attention to the labor needed to sustain this growth and the power this generates for platforms. It also considers how Airbnb configures users (Woolgar, 1990) to be productive for the goals of the company. The aim of the chapter in my

boarder argument is to introduce Airbnb as a sociotechnical system, therefore rejecting technological determinism, and exploring what people take for granted about how it began, grew, and is sustained (Hine, 2015). This chapter works as both a standalone contribution to Airbnb scholarship and a theoretical background for my subsequent chapters.

If Chapter 2 sets up the social dynamics of Airbnb's system, Chapter 3 introduces its technological components and context to our understanding. It describes the components of the platform, from its micro level entities and associations to its meso level placemarkets, knowledge graph, and platform architecture, to the macro cultural and technical ecosystems of the sharing economy and the semantic web. It asks what Airbnb is on each of these levels by reviewing existing literature for each layer of analysis, building a foundation from which to explore what Airbnb *does*. This contributes an understanding of Airbnb's sociotechnical system that has yet to be considered in social science scholarship, grounding subsequent discussions in a tangible framework of the parts and whole of Airbnb. Together, Chapters 2 and 3 situate my empirical work within the "reciprocal relations between technology and the social context" (Williams, 2019, p. 139) of Airbnb. They collectively contribute a theoretical context for my research while giving specific background on the biography of Airbnb's development and its technical components.

Chapter 4 offers a novel set of methodological considerations for how we can study platforms like Airbnb. It introduces a new creative lens through which to investigate platforms as complex, evolving, sociotechnical systems, which operationalizes STS' biographies of artefacts and practices framework, or BOAP (Pollock and Williams, 2009), with empirically grounded sociological facet studies (Mason, 2017). These generate "flashes of insight" (Mason 2011) into the entwined components of Airbnb's system over time - social, digital, and material – while attending to the change and complexity that remains largely unexplored in existing scholarship. Combining these two research orientations contributes a helpful framework for platform studies scholars that is greater than the sum of its parts. I consider the biographies of both Airbnb's *technological artefacts* (including its interface, design, products, and marketing materials) as well as its *social practices* (such as the ways it makes and governs users and frames cultural content to sustain platform growth) to work together to create a temporal backbone for my

empirical work. I then consider each facet of Airbnb's sociotechnical system, from users, to producers, to the platform itself, as an invitation to an empirical study along Airbnb's timeline. This combination structures an iterative and integrated approach to my netnographic exploration. Adding new empirical depth and breadth to Airbnb scholarship, my work draws on 4 years of platform walkthroughs, 26 interviews with hosts, guests, producers, and subject matter experts, and participant observation in Edinburgh to explore Airbnb's user governance, platform processes, and placemaking from a variety of angles and perspectives. Configuring this range of methods with a BOAP sensibility and a facet approach in both my studies and analysis helped me be strategic throughout my investigations.

Expanding existing literature on Airbnb's governance with empirical detail, Chapter 5 looks at how Airbnb, on both a technical and social level, guides and shapes the actions and practices its users. I position Airbnb's user governance as a critical tool in the platform's sociotechnical system, enacted in two ways: technologically by the platform's design and affordances, and socially by the relationship labor (Shestakofsky and Kelkar, 2020) of Airbnb users and employees. This contributes a detailed account of micro interactions between users, the platform, and Airbnb employees to our understanding of how and why Airbnb governs users. This chapter also offers a new, detailed look into Airbnb Experience hosts not seen yet in Airbnb literature. I put their practices in conversation with those of Homes hosts, attending to the differences and similarities between these two offerings and contributing a broader understanding of Airbnb user experiences. By centering the user interface and findings from platform walkthroughs in my conversations with hosts, I offer a contextualized understanding of how Airbnb's governance has evolved and how it, over time and around the world, orders and shapes the platform's "user generated content." This creates a foundational understanding of Airbnb's content as not purely user generated, but co-created via its system of technical and social governance that will be built on in subsequent chapters.

Shifting focus from users back to technology, Chapter 6 looks at how Airbnb's processes of standardization, classification, and association making order and shape the cultural content on the platform. This contributes a new articulation of Airbnb's technical components and system as well as an empirical case for understanding similar processes beyond Airbnb in the

world's largest platforms such as Google, Facebook, and Amazon. For the first time in Airbnb scholarship, I offer insights from interviews with people who engineer and architect Airbnb's platform, who I call producers. This practice further interrogates the technical processes of the platform in an "infrastructural inversion" (Bowker and Star, 1999), exploring the political and social dynamics behind the platform's design and architecture. Conversations with producers keeps the "how" in conversation with the "why" understood by the builders of Airbnb, bringing a deeper understanding to the power of platforms and an empirical "social" consideration to what the "technical" does.

Finally, Chapter 7 looks at ways Airbnb makes place, both digitally and materially, at the neighborhood, home, and street level. It extends the rich literature on Airbnb's role in shaping place by synthesizing insights from Home and Experience host interviews, guest perspectives, participant observation, a study of keyboxes and Airbnb resistance in Edinburgh, and platform walkthrough data. It explores placemaking as a socially shaped process in which space is turned to place via the meaning made when encountering it. It conceptualizes Airbnb's governance and platform processes as an ordering of place, connecting this with broader tourism orderings (Franklin, 2004), arguing that its personalization processes position space for individual consumption. I introduce the Airbnb Imaginary and Airbnb Utility as a framework through which to understand the tensions in these placemaking processes, arguing they work together to commodify place. A discussion of material interventions in the home illuminate how Airbnb changes the meaning and configuration of home for hosts. It closes with a discussion of how keyboxes shape city streets in Edinburgh, both aesthetically and as physical catalysts for top-down placing making policy and urban planning. This chapter articulates the levels in which Airbnb makes place, the tensions that exist in its system, and connects the previous processes explored in this thesis (making and governing users, standardizing, classifying, and making associations between data) to their final purpose: to configure place to be consumed.

I conclude by arguing that describing Airbnb as a sociotechnical system provides pathways to explore and understand its processes, complexity, and dynamism. My historical and contextual exploration of Airbnb helps us better understand the "why" behind its current manifestations and user experiences. This approach enables me to argue that for Airbnb to

exist, it must continue enabling the dynamic processes my chapters name and explore. It must always make productive users and govern those users to uphold the standards of the platform. It must always make user generated content workable in its broader system by standardizing, classifying, and making associations between its entities. These processes work together to make places desirable to travel to in the platform, enticing users to book Homes and Experiences. A final discussion applies these findings from Airbnb's case to the other platforms we use regularly, arguing that it advances our overall platform literacy, framing my contribution as an argument for processual platform research.

Chapter 2: What Makes Users/Users Make

We structure our worlds with technology; we perform our reality with it. Technologies, in turn, perform us. They are agents of social change and of social stability, helping to produce self and society. As such they are forms of order and forms of life. (Matthewman, 2017, p. 175)

1. Introduction: Airbnb's Relationship to Users

I begin my exploration of Airbnb with a foundational consideration: its relationship to users. I argue a crucial component of asking “how Airbnb” is understanding its rise to prominence, considering what it has “done” across points in its development. Central to this is the necessity for it to “make users” at an ever-accelerating pace. This chapter asks *how* Airbnb makes users and the role these efforts, and those users, play in making Airbnb the prominent market force it is today. Notions of cultural capital, material politics, and the sociology of technology take center stage in exploring this question, unpacking how Airbnb's dominance over other “home sharing” platforms is not a “simple a ‘technical matter,’ but is shaped by an array of economic, cultural, and political factors” (Williams, 2019, p. 142). To do this, this chapter tells the story of how Airbnb came to be, putting it conversation with a discussion of user studies scholarship and the existing limited sociological research done on and with the platform, contextualizing it within the theoretical project of the social shaping of technology (MacKenzie and Wajcman, 1985). It introduces a discussion of corresponding sociological points of departure that I will investigate empirically in later chapters: governance, politics of technology, and cultural production. Ultimately this is an exploration of how Airbnb makes users, and what those users make in turn: content, value, and platform durability.

The specificities of Airbnb are important to this story, but also craft a more widely relevant example of how users, not just the technical or social components of a technology, matter in technological production. Airbnb is a rich case of how a particular technology has attempted to harness, capitalize on, order, and present back cultural content and values on a global scale with its users. Moving away from the binary of technological determinism vs social determinism (Grint and Woolgar, 1997), I explore Airbnb beyond the assumption that its

founding idea and technological innovation alone were enough to make it the force it is today. To become viable and continue to exist, Airbnb has and always will need to make users and employ them to sustain its growth. This chapter introduces this process of co-creation, exploring the strategies and resulting phenomena facilitated by the relationship and power dynamics between Airbnb and its users. The title of this chapter, “What Makes Users/Users Make,” relies on a legacy of scholarship that has evolved over the past half century that grapples with society’s relationship with technology. It situates my research within a theoretical framework that considers users in constant production, both in that they are being made by, and in that they co-construct, the technology they use (Woolgar, 1990; Oudshoorn and Pinch, 2003; Hyysalo, Jensen and Oudshoorn, 2016; Oudshoorn, 2019; Kline and Pinch, 1996). Articulating how Airbnb produces users by making, scaling, and retaining its user “community,” is critical in understanding its socio-technical qualities over the platform’s lifespan, which this thesis explores throughout.

The narrative backbone of this chapter is journalist Leigh Gallagher’s *The Airbnb Story* (2017), written with access to and cooperation from Airbnb’s founders and communication team, and supported with some of the most powerful media muscle in the United States. This book offers an insider perspective into the platform’s approach to making and harnessing users from 2007-2017. I use *The Airbnb Story* to ground my theoretical discussion in tangible examples and provide ample prompts for critical discussion. I update its discussion by including additional source material from news media, blog posts, my own gathered archival screenshots from Airbnb, and the company’s press relations published after 2017. This chronological look at how Airbnb evolved offers an opportunity to unpack Airbnb’s “normative, epistemic, and material configurations” (Pfothenauer *et al.*, 2022, p. 21). Considering the “biography” of Airbnb attends to its “technology/society relationship at multiple levels and timeframes” and positions myself to analyze its multidimensional character from different angles (Pollock and Williams, 2009, p. 15). I articulate social, emotional, and experiential qualities of various moments from this story to keep a lyrical appreciation (Abbott, 2016) alongside my narrative account and attend to Airbnb’s processes of becoming.

My source materials offer in-depth examples of the way the media and popular culture legitimate and celebrate technological innovation through “myth and ritual,” evidencing what Pfaffenberger calls “technological dramas” (1992). He theorizes that such “dramas” unfold in three types of discourses and actions surrounding new technologies, and this framework is helpful in my consideration of Airbnb’s relationship to users. The first is “technological regularization,” in which a new technology is considered to have the aim and ability to redistribute existing power dynamics in society. Narratives surrounding this new technology are “cloaked in myths of unusual power,” positioning its use as “fundamental to the preservation of civilization and human dignity” (Pfaffenberger, 1992, p. 285); throughout this chapter, I will discuss how technological regularization is a driving strategy for how Airbnb makes users. Two challenges to this then unfold in the drama: discourses of “technological adjustment” and “technological reconstitution.” Actors who are threatened by the new technology engage in “adjustment” strategies which attempt to undermine, alter, or appropriate the social conditions that invite and perpetuate its use. “Reconstitution” takes place when discourses create counter artifacts and use contexts for the new technology, for example Fairbnb’s⁷ appropriation of Airbnb’s model within an alternative, “socially just” context. These components of Airbnb’s “technological drama” give a theoretical framework for understanding its efforts to, and struggles with, making users over the years.

I argue that Airbnb, like many other platforms, is sociological to its core; it was created with social and cultural capital and its technology is built to make and order users to uphold the values of its founders. This is not inherently sinister; those values are viewed by many as advancing a positive social agenda of “belonging,⁸” tolerance, and redistributed power among users. However, this chapter leverages theories of usership and technology to call into question the true democratizing qualities of the platform, introducing ways it builds and maintains social power through cultural ordering that creates strict governance over its users. The question of this chapter, what makes users/users make, therefore implies an ontological starting point that

⁷ Fairbnb is a peer-to-peer short term rental site that calls itself “the cooperative platform that puts people over profit by reinvesting in the communities” Source: fairbnb.coop, accessed July 2023

⁸ Airbnb uses the word “belonging” throughout its brand, both externally in marketing materials and internally amongst employees.

“digital platforms bring into existence” communities of users (Shestakofsky and Kelkar, 2020, p. 864) and make those users productive in turn. Airbnb does this by making and perpetuating the myths surrounding its values and use, designing and scaling users to achieve and benefit from networked effects, and infrastructuralizing users via persistence strategies, and ultimately creating a culture of usership.

I begin this discussion with Airbnb’s ‘fabled’ origin story to call attention to the mythmaking, social, and cultural capital leveraged in making the platform’s first users. I then explore how Airbnb intentionally designs users to produce the ideal content and use practices to perpetuate its growth via strategies like relationship labor and human-centered design. A discussion of how investment power necessitates accelerated user scaling through a variety of means deepens my argument that Airbnb must always be in a state of growth and accumulation to maintain itself. I conclude with a discussion of how Airbnb makes users feel they “belong,” and as a result infrastructuralizes them, within the Airbnb “community” both socially and technically. Identifying and discussing the processual strategies of making users leads us to understand and stabilize the *why* behind many of Airbnb’s evolving offerings and developments. Over the fifteen-year lifespan of the platform, the need to make users is the foundational motivator for almost everything Airbnb does. This discussion offers an important first step to building a deeper platform literacy of both Airbnb and other systems that dominate the platform society (van Dijck, Poell and de Waal, 2018).

2. Making Airbnb’s First User

There has been no shortage of romance constructed around Airbnb’s origin story over the years (Aydin, 2019; Fairs, 2014; DesignStudio, 2014; Shah, 2018; Gallagher, 2017). Airbnb was born out of financial desperation by two designers. Its inception was driven by the founders’ newfound adult independence: their San Francisco rent had just increased, was due, and they did not have enough money to pay it. What they did have were several air beds, an extra bedroom, and budding social capital in the young design scene. It was 2007, and the United States was beginning to realize the start of the largest financial crisis since the Great Depression. The International Council of Societies of Industrial Design/Industrial Designers

Society of America (ICSI/IDSA) World Congress was convening in San Francisco, and hotels in the area were expensive and overbooked. Brian Chesky and Joe Gebbia threw themselves into an idea: position their unused bedroom and available airbeds as a “new way to connect at this year’s IDSA conference,” promising roof access for socializing, the intellectual stimulation of a “design library,” and the kitschy cheek of “motivational posters” to keep guests engaged (Gallagher, 2017, p. 8). The pair hired a friend to code a basic website for the idea and convinced the conference leaders to back their quirky venture by posting it on related blogs. Eager to support one of their own, the design community circulated the site, endorsing it as “like Craigslist & couchsurfing.com, but classier,” and the first three guests of Airbnb booked for \$80 a night (Gallagher, 2017, p. 7).

Chesky and Gebbia had a problem – impending eviction – and needed a quick way to make money to pay their rent. A group of other designers also had a problem – lack of an affordable way to attend the conference – and needed a place to stay. Chesky and Gebbia’s idea to connect these two problems and solve one another was supported by the those in power at the IDSA; ultimately it was this connection made the first user. While home “sharing” websites already existed that could solve both sets of problems, none had the creative allure, “class” as the founders put it, or endorsement of the design community’s elite. “We didn’t want to post on Craigslist because we felt it was too impersonal,” said Gebbia in 2009 interview⁹. Pfaffenberger argues that designers hold power in several ways: they are often members of higher social classes, their trade requires an education acquired through resources and access, and they entrench this power in the technology and artifacts they design (1992). It was leveraging their power by positioning their apartment as not just a place to stay, but a way to connect with the design elite, that made Gebbia and Chesky’s offer appealing. What made the first Airbnb users was not the sheer utility of the arrangement, but the social conditions surrounding it.

In an interview with Airbnb’s first guest, Amol Surve, Gallagher asks him to share some of his noteworthy experiences from this initial stay with Chesky and Gebbia (2017). When Surve

⁹ “Travel Like a Human with Joe Gebbia, Co-founder of Airbnb!” Published August 26, 2009: <https://allentrepreneur.wordpress.com/2009/08/26/travel-like-a-human-with-joe-gebbia-co-founder-of-airbnb/>

arrived at the apartment, he was pleased to see that Gebbia looked the part of a designer, “wearing an aviator hat and some big trendy glasses,” which put him at ease; he was being hosted by like-minded people (p. 9). Alongside his airbed was a welcome pack that included a public transport pass for San Francisco and loose change to give to the local population living without homes¹⁰. As Surve settled in to get work done in his new shared space, he noticed Chesky and Gebbia working on a presentation for their idea, which featured him as their first guest. “It was ironic,” he told Gallagher, “I was both in the living room and in the slide deck at the same time” (2017, p. 10). Surve went on to recall how the founders propped him up around the conference as their “product” and asked him to comment on his user experience as the first Airbed and Breakfast guest. They showed him around other parts of San Francisco too, taking him for their favorite tacos and bringing him to iconic, design-related sites in the city. Their first user was made, not yet through a technology platform, but through the social novelty of the arrangement, and the framing of it as quirky, innovative, and giving access to cultural capital.

This story introduces a power dynamic between host and guest that would be key for the success of Airbnb: Gebbia and Chesky capitalized on their local perspective, the cultural content of San Francisco, and their relationship to a culturally elite community. They positioned themselves as the gatekeepers of place, making both their neighborhood consumable and the conference accessible for their guests. As a result, they made \$1,000 in that week from Surve and two other guests (Gallagher, 2017). In turn, the guests gained admission to a social world through the lens of two notable actors within it, for cheaper than the market value of more traditional forms of accommodation. Another dynamic emerged here as well: the dominance exerted by Chesky and Gebbia over their first user, from perpetuating their status as insiders to the conference as well as San Francisco, made Surve to a “user” within a community of people.

Airbnb’s technology is an afterthought in this origin story, simply a site link that could be circulated to articulate the initial offering. The real hook was the social context and conditions of this arrangement, specifically the offline hosting practices of Gebbia and Chesky and their cultural capital in the design world. This begins an understanding of Airbnb as a “total social

¹⁰ The irony of Airbnb’s inception happening as a response to rising rent, and seemingly lighthearted acknowledgement of San Francisco’s population living without homes, is an ironic precursor to the impacts the company would have on neighborhoods around the world in the coming decade.

phenomenon... that marries the material, the social, and the symbolic in a complex web of associations” (Pfaffenberger, 1988, p. 249). To scale and grow their offering the founders needed to build a technological platform that could reproduce the cultural power of their idea. This required a platform that facilitates the digital representation of place in all its lively sociality, that standardizes and commodifies place and to builds trust through facilitating relationships. The platform needed to make users – both guests and hosts – act in the spirit of Airbnb’s origin story. Central to this was making users who would both populate the platform with knowledge of place and pay to access it. To deepen our understanding of technology, we must “think beyond the lone genius inventor, include considerations of power, capital, and the ability to persuade, look to the positively reinforcing interactions that sustain sociotechnical systems, and appreciate previous events...and their potentially reinforcing nature” (Matthewman, 2017, pp. 22-23). The remainder of this chapter attempts just that, introducing the sociotechnical biography of Airbnb. I first discuss how Airbnb designs productive user and then articulate the role of investment in the imperative to scale those users. I then challenge some assumptions of networked effects and concluding with a discussion of the cultural power of making users “belong.”

3. Making Productive Users

This section explores the foundational process that powers the ongoing co-construction of Airbnb: *making productive users*. By productive users, I mean users that produce value in various ways for the company. This begins with Airbnb’s efforts to configure users (Woolgar, 1990) to not only adopt its technology but generate “the right” type of content in their use of it. It continues by centering users in the design process, making users productive by both appropriating their feedback and ideas back into the development of the platform and using this narrative in promotional materials to perpetuate its “technological regularization” (Pfaffenberger, 1992). Finally, Airbnb guides users to interact with each other in certain ways, building relationships that generate trust, revenue, and ultimately infrastructuralizes them into the platform (Bruni and Esposito, 2019a) generating a social structure that sustains platform use

from their relations with each other (Crossley, 2021). To begin, I return to where we left off in Airbnb's story.

3.1 Configuring Users Who Generate Content

Airbnb's origin story has solidified itself as a darling of techlore, which provides a sustaining mythology for the platform. However, in the two years after Gebbia and Cheksy hosted their first Guest, they would struggle to make and retain even a meager few hundred users. Without users en masse, the platform was not seen as viable in the eyes of investors. Thus began Airbnb's initial era of making the platform's users. This is not a new obstacle in the history of technological innovation; a major concern of those creating new technology is determining who will use it and what the realities of that use will be (Oudshoorn and Pinch, 2003, p. 2). This goes beyond the need for technologies to recruit users and into the need for technologies to *configure users* to ensure a widespread and positive reception of them (Grint and Woolgar, 1997). Continuing the technology/user production cycle, STS scholarship has convincingly shown that just as "technologies need users" to be viable, those users also "play an active role in all phases of technological development, from design to implementation and use" (Oudshoorn 2019, p. 163). In the early years of the company, Airbnb began several strategies to make and configure users to sustain the growth of its technology: relationship labor, product design, and a continued pursuit of user centered design. Several of these strategies have become solidified as enduring practices the company still uses today (as Chapters 5, 6, and 7 will discuss), implicating users, producers, and technology in the co-production of the platform.

User scholarship offers a plethora of examples of how new technologies make users to be viable, with a particular focus on historical innovations. Established well before the proliferation of digital platforms, user research focusing on analog technologies offers an initial understanding for how technology requires the production of users, and how those users (re)produce technology by using it on their own terms. Oudshoorn and Pinch (2003) give the example of George Eastman's groundbreaking introduction of the affordable roll-film camera, and his biggest problem: he had no users of it. Eastman had to reimagine what camera use could be to a different group of people, breaking down their barriers that photography was for

elite, wealthy groups alone; “he had to redefine photography and the camera” to the public (Oudshoorn and Pinch, 2003, p. 2). In other words, Eastman had to focus on the conditions (social, cultural) surrounding the *idea* of use before he could make users.

Other examples show how users have agency in shaping technologies, reappropriating it for different contexts and use cases, and thus perpetuating its innovation and evolution. Users of artifacts like the T-Ford in rural settings “acted as agents of technological change” (Kline and Pinch, 1996, p. 764), and it is argued that we should consider technology like the radio as socially constructed by “individuals, institutions, ideas, and technology” (Douglas, 1989, p. xvi). The telephone, for example, although invented for business calls, quickly became a new means for gossiping, social connection, and accessing information as its users put it to work (Martin, 1991). This in turn accelerated the widespread adoption of the telephone, making *more* users as a result of its appropriation by its *early* users.

Fitting with these patterns of innovation, the founders of Airbnb also had a (lack of) usership problem. From 2007 to 2009, they encountered well-documented rejections from investors as a result. Some of these rejections were in the form of bias against designers in a world that privileged engineers; Silicon Valley was looking for developers, not artists, to start the next big tech initiative. But most of these rejections came from the belief that a user base for Airbnb did not exist at scale. Like Eastman’s camera, there were social and cultural barriers to using the *concept*, let alone the platform. The idea that people would want to stay in the homes of strangers, and invite strangers into their own homes, did not seem mainstream enough to resonate with enough users to merit a confident investment. In one funding pitch, when the founders said they had a few hundred users, one investor asked “Why? What’s *wrong* with them?” (Gallagher, 2017, p. 24). Thus began an ongoing effort by Gebbia and Chesky to produce both a concept, and a technology platform, that users could not only trust but want to use, from both the host and guest side. In order to make their product, they had to first make users, inviting a consideration for how “users are designed along with the technology” they use (Lindsay, 2003, p. 30).

In 2016, Oudshoorn evolved her 2003 theorization of the production of users with Hyysalo and Jensen to consider the technological advances made since *How Users Matter*,

specifically in how Web 2.0 facilitates a new form of user involvement (Hyysalo, Jensen and Oudshoorn, 2016). Airbnb, like other digital platforms, differs from a piece of equipment that is produced, sold in one form, and configured and coopted by users, like a camera, telephone or Ford engine. Whilst those technologies did evolve in the hands of users, in turn shaping users as well, they did not rely on sustained production of users to survive as artifacts. Their monetary value to their makers was mostly realized through their initial sale and would increase by producing the next generation of the equipment that would meet the evolving needs of users. In contrast, for digital platforms to sustain themselves, it is crucial for them to constantly produce ‘active users¹¹’, and retain existing ones, as value is generated from their interactions with the platform on a daily basis (Hyysalo, Jensen and Oudshoorn, 2016). Therefore, these platforms are designed around intentionally involving users in their production by stimulating their continued use, optimizing affordances to their behavior, and ultimately integrating the flow of user feedback into their design practices.

A turning point in Gebbia and Chesky’s imperative to make users was when a mentor encouraged them to find and interact with those users offline (Gallagher, 2017). At that point in 2009, the majority of their hundred-odd Airbnb users (hosts) were concentrated in New York City. They travelled from San Francisco to New York to stay in their users’ homes, observing and talking with them offline as they used the Airbnb website, ultimately experiencing their “end product” from both the host and guest perspective. This practice of centering their users in their own design process engaged Gebbia and Chesky in an early form of Airbnb’s “relationship labor.” Shestakofsky and Kellkar identify relationship labor as a key yet under acknowledged form of platform governance, defining it as the work done by platform employees to engage with users outside of the technical confines of the platform to sustain their successful use of it (2020). I explore this concept in depth in Chapter 5 but introduce it here to demonstrate that this type of platform work is an integral part of managing the production and participation of users, and Airbnb has leveraged this work throughout the evolution of its platform.

A major finding from this initial relationship labor was that the photos users uploaded to Airbnb – and therefore online representations of homes – were of poor quality. Gebbia and

¹¹ Airbnb’s active users include “Hosts” and “Guests” and I will expand these definitions in the coming pages

Chesky felt the offline homes they were experiencing were authentic, warm, and inviting, but their hosts lacked the widespread and consistent equipment, skills, and technical savvy to adequately represent their spaces online. In 2009, many users did not have access to quality digital cameras and if they did, even fewer had the skills to take appealing photographs (Gallagher, 2017). So, Chesky began what Airbnb now calls the “photography project,” which (still¹²) provides high quality photography to hosts. This started with Chesky as the photographer, and eventually scaled to include freelancers in local markets. By 2012, Airbnb was working with over 2,000 photographers worldwide (Shah, 2018). By 2014, Chesky told *dezeen* that they had “created this network of 4,000 to 5,000 professional photographers. You click a button and a photographer will come and photograph your home for free” (Fairs, 2014). This professionally crowd-sourced design model, sustained by relationship labor, propelled the growth of Airbnb’s business; it not only increased the quality of listings and helped hosts use the platform better, but “[made] the storytelling of the entire platform recognizable and consistent,” ultimately building trust between users and the platform (Villari, 2018, p. 17).

3.2 Centering Users in Design

Visiting users in person brought them in the platform design process, taking seriously their experiences in a form of human centered design (HCD). HCD privileges user experiences in the design process, therefore giving users a productive role in technology design (Hyysalo, Jensen and Oudshoorn, 2016). HCD emerged in the 1970s from the multidisciplinary field of human computer interaction (HCI) and considers the knowledge all people have of their own work and interactions with technology as viable and useful if incorporated strategically into product design. This reframing of users as having insight into and agency over the way technology should be developed has made users central to the co-construction of many technologies in various settings. This began in information systems and in the early use of tech in offices settings in the 1980s, and over the decades became critical to the Internet and platform applications development of the 2000s (Hyysalo, Jensen and Oudshoorn, 2016).

¹² Photography was free for users for years, but now is available “for a price quote,” per the Airbnb site: <https://www.airbnb.co.uk/help/article/297/professional-photography-for-listings>

In the case of Airbnb, HCD is celebrated as a core value, positioned in the company's communications as a democratic principle of the platform. In media coverage and blog posts about the company, Airbnb leverages HCD as a mythmaking strategy to build a culture of usership (Pfaffenberger, 1992). In 2019, Airbnb's Chief Design Officer, Alex Schleifer, described his company as:

a human-centered business that aims to connect millions of people across the world, and design is at the core of how we work... design is fundamentally about making decisions through the lens of what will be useful and engaging to people.

In the same interview, Tim Allen, Airbnb's then VP of Design, elaborated that "to do this, we will need to constantly observe, evaluate, and understand human behavior from every part of the globe, framing and reframing our insights so that we can creatively solve problems" (Airbnb, 2019). Here, Allen is positioning users as the key to Airbnb's problem solving, declaring that their platform use generates valuable research data for the company. This cycle of making users and making them productive through product design has sustained Airbnb for over a decade of growth both literally and symbolically. Not only do users inform the design of the platform, but Airbnb promotes their human-centered design practices in marketing content. This builds and perpetuates Airbnb's "technological regularization" (Pfaffenberger, 1992) through narratives about user connection, problem solving, and decentralizing decision making power.

3.3 Infrastructuralizing Users

In the years following the launch of the Photography Project, Airbnb's efforts to make users began to see escalating results. In 2014 Chesky shared with *The New York Times* that it took the company four years to get its first million users; by the time of that interview, a million users a month were staying in Airbnb listings. Chesky attributed this growth to the company's "real innovation – [building] a platform of 'trust'" (Friedman, 2014). This acknowledgement by Chesky shows the value generated by relationships between users, and how fostering those relationships by building trust is vital to the success of the company. Airbnb makes users by designing and building a platform of that promotes trust, signaled by the photographs, user profiles, and reviews it asks users to produce. These trust signals not only entice users to the

platform but are key in generating more value from users as they build relationships with each other. This was reiterated by Airbnb's Chief Design Officer in 2019, Alex Schleifler: "Our work is about building a trust system so that strangers can share their homes, their passions, their time... Our business succeeds only if we support a thriving and trusting community" (Airbnb, 2019). Trust is not just a technological feature, nor is it a solely a design element; trust is a social contract that develops in the space of relationships between users and the platform.

Crossley's notion of "relational sociology" is a useful metaphor for understanding how relationships can create social structure (2021). Although not concerned with digital platforms, Crossley posits that as "actors interact and form relations [...] their interactions and relations form a structure which creates opportunities and constraints for them, affecting processes, such as the diffusion of culture, that play out between them" (2021, p. 179). I will not dwell on the sociological debate of structure vs agency, but instead apply the imagery of relationships creating social structure to our understanding of how Airbnb's users play a role in producing the infrastructure of its platform. The two processes discussed so far – configuring users who generate content and centering users in design – create the context and guide the nature of Airbnb's platform. For example, a 2016 study found that Airbnb listing photos are a main trust builder for the platform; furthermore, quality photos "affect listings' prices and probability of being chosen, even when all listing information is controlled for" (Ert, Fleischer and Magen, 2016, p. 72). Leveraging relationship labor to help hosts use the platform in a more consistent, appealing way with the photography project, Gebbia and Cheksy facilitated the concurrent success of users and therefore the platform.

Although Airbnb is widely considered a travel and accommodation platform, its economic model is designed to not involve physical properties at all; instead, the platform monetizes each transaction that happens *between* its users. Therefore, making and retaining active users who develop transactional relationships between each other is vital to the platform's success (Bruni and Esposito, 2019a). A literal look at how Airbnb defines users, called "Members" by the platform, and classifies them as "Hosts" and/or "Guests" (each Member can perform both roles with the same account), reiterates how connecting "Members" is the main offering of the platform. Airbnb's terms of service begin by spelling out its own role in this

arrangement, making clear it is simply the online “venue” through which members can connect with each other and not involved in owning or managing listings (Bruni and Esposito, 2019b). Here is the most recent way Airbnb defines the users of its platform¹³ with emphasis in bold added for this discussion:

The Airbnb Platform offers an online venue that enables users (“**Members**”) to publish, offer, search for, and book services. Members who publish and offer services are “**Hosts**” and Members who search for, book, or use services are “**Guests**.” Hosts offer accommodations (“**Accommodations**”), activities, excursions and events (“**Experiences**”), and a variety of travel and other services (collectively, “**Host Services**,” and each Host Service offering, a “**Listing**”). You must register an account to access and use many features of the Airbnb Platform, and must keep your account information accurate. As the provider of the Airbnb Platform, Airbnb does not own, control, offer or manage any Listings, Host Services, or tourism services. Airbnb is not... a real estate broker, travel agency, insurer or an organizer or retailer of travel packages.

The social relationships between users are the only source of revenue for Airbnb. Therefore, the content users produce is in service of building and maintaining these relationships, and centering users in design is for the aim of keeping users interacting with each other.

Designing trust into the technology has been a crucial process of *infrastructuralizing* social relationships in Airbnb, making not only users but fortifying the platform itself via their relationships (Bruni and Esposito, 2019a). From the moment users begin registration, the features and design of the platform guide them to produce themselves as credible, trustworthy Members. Airbnb makes users register with an existing email address or Facebook account, a phone number, and a bank account that can facilitate digital payments. They must also input information about themselves, such as their location, official identification card and profile photo; hosts are required to upload photos and information about their offline home or experience, too. Like other platforms, Airbnb relies on an existing digital, economic, and governmental infrastructure to verify users; “these requirements are the grounds on which the company is able to start and continue its user production” (Bruni and Esposito, 2019b, p. 675).

¹³ Airbnb’s terms define users for those residing in the EU, Switzerland, or the UK, last updated on 10 Feb 2022, accessed here, October 2022: <https://www.airbnb.co.uk/help/article/2908/terms-of-service>

Chesky's 2014 *New York Times* interview connects the dots between user profiles, trust, and Airbnb's growth: the more work users do to validate their identities, including connecting Facebook profiles, government IDs, and earning reviews, "the more other people want to work with you," he said. When this happens, Chesky proclaims, "you unlock all this value and the world starts to feel like a community again" (Friedman, 2014). This "value" users make as they build trust with each other is used to build the relational structure of the platform, ultimately then used to entice more users to join the "community." This infrastructural framing of Airbnb's relationship to users contributes a foundational understanding of the sociotechnical qualities of the platform.

4. Investing, Scaling and Network Effects of Users

I have now discussed how Airbnb makes productive users who generate the platform's content, help shape its design, and create value in their social relationships with each other as they use the technology. This section builds on this foundational understanding of Airbnb's relationship to users with a discussion of broader level actors and processes: venture capital investment, the resulting imperative to scale, and the impact of networked effects. First, Airbnb's focus on making users inspired investors to fund the company, centering users once again as critical to its development. The investment of venture capital then required Airbnb to grow users at escalating rates, making scaling a major priority for the founders. Their scaling efforts helped Airbnb realize the benefits of network effects, which make a system increasingly valuable for users the more users join (Katz and Shapiro, 1994). This section expands our understanding of what makes users to include broader systemic and economic forces, and shows the productive power of users en masse.

4.1 Investing in Users

Airbnb's early success with the photography project not only helped users populate the platform with "better," more trustworthy content, but also encouraged the company's first major investor to commit to funding in 2009. This funder "was impressed by their philosophy of building a community of hosts and guests, as well as the way they had designed social

mechanisms to address trust issues” (Gallagher, 2017, p. 30). It is important to note here that this investment was inspired more by the company’s power to make and generate value from a social group of users than the promise of its technology. It was only when Airbnb successfully made a community of users, with the potential to scale those users, that it received capital. This investor was Greg McAdoo, a member of Sequoia, the same venture capital firm that funded Google, Apple, Oracle, and other major technology firms. McAdoo noted that Gebbia and Chesky’s approach to users set them apart in that it “was so far out of the thought process of the traditional vacation-rental business, yet it was very clear to me that they solve some if not all of the challenges of bringing together hosts and guests at scale” (Gallagher, 2017, p. 30). This funding launched Airbnb into a class of tech companies beyond their peers in the travel and tourism industry; McAdoo’s vote of confidence aligned Airbnb with the major tech platforms of our time. It also positioned Airbnb as a “solution” to the created problem of the vacation rental sector’s stunted growth, setting scaling as a goal in and of itself (Pfothenauer *et al.*, 2022). This investment gave Airbnb the financial power to hire and then imposed upon it the imperative to scale. It was the major tipping point for Airbnb; “there was no going back,” Chesky told Gallagher (2017, p. 31).

McAdoo’s funding exemplifies the structural power of venture capital in several ways. Cooman describes how venture capital investors “imprint” their growth logics on the companies they fund, transforming them into “assets for themselves and their capital providers” (2022, p. 1). Pfothenauer, Laurent, and Stilgoe offer the notion of a “scalability zeitgeist” to this discussion, linking “social value” to the imperative to maximize profits through “blitzscaling” (2022, p. 19). In this way, venture capitalist growth logics are positioned as a solution to many of society’s shortcomings and therefore assetizing the companies they invest in generates value for society. This contributes to the “technical regularization” (Pfaffenberger, 1992) of tech startups on a broader scale that just Airbnb, lauding startup culture as an innovative solution for social issues. Cooman’s work explains two ways investors shape the businesses they fund. The first is by choosing to fund only companies with a fast and large growth potential, positioning venture capitalists as gatekeepers with immense decision-making power. Note McAdoo’s focus on Airbnb’s philosophy of growing a user community, and its ability

to connect both hosts and guests “at scale;” Airbnb’s user community was the reason McAdoo opened the funding gates. Once involved, McAdoo inherently had a vested interest in the success of Airbnb. So, he offered Cooman’s second imprinting strategy of “participatory capital,” which is “offering operational advice and access to [his] network” (2022, p. 1). After the investment, Airbnb’s founders had breakfast with McAdoo several times a week to solicit advice and connections to other powerful actors in tech and business, such as Apple, Starbucks, and Nike. By August 2009, after several strategic hires and snowballing growth, Airbnb’s revenue became stable, and the company reached a profitable volume of users. Now that they had achieved funding, Airbnb’s next task was to build a technical platform that represented, standardized, ordered, and “blitzscaled” (Pfothenauer *et al.*, 2022) the culture of their small group of users in an exponential, yet sustainable, way¹⁴.

4.2 Scaling Users

By the summer of 2010, Airbnb had 25 employees and a steadily growing community of users, but they were not experiencing the “hypergrowth” needed for their investors. This inspired Blecharczyk, Airbnb’s founding engineer, to introduce what he called “growth hacks” to increase the awareness of Airbnb and ultimately make more users. These “growth hacks” relied on existing platforms, their affordances, and communities of users. He built connections between Airbnb and Google’s AdWords to automate local ad campaigns in markets where Airbnb wanted to expand. He also built a “back door” into Craigslist, developing a “one-click integration tool” that allowed Hosts to publish their listing to Craigslist as well as Airbnb. This tapped into the website’s tens of millions of users, with the listings bringing users back to Airbnb rather than a listing on Craigslist (Gallagher, 2017, p. 38). This was a “hack” of great renown at the time within the tech community, as Craigslist did not have an application program interface (API); but Blecharczyk built a bespoke solution to work around that barrier (Gallagher, 2017). In 2011, Airbnb introduced Social Connections, which leveraged Facebook’s API to show users which of their friends, and friends of friends, are hosts on Airbnb. “With over 1.5 million nights booked through Airbnb so far, chances are someone you know has already

¹⁴ This point is intentionally oxymoronic, drawing attention to the tensions between hyper growth and sustaining it

used Airbnb,” proclaimed the company’s announcement about the feature (Airbnb, 2011). Social Connections harnessed the trust and networks of Facebook users to grow their own user base. From Google, to Craigslist, to Facebook, these “growth hacks” brought users from elsewhere on the web to Airbnb. They coopted the social networks and trust users had on other platforms, making them Airbnb users as well.

This technical connectivity began to entrench Airbnb into the broader platform society (van Dijck, Poell and de Waal, 2018), both by scaling users at a much faster rate and by plugging into the strengthening infrastructure of other prominent platforms in the early 2010s. Airbnb users were not only recruited from and with the use of other platforms, but were now also presented with the familiar, easy, established, and trusted technical affordances designed by these platforms and integrated into an evolving Airbnb user experience. Airbnb’s engineers embedded Google Maps to help guests navigate neighborhoods and created a single sign on account creation with Facebook and Google to verify user identities and built trust. These integrations enabled Airbnb to profit from these other platforms’ “global connectivity, ubiquitous accessibility, and network effects” (van Dijck, Poell and de Waal, 2018, p. 15). The user growth realized by these “hacks” and integrations began to gain momentum, and Airbnb soon reached its own positive network effect within and across user groups. From an infrastructural perspective, they worked to enable both social and technical flows of users and data, entrenching Airbnb into the platform society.

4.3 Realizing Network Effects

As discussed, Airbnb is a marketplace with two groups of users: buyers (guests) and sellers (hosts), and users can also be both. Therefore, network effects are fortified by the interactions within and between these groups; positive “within-group and cross-group external effects” help to grow and strengthen user groups’ use of and loyalty to the platform (Belleflamme and Peitz, 2018, p. 288). Within a group of guests, the more guests, the more trust is generated in the form of reviews and quantified stays. Across groups of hosts and guests, the more hosts, the more inventory for guests to choose from, and the more guests, the more valuable hosting becomes. In short, both groups benefit from more of the other, which builds

on the discussion of trust and structures built by relationships in the previous section. Gallagher points out the unique position travel brings to Airbnb's network effect, as opposed to other "sharing economy" platforms in its class, such as Uber, which occur locally in a specific market. Airbnb benefits from a "global network effect enabled by fast and cheap cross-pollination" across destinations, "without staffers or teams ever having to set foot in them" (Gallagher 2017, p. 40). I found this articulated in my interviews with both hosts and guests, which I will discuss in detail in the coming chapters; a common use pattern is that being a guest somewhere where Airbnb is prominent then inspires that user to host when they return home, making more hosts, potentially in new markets, from guests. Therefore, global travel patterns contribute to Airbnb's external network effects (Gallagher, 2017) and in turn incentivize, guide, and propel the platform's international growth (Guillén, 2021).

So far, this section has discussed the relationship between investment power, the imperative to scale, and network effects, and how each of these contribute to making productive Airbnb users. Crucial investment (both economic and social) was granted to the founders because they showed a promise of scalability via their focus on building a user community; once given, that investment imprinted an imperative on Airbnb to make hypergrowth happen exponentially. This was achieved through a series of technical integrations to hack scale through other sites, and then to leverage the existing infrastructure of the platform society's most successful, durable platforms to build user trust, familiarity, and ease. Once a critical mass of users was made, these users became even more productive in their contribution to the platform's network effects, both within groups of hosts and guests and across groups by building more supply and demand on a global scale.

What is important to conclude about these factors is that they led to Airbnb's massive user base (over 150 million users at the time of this writing¹⁵) and platform persistence, making it particularly durable and socially significant in its market dominance. Research finds that external network effects between users can cause a "tip" toward one platform over another, causing this "*market agglomeration*, in which all users locate on a single platform" (Karle, Peitz

¹⁵ Source for this statistic: <https://www.searchlogistics.com/learn/statistics/airbnb-statistics/#:~:text=Airbnb%20Key%20Statistics%202023,-Airbnb%20is%20a&text=There%20are%20over%20100%2C000%20cities,booked%20over%201%20billion%20stays>

and Reisinger, 2020, p. 2329). Furthermore, once a platform has obtained “a critical mass of users, or *installed base*,” competing platforms are blocked from obtaining a share of users as “the confluence of direct and indirect network benefits will leave platform users reluctant to switch to a relatively smaller or newer network of users” (McIntyre, Srinivasan and Chintakananda, 2020, p. 3). For Airbnb in the early 2010s, these factors combined to blitzscale user activity tenfold from 1 million nights booked as of February 2011 to 10 million nights booked by June 2012 (Williams, 2022). In early 2013, *Techcrunch* reported that “2012 was the year that Airbnb stopped being something people were talking about and started to be something (a lot of) people *used*” (Crook, 2013). Airbnb had made users en masse, and in turn those users had helped perpetuate the platform’s success, bringing it into a “cash cow” status: “the technology [came] of age, the novelty [found] utilities, and it embed[ed] itself into the world” (Matthewman, 2017, p. 157).

5. Feeding network effects: Platform durability through governance

Up until this point in Airbnb’s story, the founders and their team had been focused on making enough users to make their idea, and therefore company, viable. Like with other technology firms, these initial stages of building and developing their platform were concerned with getting to the point of realizing network effects. However, platforms are sociotechnical in that they exist in a dynamic setting of markets and societies, with lively communities of users. They require constant maintenance, care, and evolution to persist and grow, even after achieving the power of network effects and market agglomeration. To ensure their durability, McIntyre et al argues that platforms must effectively govern their users through architecture and design, manage interfaces with other complementor platforms, and continue to evaluate and evolve its own scope and offerings (2020). I also add that platforms benefit from evolving their relationship labor practices (Shestakofsky and Kelkar, 2020) to maintain durability, too. For Airbnb, this included keeping up initiatives such as the photography project as well as heavily investing other host support and recruitment. To keep making hosts, Airbnb realized it not only needed to make users adapt its technology; it needed to reshape their daily practices outside of the interface to support the goals of the platform. To continue to grow, Airbnb needed to

convince “millions of [more] real people to agree to open up their most personal spaces to strangers and effectively become citizen hoteliers” (Gallagher, 2017, p. 70).

In 2013, Airbnb embarked on a serious investment in host-building, and Chesky hired a similarly idealistic “hospitality expert,” Chip Conley, to lead this effort. Conley told Gallagher he joined Airbnb because he was inspired to take the hospitality industry “back to its roots,” and was “fascinated by the challenge of effectively democratizing” it (2017, p. 71). This use of solutionism positions the industry as in need of democratization, and Airbnb as the means of achieving this, inserting values and politics into the imperative to continue scaling (Pfothenauer *et al.*, 2022). This fueled (and justified) another round of efforts to make more, and “better,” hosts. Conley considered Airbnb hosts to be vital brand touchpoints and put systems and structures in place to govern their practices more tightly; these initiatives provide illustrative examples of McIntyre *et al.*'s strategies of platform persistence (2020). He evolved Airbnb's platform scope, offerings, and functionality by starting an “online community center” where hosts could share best practices and learn from each other. He governed host behavior with myriad educational resources for how hosts can improve, including a newsletter and blog, as well as a “set of standards” hosts should follow. Most notably, he “developed a mentorship program wherein experienced hosts could bring new hosts on board and show them the ropes to good hospitality” (Gallagher, 2017). This last example delegated Airbnb's relationship labor from employees to users, leveraging the most successful users to reproduce *more* users in their image, teaching them how to act to succeed on the platform.

Conley's efforts built a foundation for Airbnb's subsequent hosting culture building strategies, extending platform governance beyond the screen, and exponentially scaling its relationship labor. These standards and suggestions set by Conley require much more from hosts than simply listing their home on Airbnb. They ask hosts to respond to booking inquiries within 24 hours, communicate often and clearly to guests, only accept bookings from guests who match their “hosting style,” clearly communicate their house rules on the front end, be diligent in their cleaning practices, provide amenities like towels, and go above and beyond by perhaps picking up guests at the airport, putting out fresh flowers, and offering welcome touches like a bottle of wine (Gallagher 2017, p. 72). These requests are reminiscent of Chesky's

2009 practices of knocking on hosts' doors in New York to experience the "end product," providing feedback for how they could deliver a better guest experience. However, they were now being built into the architecture of the platform, aiming to streamline and automate host governance into the interface. The platform's review system is another governance feature, built to control hosting practices and ensure they are up to the standards of Airbnb's brand promise. It is another example of how Airbnb exports relational labor onto end users, removing Airbnb's need to actively monitor and enforce hosting "suggestions," putting the burden on guests. From 2007 to 2013, Airbnb's approach to making users went from being user centered to enabling automated user governance. These practices have been embedded in Airbnb's interface ever since, constantly evolving to ensure platform persistence (McIntyre, Srinivasan and Chintakananda, 2020).

While the details of this user governance change, their processual, productive qualities remain. I will explore these in empirical detail in Chapter 5, but introduce them here by returning to Bruni and Esposito's (2019b) sociological observations of this process. As discussed earlier, they theorize this as infrastructuralizing users through their relationships with each other and the platform. A Member becomes a host by creating a Listing within the platform, which involves an intricate negotiation between that user self-categorizing her own home and/or cultural experience with the pre-determined categories of the platform. With Conley's evolved user governance design affordances, the platform's input forms get to work, producing Airbnb's preferred hosts as users complete the form. For example, the forms suggest the host "provide the main services to make your guests feel at home," like serve breakfast, coffee, or tea, operationalizing (and embedding in use) Conley's suggestions for hosts. They also offer a list of amenities hosts can tick off as they build their listing profile, such as Wi-Fi, a hairdryer, and other essentials such as number of bedrooms and towels. These are more than data collection points; they suggest ways of hosting, ultimately having performative power to change offline hosting practices, shaping them to deliver Airbnb's ideal hospitality experience. Bruni and Esposito point out that the platform acts as a "coach" for these user inputs, nudging Hosts to include descriptions that "stimulate the hosts' creativity," in the form of an eye-catching title, description, and artful photos (2019b, p. 676). They are the platform's attempt and reproducing

the social “magic” of the Airbnb experience, producing ideal hosts on the platform by imprinting these practices in their domestic lives.

Airbnb’s Design Team is deeply embedded in this process of making Members productive, ideal hosts. Their content strategy team works in tandem with their product development and engineering teams to architect a user experience that will produce the most successful Hosts. “We sit by our designers to map out entire flows, agree on a hierarchy of information, and weigh different approaches to the design or content,” explains Marissa Phillips, Airbnb’s Content Strategy Lead. She describes that they “use user insights from research and data science to inform our recommendations” (Philips, 2017). She gives an example about how the content strategy team is around “every step of the way” as a user becomes a Host. She elaborates on how they carefully craft user guidance:

[We insert] helpful tips about writing a description of their home, prices for similar listings in their neighborhood, ideas around the kind of hospitality our guests look for, and so much more. And after a guest has booked their first Airbnb, we’ll send an email letting them know what to expect and what’s unique about traveling with us. We’ll encourage them to reach out to their host with questions, and we’ll gently remind them that they’re staying in someone’s home (Philips, 2017).

Controlling users and their inputs into the platform – therefore, the content of the platform – is embedded in Airbnb’s design. Airbnb’s practices merge “elements of production by the user and production of the users”; once a Host is made, she is now a producer of content in the shape and form most beneficial to Airbnb (Bruni and Esposito, 2019b). Bruni and Esposito follow the STS and actor-network theory (ANT) tradition of considering platforms mediators rather than intermediaries (Latour, 2005), constructed by the relationships between their users and their technology. These relationships require constant performance, and as stated also have performative qualities; leveraging ANT in our understanding of them helps us see Airbnb as the continuously produced output of engineering by a variety of human and non-human actors (Bruni and Esposito, 2019a). The “relational and performative aspect” of Airbnb can be explored by unpacking how the “platform makes users and the ways in which users give shape to those practices and relationships” (Bruni and Esposito, 2019b, p. 671)

This process of platform governance continues well beyond creating hosts (via listings) and embeds itself further in the way Airbnb facilitates relationships between hosts and guests. In 2014, Airbnb announced a new review system, aimed at “building trust” by “help[ing] our community share and receive honest feedback.” Updates included creating urgency around giving reviews by shortening the review period, easing worry that negative reviews would cause retaliation by revealing reviews simultaneously to both hosts and guests, and enabling guests to leave private feedback to hosts (Airbnb, 2014). These updates afford more detailed user-to-user governance, further making users productive in perpetuating Airbnb’s ideals. Airbnb’s announcement of the changes points to the role of reviews in being found on the platform, touting strong reviews as helping hosts “stand out from the pack.” In *The Airbnb Story*, Gallagher connects strong reviews with being privileged in the platform’s search engine results. “Those who provided positive experiences for guests and received good reviews would get vaulted to the top of search results, giving them greater exposure and increasing their chances of future bookings” (Gallagher, 2017, p 72). This makes “good” users more durable within the platform, infrastructuralizing their presence and perpetuating a better experience for guests. This exemplifies how Airbnb’s architecture creates a valuable currency that governs hosts and does the brand management via technological governance: the better a host is, the more her listing shows up in searches, rewarding her for reproducing a guest experience in line with the platform’s goals.

Continuing to exemplify McIntyre et al’s platform persistence strategies (2020), 2014 saw a “period of renewed focus on the UX of Airbnb as a product,” introducing new features to streamline the booking process between hosts and guests (Shah 2018). Booking process improvements included metrics on response and acceptance rates which gave hosts insight into how their listings perform in the search algorithm with corresponding advice on how to optimize them. Airbnb invested heavily in building its search engine, understanding its importance in keeping users coming back to the platform. This was (and continues to be) a complex and massive undertaking, as “every listing is unique, not just in its look, feel, location, and price but also in its availability, its host, [and] its host’s set of rules and preferences” (Gallagher, 2017). As usership continued to grow, Airbnb’s search functionality got increasingly

multifaceted in its effort to create personalized experiences for users. I will explore this further in Chapter 6, but the point to make here is Airbnb's platform "had to deliver product that both the guest and the host would not just like but like so much that both would use the platform again and would tell their friends" (Gallagher, 2017, p. 44). These evolutions to Airbnb's architecture and design made the platform durable (McIntyre, Srinivasan and Chintakananda, 2020), infrastructuralizing its users in a system of co-productive governance (Bruni and Esposito, 2019a) that is constantly evolving and optimizing to remain persistent. I will explore platform governance with empirical detail in Chapter 5.

6. Making Users "Belong": The Cultural Hook of Usership

So far, I have explored considerations for what makes users and what users make by critically discussing the phases of Airbnb's story of becoming. In making their first users, Chesky and Gebbia leveraged their elite status, backed by the social capital of the design community, in their positioning and promotion of their concept. To gain momentum and build an initial community of productive hosts and guests, Airbnb centered users in their product design, leveraging relationship labor and designing trust mechanisms into the platform. These efforts to build a user community garnered powerful venture capital investment, making users the key to Airbnb's promise of success. In turn, this investment imposed the imperative of hypergrowth on the founders, driving them to scale users to the point of reaching network effects and market agglomeration so Airbnb would become an asset for investors. To maintain and fuel user growth from this point on, Airbnb continuously evolves its offerings, building governance features into the platform's interface to automate further user production through their use of the platform. These processes and strategies combine to show how the socio-technical power of Airbnb has been produced by technological regularization (Pfaffenberger, 1992), relationship labor (Shestakofsky and Kelkar, 2020), design, investment, usership, and sustained evolution. However, notably absent from my discussion thus far is a crucial, common thread that runs throughout Airbnb's process of making users: its purpose-built culture of "belonging."

In 2014 Airbnb rebranded, embracing the motto of "belong anywhere," a creative position that Chesky remarked "has kept the feeling of being at home anywhere" (Fairs, 2014).

This ethos manifested in an Airbnb homepage design shift made between summer and autumn in 2014: the main call to action changes from “Find a place to stay” to “Welcome home.”¹⁶ The “Belong Anywhere” brand was released to critical acclaim and “global conversation,” at least according to the tech blogosphere (DesignStudio, 2014). A new logo (still in use today) combined symbols to represent “people,” “places,” “love,” and “Airbnb.” This move explicitly embedded “the symbolic” within Airbnb’s material and social fabric, making it a “*total* social phenomenon,” successful beyond its technology alone (Pfaffenberger, 1988, p. 249). It is interesting to note that travel and tourism are actively absent from the brand’s components; this echoes Airbnb’s legacy of perpetuating anti-touristic ideals (despite itself being a travel company). This rebrand was born from over 500 focus groups with Airbnb guests, and the purpose was to tap into an ethos of millennial travelers that the researchers found and articulated via the brand (Gallagher, 2017). However, it can be argued that the participants’ “ethos” was initially, if only partly, constructed or shaped by Airbnb’s service offerings to begin with.

As articulated by Pfaffenberger, creating a new technology makes “a new world of social relations and myths in which definitions of what ‘works’ and is ‘successful’ are constructed by the same political relations the technology engenders” (Pfaffenberger, 1988, pp. 249-250). Ultimately, it was Airbnb users who made the rebrand legitimate. When the new logo was announced, it was met with ridicule and pushback (Gallagher 2017). However, Airbnb’s users embraced the rebrand, making it a symbol of their own. For several months after the new logo was announced, “more than eighty-thousand people went online and designed their own versions of the logo, a rate of consumer brand engagement that would be off the charts by larger brands” (Gallagher, 2017, p. 66). Airbnb’s rebrand exemplifies Donald MacKenzie’s (1988) argument that successful technologies make, perpetuate, and disseminate the social and cultural norms that will continue their success. Ultimately, Airbnb has made users by building a narrative that using the platform is a desirable social norm; in turn, they defended the symbolism of its branding, producing even more value from their loyalty to it.

¹⁶ Observed by McGowan in the Internet Archive Wayback Machine, 2019

Alongside (and well after) Airbnb's rebrand, steady reinforcements of "belonging" were infrastructuralized into its platform architecture in form of design choices and affordances. One example of this is Neighborhoods, a new Airbnb offering launched in 2013. Gallagher points out that belonging anywhere meant much more than making friends with your host: "it meant venturing into neighborhoods that you might not otherwise be able to see, [and] staying in neighborhoods and places as a traveler you wouldn't normally be able to" (2017, p. 65). Neighborhoods allowed users to search for properties based on a variety of social and cultural criteria that the designers of the platform attributed to specific areas in cities. These neighborhood guides began to appear prominently on Airbnb's home page and invite users to explore cities through the areas featured. "Not sure where to stay?" the home page asks. "We've created neighborhood guides for cities around the world"¹⁷.

Travel bloggers championed Neighborhoods. In a 2014 post, TripHackr shared screenshots of Airbnb's classifications of Featured Neighborhoods in Boston. Attributes such as "Foodie Destination," "Regal," and "Hipster" are associated with specific neighborhoods in Airbnb's interface. The post also noted that Neighborhoods made choosing a location to rent "much easier by displaying a map, transit times, and even will let you know how hard it is to park your rental car" (Johnston, 2014). With Neighborhoods, Airbnb positioned itself as an expert and a purveyor of cultural knowledge for localities around the world; it became an "aspirational tool for adventurous travelers who [want] to experience the real flavor of a city rather than the typical tourist experience" (Shah, 2018). Airbnb exercises political power through Neighborhoods, actively embedding value judgements on neighborhoods' identities "to suit the needs of the moment" (Pfaffenberger, 1992). In this case, making users explore Neighborhoods outside typical tourist areas legitimates listing inventory further afield, casting a wider net for making potential hosts. Tornberg argues that Airbnb's true product is not the inventory of places to stay, "but a cultural product of community, belonging, and authenticity" (2022, p. 8). Airbnb therefore owns, governs, and profits from the user community it built (and builds) who actively produce and re-produce this cultural product.

¹⁷ Observed by McGowan using the Internet Archive's Wayback Machine, archive from 27 March 2013, accessed in 2019

Though a fruitful example, Neighborhoods is but one of many mechanisms Airbnb uses to embed a culture of “belonging” into its platform design and perpetuate it through use. Airbnb Experiences launched in 2016, connecting travelers with “one-of-a-kind activities hosted by locals” (Aydin 2019). Experiences marked the platform’s expansion beyond accommodation and extended hosting usership to people who might not have a property to list, simultaneously multiplying guest usership with additional booking offerings. Airbnb expanded further in 2018 with Airbnb Select, described by Chesky as one of the “biggest changes to our platform in our 10-year history” (Shah 2018). Airbnb Select is comprised of Airbnb Plus, “a selection of places to stay verified for quality and design,” (Airbnb 2018b) and Airbnb Luxe, which offers “pristine, expertly designed homes with luxury amenities, services, and a dedicated trip designer” (Airbnb 2018a). These offerings further evolved the platform, even making users out of people “who hate Airbnb” (Carey, 2018). They collectively contribute to Airbnb’s culture of belonging, creating “an interface to the symbolic marketplace” (Törnberg, 2022, p. 20) which offers something for everyone. I will explore each in empirical detail in the chapters to come.

Later Airbnb focus groups conducted after the rebrand surfaced the power of continued usership in building a culture: “belong anywhere isn’t just a single moment; it was a transformation people experienced when they traveled on Airbnb” (Gallagher, 2017, p. 78). Tornberg found that “the cosmopolitan values distilled in the marketing slogan ‘belong anywhere’” are reproduced via the users in features from reviews to listing descriptions (2022, p. 12). This highlights the importance of “positioning technology as an ongoing encounter” (Matthewman, 2017, p. 12) to get at the nature of its social impact. Subsequent chapters will empirically explore sociological components of Airbnb’s culture, which consider co-created by facets of usership and the platform. For now, I conclude that making users “belong” is the sticking point of platform persistence that is both durable yet vulnerable to shifting attitudes. Therefore, it requires constant upkeep, which Airbnb performs via evolving and introducing platform features as well with strategies of mythmaking in the form of branding; these strategies complement each other.

7. Conclusion: Exploring Airbnb's Co-creation

This chapter has asked why and how Airbnb makes users, and how and to what end those users are productive for the platform. The answers to these questions are cyclical and cumulative; processual, in other words. Airbnb needs to make users for the product to be viable and is in turn transformed through its use into a legitimate asset for investors (and of course, the founders). It makes users by leveraging cultural capital to convince people to try the concept, performing relational labor to enable more successful use of the product, and tapping into the existing platform ecosystem to bring users to Airbnb at a growing scale. These users are then in turn productive for Airbnb by supplying the platform with inventory in the form of listings, making more users via network effects, and being agents of platform governance in their interactions with each other. Ultimately, users made each progression of Airbnb's growth plausible, not just by joining as Members in exponential numbers, but in perpetuating its brand of "belonging."

Tracing the way Airbnb began making users, and continues to make them, is a sociological endeavor in that it positions Airbnb as an actor with agency to leverage cultural capital and social relationships to build a user "community." This community is governed by Airbnb's imperative to scale and generate revenue in the form of bookings, so use patterns are managed by these goals. Users make value for the platform in the form of content, listings, and, as they improve the platform, more users. To humanize Airbnb's technology in this way makes things complicated and sprawling, as this lengthy chapter exemplifies. As Pfaffenberger observes, considering "technology as humanized nature... forces recognition of the almost unbelievable complexity that is involved in virtually any link between human technological forms and human culture" (1988, p. 244). However, technology's "meaning is always found in its use" (Matthewman, 2017, p. 80), so I begin my exploration of Airbnb by taking seriously its relationship to users.

This chapter sets up a co-construction between users and Airbnb, an ongoing entanglement that is in constant production and (re)production that necessitates a processual approach to analyze. I argue that much of the existing research on Airbnb has succumbed to

“technological somnambulism,” when our relationship with and to technology is “too obvious to merit serious reflection” and therefore neglects to take seriously the ways its actual technology structures social life (Winner, 1986). Conversely, I am cautious against falling victim to the assumption of technological determinism, also present in much critical Airbnb research, not wanting to grant full autonomy to Airbnb’s technology (Grint and Woolgar, 1997). Pfaffenberger argues that to take either of these stances is to “gravely understate or disguise the social relations of technology,” inviting scholars to study its social nature (1988, p. 241).

This is the task of my thesis. I further explore Airbnb’s governance strategies used to make its millions of users productive for the goals of the platform, introduced by the themes of this chapter, and explored empirically in Chapter 5. Next, Chapter 3 will introduce the technological components and context of the platform, which will ground this exploration in an understanding of Airbnb’s infrastructure. I will empirically explore the platform’s technical structure in Chapter 6. All subsequent chapters continue to consider the entwinements between users and the technology introduced in this chapter, closely tracing the technological processes of how Airbnb orders and configures users. I do this from the perspective of its historical development, its platform architectural details, and the way users produce, subvert, and contribute to its dominance.

Chapter 3: Components and Context of Airbnb

1. Introduction: A Framework for Exploring Airbnb

Throughout this research, it seemed the closer I looked at Airbnb, the more expansive it became. Each month there were new affordances, like Smart Pricing or Guidebooks, or a “groundbreaking” announcement from the CEO Brian Chesky about a new social initiative, or a reconfiguration of how users can interact with the platform. As discussed so far, this dynamic quality of the platform has necessitated a processual approach to studying it. Understanding how these evolving components, these parts, fit into the whole of my research object, has been a foundational challenge of this work. I argue that these complexities, confusions of scale, and relationships to change should be considered by researchers investigating the role of platforms in today’s social life. This deep dive into Airbnb is not intended to mark it particularly as *the* platform worthy of investigation; rather, it is an attempt to cast light on the components of it that exemplify or perpetuate the patterns of the wider platform society (van Dijck, Poell and de Waal, 2018). In this case, Airbnb’s technological details “matter” (MacKenzie and Wajcman 1999), and therefore this chapter introduces its micro and meso components. However, as the social context of technology also matters, it also zooms to discuss the macro cultural, technical, and social contexts Airbnb exists within. Situated in the previous chapter’s close look at Airbnb’s socially shaped nature through a historical biography, this chapter attempts to make sense of the messiness of technological artefacts that have been shaped, following the BOAP imperative (Pollock and Williams, 2009). My aim is to develop a literacy for how to understand Airbnb by offering a set of clarifying definitions as we embark on my broader exploration of “how” Airbnb in later chapters.

To do this, this chapter will introduce my own framework for Airbnb’s components and how I situate them within today’s social and digital landscape. My aim is to contain the parts that comprise the whole and draw connections and relationships between them to better understand this ensemble. I will continue to explore, expand upon, and empirically investigate these concepts throughout this thesis. For now, I introduce their definitions to offer a clarifying

vocabulary for my work. These definitions are the result of my empirical research and draw on existing scholarship, my netnographic investigations within the platform, my interviews with Airbnb producers, and my own reflections and theorizations that have occurred throughout my research¹⁸. In the spirit of making sense of parts and wholes, this chapter orders them from the micro parts to macro whole, starting small and expanding with each concept to the wider situational context. Together, they comprise Airbnb's "thinking infrastructure" (Bowker *et al.*, 2019) via how they create, order, govern, and generate knowledge. Collectively, this framework allows us to further explore the cultural and social implications of Airbnb, and other platforms, in terms of meaning-making and knowledge production.

I begin by defining the components of Airbnb. I start at the micro level with the most granular term, "entities." I then discuss the micro encounters, or relationships, between entities as "associations," which comprise the relational structure of the platform's database. I then expand to the meso level with a discussion of how associations between entities combine with geographic place data to make up Airbnb's "placemarks." These are a component of "knowledge graphs," the massive and flexible data structures of not only Airbnb but many of the other most used platforms in the world. I leverage examples from Google's knowledge graph to introduce the epistemological properties of these "thinking infrastructures" (Bowker *et al.*, 2019). Next, I give an overview of "platforms" and the components that make up Airbnb's at the time of this writing. The following macro level discussion situates these components in the wider social and digital context, the "sharing economy" and the "semantic web," taking a deeper exploratory approach to understanding each. These definitions are not universal; as I will discuss, several are contested, and I will give an overview of their debated meanings and uses. Nevertheless, I offer them to articulate my findings and conceptualization of Airbnb. I conclude by arguing that we need this framework to understand the complexities of how platforms shape our social world and set a pathway to begin using it throughout the remainder of this thesis. Let's dive in, starting with the granular and broadening out to situate Airbnb within today's macro social world.

¹⁸ Chapter 4 details my methodology

2. Micro Level: Entities and Associations

2.1 Entities: Entities are the smallest data units of a digital system, such as a knowledge graph, platform, and the semantic web; they are distinct and contained data points that represent things in the “real world,” standardized to be workable in a broader structure.

Calling entities the “smallest unit” does not imply they represent the smallest things in the real world. However, they are the most elemental units of all the definitions I offer in this section; they are the data building blocks that comprise placemarkets, knowledge graphs, platforms, and the semantic web. In Airbnb, entities can represent things of various scales, like a home, an experience, a neighborhood, a cultural concept, a city, a person, a language, a restaurant, a landmark, and many other examples, and are also referred to as “nodes” by Airbnb engineers (Chang, 2018). I have found that entities are both input into the platform by users (such as a Home listing) and created by the assembly of other platform content (such as a Guidebook listing). Chapter 5 will explore the way Airbnb governs users in their creation of entities, and Chapter 6 will trace the way standards, classification, and associations also create entities. Entities comprise the basic units of other platforms and systems as well (Iliadis *et al.*, 2020), and can represent infinite things, such as a recipe (in Google’s knowledge graph), a group of people (in Facebook’s open graph), a book (Amazon’s knowledge graph), and an academic concept (Wikipedia’s knowledge graph). Although entities can represent things big and small, simple and complex, their unifying nature is that they are contained to a singular node in the database of the system they are a part of. While each point can be internally expansive in meaning (like a city), they are simultaneously contained into a bounded concept to make them operational in the larger database. Entities are the building blocks of today’s internet, known as the semantic web (Iliadis *et al.*, 2023), and they are the smallest unit of analysis for my research, no matter the scale of what each one represents.

Considering entities in this way introduces an ontological point of departure to explore the interplay of the part and the whole, to consider entities as both assemblages themselves and collectively making up the broader system of Airbnb. Entities as assemblages helps us understand them as arrangements (Phillips, 2006) that are “heterogeneous within the

ephemeral, while preserving some concept of the structural” (Marcus and Saka, 2006, p. 102); in other words, they are “sets of sets” (DeLanda, 2016). For example, a single Neighborhood entity within Airbnb, like Leith, is both constructed by and associated with hundreds of Homes entities, which would be listings in Leith¹⁹, which would be associated with dozens of restaurants and bar entities, also associated with Leith and each listing, which would all be associated with Edinburgh. This collapse of scale invites one to consider how cities are comprised within platforms and on the semantic web, how users might encounter them, and how this shapes people’s understandings of place.

2.2 Associations: Associations are the links, or ties, between entities, that not only connect them, but ascribe meaning to them via those connections.

As just introduced, associations in Airbnb should be considered as both a part of entities, and the relationships between them. There are many different types of associations within Airbnb (Chang, 2018) which I will detail in Chapter 6, and infinitely more in other platforms and across the semantic web (Iliadis *et al.*, 2023), which I will discuss later in this chapter. Latour considers sociology to be the study of “tracing of associations” between things (Latour, 2005), bringing an intriguing theoretical provocation to this technical feature of the platform. Within Airbnb’s technological structure, these associations are indeed “flat” between heterogenous entities, translating their meaning to new entities via their relationships (Latour, 2005); associations “characterize entities in the first place” (Latour *et al.*, 2012, p. 598). In Airbnb, these associations connect an entity like a home, to an entity like a neighborhood, to an entity like surfing. Associations ascribe meaning by defining a value or condition with each connection. For example, this neighborhood entity is “known_for” the entity of surfing, and this home entity is “in” this neighborhood entity. Therefore, guests encountering this home in Airbnb’s user interface understand that the home is good for surfers, not because of the home itself, but because of its association with the neighborhood and the neighborhood’s association with surfing (Chang, 2018). Meaning is made not only via direct associations to other entities but

¹⁹ Leith is a neighborhood in North Edinburgh that is amply represented on Airbnb

also by frequency of associations as well. For example, if a high enough frequency of entities, like Experiences, are associated with a “contains” link to specific cultural entity, like Hutong²⁰, Hutong will then surface as something a specific location is “known_for” as well (Wu and Grbovic, 2020). Therefore, the high number of associations in the knowledge graph between a location entity and a concept entity will not only add new meaning to the concept as an important, unique concept within that location; it will create an entirely new entity in the form of a local concept.

Tracing these associations (Latour, 2005) is an example of how ANT can be useful as a method to understand the wider placemaking and epistemological processes of Airbnb (Sayes, 2014). However, as discussed in Chapter 2, I consider Airbnb a socially shaped technology, which is a theoretical perspective that can be considered in conflict with a true ANT perspective (Matthewman, 2017). These associations are not generated by autonomous relationships between entities themselves, but actively architected by the producers who build and maintain the platform. Decisions were made at a human level to structure this network of entities and associations, which I will empirically detail in Chapter 6. Nevertheless, associations are mediators, not simply intermediaries, as they have the power to change entities through association (Latour, 2005). Understanding the associations between Airbnb entities as having agency to change those entities, while also understanding these entities as themselves socially shaped, blurs the line between the ANT and social shaping of technology dichotomy²¹. In this way, I argue John Law’s distinction of ANT as “a disparate family of material-semiotic tools, sensibilities, and methods of analysis” that does not explain why something happens but describes “‘how’ relations assemble or don’t” is helpful here (2008, p. 141). In other words, I use these concepts from ANT a method more than a theory. Introducing and defining associations as a component of Airbnb worthy of following recognizes the methodological

²⁰ Hutong is a type of ancient narrow street in Northern China that Airbnb offers a high frequency of Experience tours of in that placemarket; I will discuss in Chapter 6 how this high frequency created this cultural concept as an entity that now other entities can be associated with.

²¹ Latour asserts this line in *Reassembling the Social* that he does not consider SST to be a part of the ANT project Latour, B. (2005) *Reassembling the social : an introduction to actor-network-theory*. Oxford: Oxford : Oxford University Press, UK.

invitation of ANT, but this chapter takes a broader consideration of other components and social context of the platform (Pollock and Williams, 2009; Hyysalo, Pollock and Williams, 2019).

3. Meso Level: Placemarks, Knowledge Graph and Platform

3.1 Placemarks: Placemarks are the geographically, digitally, economically, and culturally bounded regions of Airbnb.

The term “placemarket” was first introduced by Norum and Polson in their work on Airbnb’s online Experiences (2021). They use it to theorize how types of digital content of these Experiences comprise new “regions” in Airbnb that build a sense of place via the first person, affective, imaginative lens of their hosts. I extend the term here to include not only the way Experience Hosts make place, but how the platform’s other processes contribute to defining geographical, digital, economic, and cultural places. Furthermore, Airbnb developers refer to locations within Airbnb as “markets” or “marketplaces.” Here, I flip the term (from marketplace to placemarket), to offer a concept that is more encompassing of the richness of how I theorize it in my research, and to lead with the idea of place. There is no further scholarship that uses this concept, so my definition of it comes from my own empirical work and contributes to the vocabulary of how platforms shape place.

I have found that placemarks in Airbnb generally follow along established geographic boundaries, such as cities and touristic regions, although they can extend beyond and through them at times based on the Airbnb inventory of each place (such as how many homes or experiences are available in a geographic area). Placemarks are delineated within Airbnb by digital boundaries as well, with some technical features being rolled out in some placemarks more than others. For example, testing bringing hotels to the platform in the San Francisco market, or a dedicated advertising campaign to bring in more hosts to the platform in Brazil, are digitally bounded activities that contribute to my conceptualizing of placemarks²². Economic

²² These examples are from my interviews with Airbnb knowledge graph engineers, which I will discuss in detail in Chapter 7

boundaries of placemarkets include platform affordances that contain the financial workings of each region like Smart Pricing. Smart Pricing is a feature that “is based on the type and location of your listing²³” and determines the nightly price of your listing based on demand for other listings in your same placemarket. Cultural boundaries of placemarkets include concepts like Harry Potter Tourism or graffiti tours that placemarkets are “known_for,” leveraging the associations between entities to define the cultural flavor of a particular area. I will expand on this concept in Chapters 5, 6, and 7.

3.2 Knowledge graph: A knowledge graph is the massive, dynamic, flexible data structure of a platform that organizes its entities in relation to each other via associations for the purpose of making meaning out of those connections.

Airbnb’s fundamental data structure is a knowledge graph (Chang, 2018; Bhayani, 2022; Wei and Liao, 2019). Knowledge graphs power most of the world’s platforms, from Facebook to Amazon, LinkedIn to Microsoft, to Uber, Google, and Airbnb (Fensel *et al.*, 2020; Iliadis *et al.*, 2020). Simply put, they are architected to structure the intricate relationships between massive amounts of things (entities) that comprise the databases of these platforms. They invisibly assemble enormous amounts of real-world data from myriad sources and construct them in relation to each other. They are structured in dynamic, relational databases powered, ordered, and continuously shaped by artificial intelligence’s interaction with entities and user behavior (Wei and Liao, 2019). Within expert circles, they are lauded as technological fetes of innovation, yet their details remain mostly opaque, understood enough to be marketed as impressive yet elusive enough to be regarded as proprietary. Nevertheless, they wield great power in the way they aggregate, sort, relate, and present knowledge as objective to their users. Knowledge graphs are mostly unexplored in sociology and STS research with the exception of a few calls for research (Halford, Pope and Weal, 2013; Iliadis *et al.*, 2020), so this overview draws on fledgling work from web semantics, applied mathematics, computer science, information systems, and corporate papers from companies who use them. I emphasize this important platform

²³ Airbnb’s Help article on how Smart Pricing works can be found here: <https://www.airbnb.com/help/article/1168/smart-pricing>

component in the sociological discussion by using the framework of Bowker and colleagues' concept thinking infrastructures (2019), which although does not reference knowledge graphs directly, is a useful tool to understand the work they do.

The term *knowledge graph* was first proposed in the early 1980s to formalize a system designed by researchers at the University of Groningen and the University of Twente “that integrates knowledge from different sources for representing natural language” (Ehrlinger and Wöß, 2016, p. 3). This early notion of knowledge graph theory became useful in mapping and connecting medical and sociological texts by the late 1980s, enabling their cumulative knowledge to be structured in expanding graphs that eventually linked the relationships between their layers (Nurdiati and Hoede, 2008). Since then, knowledge graphs have grown and evolved with time, need, use cases, and the sheer volume of data input into them as a solution for the limitations of linear query and response approaches to data configurations (Fensel *et al.*, 2020).

Although it remains a fuzzy and imprecisely defined term, a few recent papers describe the unifying principles of knowledge graphs and offer a wider understanding of them through various examples and classifications. Fensel *et al.* (2020) understand the term as more of a current catch-all than a precise technological blueprint. They offer a conceptual definition that generalizes knowledge graphs as “very large semantic nets that integrate various and heterogeneous information sources to represent knowledge about certain domains of discourse” (Fensel *et al.*, 2020, p. 6). In an effort to offer an *inclusive* definition, Hogan *et al.* (2020) consider them to be:

[graphs] of data intended to accumulate and convey knowledge of the real world, whose nodes represent entities of interest and whose edges represent relations between these entities. The graph of data (aka data graph) conforms to a graph-based data model, which may be a directed edge-labelled graph, a property graph, etc. By knowledge, we refer to something that is known²⁴ (2).

²⁴ My response to “something that is *known*” is a resounding, known by whom? I will table this question for now, but pick it up in future chapters.

The UK based data visualization software firm Cambridge Intelligence acknowledges the “ongoing debate around creating a clear definition, particularly amongst the Semantic Web community,” but offers some high-level characteristics shared by knowledge graphs. These are “size – they’re a large network of connected, real world entities,” “ontology - they feature semantic modeling of knowledge: think of it as a dictionary of descriptive terms we can use to link things,” and “integration – they collect information from a variety of external sources” (Miles, 2020). Furthermore, although knowledge graphs refer to the databases of specific platforms, they also aim to make their data workable in the wider semantic web: “more recent efforts have aimed to build out knowledge graphs that link together relevant data from all over the web” (Poirier, 2019). In short, they “synthesize more recognizable ways of managing data,” (Iliadis *et al.*, 2020, p. 17), which inherently add epistemological implications to how they contextualize and represent information in knowledge systems. The following discussion describes the characteristics and workings of some of the largest knowledge graphs in the world detailed in technical yet uncritical scholarship and grey literature. I contribute a critical engagement with their characteristics to explore their role in widespread knowledge production, setting up the importance of considering them sociologically.

Google’s knowledge graph is a useful case for understanding the qualities of the concept and with which to argue the importance of studying them sociology because of their immense epistemological power. In 2012, Google operationalized knowledge graph theory into the lives of everyday internet users by announcing its use in their search engine, using it to connect billions of real-world entities, “introducing” the branded term Knowledge Graph to the general vernacular (Ehrlinger and Wöß, 2016). This fundamentally shifted the role of information discovery in everyday life; although knowledge graph theory and principles had emerged several decades prior, it was the tech giant who “coined the term... to build a model of the world” (Fensel *et al.*, 2020, p. 5). In a widely cited blog post, Google’s SVP of Engineering, Amit Singhal, announced the launch of the branded term “Knowledge Graph” (KG) with examples aimed at a broad, general audience (2012). He started by contrasting the linear way search has worked historically: by “matching keywords to queries,” against what the KG now affords: “a ‘graph’ that understands real-world entities and their relationships to one another.” In other words, it

understands the social world of its data inputs; a knowledge infrastructure that actively thinks as it structures (Bowker *et al.*, 2019), making decisions about what information to surface to end users over others. Since then, the tech giant has leveraged its knowledge graph to serve personalized, predictive, and natural language search results to billions of queries a day²⁵.

To make search results more “human” to searchers’ wide array of intentions and contexts, Google’s KG makes foundational assumptions about each search query:

The Knowledge Graph enables you to search for things, people or places that Google knows about—landmarks, celebrities, cities, sports teams, buildings, geographical features, movies, celestial objects, works of art and more—and instantly get information that’s relevant to your query. This is a critical first step towards building the next generation of search, which taps into the collective intelligence of the web and understands the world a bit more like people do. (Singhal, 2012)

In short, Google’s KG builds *relationships* (associations) between things into its core design. Of course, to do this, it must build a structure of what it believes these relationships are in the world. Singhal gives another example of Marie Curie as “a person in the Knowledge Graph” who is connected to her children and her husband who are also Nobel Peace Prize winners. A search result for Curie returns not only information about her own life, but her relational place in the social world as a mother and wife. Therefore, Singhal proclaims, the KG is “not just a catalog of objects; it also models all these inter-relationships. It’s the intelligence between these different entities that’s the key” (2012). This shows how with the KG, Google can interrogate its database “via structured queries and their properties can be analyzed like social networks” (Iliadis *et al.*, 2020, p. 17). Google’s KG organizes, categorizes, and builds connections between all the indexable content on the web, making it a key ontological and epistemological actor in the way knowledge is organized and discovered.

Google’s KG is not only *built* on relationships between entities, but its architecture makes *assumptions* about what is meaningful in these relationships and leverages this

²⁵ As of this writing, there are approximately 3.5 billion Google searches a day Mohsin, M. (2020) 'Search Statistics You Need to Know in 2021', 3 April 2020. Available at: <https://www.oberlo.com/blog/google-search-statistics#:~:text=Google%20processes%20over%203.5%20billion%20searches%20per%20day,been%20asked%20on%20Google%20Lens%202021>].

knowledge to help searchers “make some unexpected discoveries” (Singhal, 2012). For example, Singhal makes a broad claim that “people are interested in knowing what books Charles Dickens wrote, whereas they’re less interested in what books Frank Lloyd Wright wrote, and more in what buildings he designed” (2012). This classifies one entity as an author and the other as an architect, making decisions about which is the overriding category for each person’s identity. The KG uses these assumptions in returning search results for each entity, privileging associated entities classified as books in search results about Dickens and associated entities classified as buildings in search results about Wright. This knowledge infrastructure relating authors with books and architects with buildings is of course practical on a basic level, but merits critical consideration for the KG’s role in constructing “knowledge” about the world.

This relational process is enabled through Google’s thinking infrastructure (Bowker *et al.*, 2019) that dictates what information is presented back to searchers in a predictive way. Bowker and colleagues define thinking infrastructures as systems that “configure entities (through tracing, tagging); organize knowledge (through search engines); sort things out (through rankings and ratings); govern markets (through calculative practices, including algorithms, and configure preferences (through valuations such as recommender systems)” (2019, p. 2). Singhal asserts that Google’s KG helps you “answer your next question before you’ve even asked it, because the facts we show are informed by what other people have searched for” (Singhal, 2012). This is again a practicality of Google we have come to expect as users but has wider implications for the way we discover information about culture and society; “technological and economic elements of platforms steer user interaction but simultaneously shape social norms” (van Dijck, Poell and de Waal, 2018, p. 11). Google has normalized its thinking infrastructure to users in the everyday use and celebration around its knowledge graph.

With all the hype around Google’s KG, the details of its system remain opaque. Ehrlinger and Wöß point out that “numerous research papers refer to Google’s Knowledge Graph, although no official documentation about the used methods exists” (Ehrlinger and Wöß, 2016, p. 1). With Google’s KG holding more than 1 billion “entities” and 70 billion “assertions” (meaning, “facts” produced via associations made of entities) as of 2019, its scale eclipses the other major knowledge graphs in existence (Noy *et al.*, 2019). In addition to its massive size, the

KG also provides “a long-term, stable source of class and entity identity that many Google products use behind the scenes” (Noy *et al.*, 2019, p. 7). Its structure provides a base not only for Google owned services such as YouTube but lends its knowledge through many APIs that power countless other platforms, from apps providing maps and directions to those that help you book the cheapest flights to those that present travel accommodation and experience services such as Airbnb. This suggests major global implications for the way the company aggregates, conceptualizes, connects, and makes assumptions about the “entities” it holds in its KG; the most widely used data and knowledge structure in the world is, indeed, a black box.

While Google’s KG provides many rich examples of the thinking processes of these data structures, turning to other platforms can broaden our understanding of their processes and discursive power. In a paper published by the Association for Computing Machinery, co-authors from Google, Microsoft, IBM Watson, Facebook, and eBay explore the “lessons and challenges” of “industry scale knowledge graphs” (Noy *et al.*, 2019). While this paper is uncritical and provides a look at the qualities of knowledge graphs from an industry perspective, it provokes my exploration of the theoretical implications of knowledge graphs by offering several hints and examples of how these major ones operate. To shed light on the practical user experience of knowledge graphs, the authors give an example from the Microsoft owned search engine Bing. Like Google, Bing’s imperative is to streamline the most relevant knowledge to a user in her search query from the myriad data points that exist online about a topic. The authors describe the role of the knowledge graph in knowledge generation to users:

To generate knowledge about the world, data is ingested from multiple sources, which may be very noisy and contradictory, and needs to be collated into a single, consistent, and accurate graph²⁶. The final fact that a user sees is the tip of an iceberg – a huge amount of work and complexity is hidden below. For example, there are 200 Will Smiths in Wikipedia alone, and the Bing knowledge result for the actor Will Smith is composed from 108,000 facts taken from 41 websites. (Noy *et al.*, 2019, p. 6)

²⁶ This is a wonderful example of how knowledge graphs standardize and classify, which I will discuss empirically with the case of Airbnb in Chapter 6

This example from Bing sheds light on the platform's "thinking" in its data infrastructure and offers several interesting implications for the role of knowledge graphs in society. First, the authors distinguish data from knowledge, and implicate Bing's technology as epistemologically active. With its knowledge graph, Bing has the power to "make sense of" the loud, competing information that lives in the online universe. Its technology plays an active role in obscuring data and content that are not deemed relevant to users and making visible the "tip of the iceberg" that it deems correct. Bing's knowledge graph, like others, is proprietary and therefore kept a black box for competitive purposes. van Dijck, Poell, and de Waal point out, "although platform owners may lift a veil on how their algorithms work, they are often well-kept trade secrets and are everything but transparent" (2018, 10), which this description of Bing's exemplifies. Nevertheless, this example shows what the algorithm "makes sense of" and shows its impact on framing information about the world.

Another tech giant, Facebook (and now its parent company Meta), has leveraged knowledge graph theory to build connections between people since 2003 and is considered today to be the largest "social graph" in the world. Its knowledge graph now extends beyond social connections to consider "the things that people care about," leveraging the same technology (although not the same technological intricacies) as Google to generate information about the world (Noy *et al.*, 2019, p. 9). It's contemporary knowledge graph, called the "Entities Graph," launched in 2010 "and contains knowledge about the Facebook users, namely, their profile information, interests, and connections." It contains about 500 million "facts" and can be accessed by developers and other platforms (including Airbnb) via the Facebook Graph API (Noy *et al.*, 2019, 9). Each platform's knowledge graph has a particular configuration of entities, associations, and knowledge recall tactics. Tracing their specifics surfaces the way they are interconnected in a broader thinking infrastructure and the broader, giving weight to their epistemological processes.

I offer this discussion of various companies' knowledge graphs to show the ubiquity of this data structure in our digital worlds and argue that understanding their processes is an important part of understanding the prominent knowledge production practices of our time. To begin an analysis of the concept, Fensel *et al.* (2020) give a hermeneutical breakdown of the

terms *knowledge* and *graph* that can serve as a further theoretical provocation for the epistemological implications of knowledge graphs. They point out that a *graph* is a configuration that structures and facilitates the relationships between data points or other types of information in varying degrees of complexity. They refer to *knowledge* as “externally assigned” to an agent assumed to follow “the principle of rationality” for “‘optimal’ decision making” when taking actions to “achieve certain goals” (3). This *knowledge* is therefore less of an independent entity but something that is ascribed to “agents,” or algorithms, navigating the information in the *graph*. Unpacking these terms invites consideration of how “arrangements of technical infrastructure are arrangements of power” (DeNardis, 2020). The structure given to the graph by engineers lays out the field in which power relations can play out²⁷. The knowledge, or instructions assigned to agents moving within the graph (algorithms), have the proprietary goals of the platform embedded within them. Therefore, their configuration and design are part and parcel of the way platforms and society interact with each other. As Kitchin offers, algorithms have the power to “shape how we understand the world” (Kitchin, 2017), and knowledge graphs offer a “thinking infrastructure” (Bowker *et al.*, 2019) within which they can do this work.

Like other knowledge graphs, Airbnb’s is comprised of a massive amount of standardized entities (Homes, Experiences, locations, guests, hosts, Concepts) that represent real-world information, collected from a diverse array of data sources (the inputs and actions of over 150 million users around the world²⁸, location data, search data, and connections with other platforms such as Google and Foursquare), structured relationally by technological links that are scalable in size and knowledge generation capabilities. As discussed in Chapter 2, Airbnb has expanded well beyond an accommodation platform; its knowledge graph has incorporated diverse components of locations such as neighborhoods, restaurants, landmarks, activities, and local cultural concepts. Technical experts like Bhayani who study Airbnb’s knowledge graph describe that it “powers the search discovery, and trip planning of the platform... [to] help users

²⁷ The notion of power is one I am tabling in this text, but one I am working through and will explore in future chapters.

²⁸ The user number has not been updated since 2018, so the true number of users has likely grown. Sourced from: <https://www.businessofapps.com/data/airbnb-statistics/> on April 26, 2021

make the best decision” as they explore where to go, where to stay, and what to do around the world (Bhayani, 2022). The fuzziness of what knowledge graphs are has been an interesting provocation for my work, and I consider this an invitation to dig into Airbnb’s knowledge graph specifically to connect its platform processes to its role in placemaking, deepening our sociotechnical understanding of the platform. What are the nuts and bolts, the inner workings, the data, the links between those data? How does Airbnb’s knowledge graph plug in with, link up to, and therefore impact data and meaning in the larger semantic web? As mentioned above, a place to begin this work is to turn my focus to what they *do*.

The Alan Turing Institute’s research group on knowledge graphs explains that they “organize data from multiple sources, capture information about entities of interest in a given domain or task (like people, places or events), and forge connections between them” (Institute, 2022). With the understanding of knowledge graphs developed in this section, asking “how Airbnb?²⁹” has an intriguing epistemological point of departure. As I will explore in Chapter 6, Airbnb’s knowledge graph is the catalyst for a series of processes that I argue are important to consider about how the platform creates knowledge of place but have yet to be explored in critical scholarship. First, for its entities to be usable in the knowledge graph, they must be standardized, classified, and categorized; this is done with a series of tactics such as input forms inviting users to self-classify their offerings and the work of Airbnb marketing and product teams who further tag user generated content with themes and categories. Then, entities go through a process of association making, creating social relationships between them. This is done by Airbnb engineers who code in those associations to the knowledge graph and also develop machine learning functions for associations to surface with various rules and frequencies (Wu and Grbovic, 2020). These first two processes make possible the final process of personalization via recommendations to end users. This final process leverages the work of the knowledge graph to make assumptions about what users might be interested in, showing them personalized content of placemarkets to entice bookings. Airbnb’s knowledge graph structure is built to both benefit users within the platform and to make the platform’s entities usable in the wider semantic web.

²⁹ Returning to the project of ANT, describing “how” by tracing the technology

3.2 Platform: A platform is a cohesive digital system comprised of various technologies that serves as a foundation for additional applications, systems, protocols, and networks to be built on and connected to for the purpose of generating data and facilitating social and economic connections between users and developers.

Airbnb is a platform, in part made up of each of the components discussed thus far: entities and associations are its content, combining to make placemarkets and structured together in its knowledge graph. But these only attend to the data of the platform; important to also consider is the technical structure that arranges them and puts them to work together with each other and other systems. Platforms are characterized by additional qualities and affordances, in particular their programmability (Helmond, 2015), technical connectivity (van Dijck, Poell and de Waal, 2018), social networking capability (Ellison and Boyd, 2013), and capacity for economic exchange (Srnicsek, 2017). Taken together, these components make platforms “(re)programmable digital infrastructures that facilitate and shape personalized interactions among end-users and complementors, organized through the systematic collection, algorithmic processing, monetization, and circulation of data” (Poell, Nieborg and van Dijck, 2019, p. 3). Thinking of platforms from an infrastructural perspective can help take seriously their durability, materiality, and connectivity with other systems. With its social network of relationships between hosts and guests, connections with other systems like Facebook and Google discussed in Chapter 2, two-sided marketplace capabilities, and (re)programmability that shows itself in constant updates and changes, considering Airbnb a platform opens fruitful pathways to research and theorize it.

Unlike knowledge graphs, platforms are a widely known and studied concept in academia and a familiar concept in general popular culture as well. Following alongside their emergent use in the 2010s, critical scholars quickly identified the need to take platforms as serious objects (and systems) of study. Gillespie was early to point out the “semantic richness” of the term “platform,” drawing from discursive meanings in computational, architectural, figurative, and political contexts (2010). His 2010 article theorizing the “politics of platforms,”

called for researchers to resist the “comforting sense of technical neutrality and progressive openness” the term promotes, and invited social scientists to take up critical and precise empirical research on and with platforms (p. 360). Around the same time, Gawer edited a groundbreaking series of empirical scholarship concerning platforms (2011). She argued that “platforms invite us to examine carefully the intimate interactions between technology and business, and in particular the structure of technology and modalities of business interaction” (2011, p. 4). Scholars have taken up both challenges, exploring platforms from a variety of lenses and advancing our critical understanding of them. The field of platform studies has since shown the enabling and constraining qualities platforms have on social life (Plantin *et al.*, 2018).

Throughout this thesis I refer to Airbnb as a sociotechnical system and a platform, and argue that taking an infrastructural approach to exploring it can help make visible its multifaceted nature and the many things it does. Indeed, Plantin and colleagues advocate for considering perspectives from both infrastructure and platform studies as they can offer different yet complementary insights, a kind of “theoretical bifocal” (Plantin *et al.*, 2018, p. 306). For the sake of distinguishing my use of both terms, I use “platform” when referring to Airbnb’s specific technological system. I consider my approach to analyzing this system to be an “infrastructural” one that attends to the programmability and connectivity of platforms just discussed above. Considering platforms from an infrastructural perspective invites us to ask questions of “scale, labor, industry logics, policy and regulation, state power, cultural practices, and citizenship in relation to the routine, every day uses” of them (Plantin and Punathambekar, 2019). This has inspired me to consider what Airbnb’s platform enables, what other systems it connects with, and what is obscured beneath what we see in the user interface.

Computationally, platforms differ from websites in that they are a foundational structure upon which to build and connect to other applications (Gillespie, 2010; van Dijck, Poell and de Waal, 2018; Helmond, 2015). Airbnb’s foundational digital structure includes its knowledge graph, its various products such as Airbnb Plus, Experiences, and Neighborhoods (which are populated by Homes, Experiences, and Neighborhoods entities as well, examples in this instance of collapsing scales), and its platform affordances such as messaging, financial transactions, leaving reviews, and making lists. Platforms are also characterized by their reliance

on the connection to the broader platform ecosystem via their application platform interfaces, commonly called *APIs* (Helmond, 2015; van Dijck, Poell and de Waal, 2018). Airbnb relies on other platforms such as Facebook, Amazon³⁰, and Google through APIs to perform crucial functions such as verify and govern user identities, host its servers, and map its listings around the world. Airbnb's complex tech stack³¹ shows the variety of applications (Airflow, Druid, Presto), systems (Redis), protocols (React, Sass) and networks (Nginx), that make up its platform. Helmond points out that these types of integrations make platforms the "dominant infrastructural and economic model" of the web (Helmond, 2015, p. 5). She argues platforms provide both a "technological framework for others to build on," while simultaneously "readying external data for their own databases," which is a crucial element of their business models. She calls the tension between this de- and re-centralization of data by platforms "the double logic of platformization" (Helmond 2015 p 8).

The relationship between platforms and infrastructures can be further explored with this notion of "platformization." Scholars consider this a process that both shapes the system being "platformized" and simultaneously strengthens the platform doing the shaping. As just discussed, Helmond uses the concept to convey the infrastructural capabilities of platforms to build the more solid, technological framework of the web (2015). She has illustrated this with impressive empirical depth in her study of Facebook's use of APIs to fortify and grow the platform into a vast, connected infrastructure (Helmond, Nieborg and van der Vlist, 2019). Poell, Nieborg, and van Dicjk define platformization as "the penetration of infrastructures, economic processes and governmental frameworks of digital platforms in different economic sectors and spheres of life, as well as the reorganization of cultural practices and imaginations around these platforms" (2019, p. 1). In this definition, the logics of the technology infrastructures called "platforms" influence and reshape existing, more legacy infrastructures such as cities and governments, and crucially also shape the practices and expectations of end-users as well. In both definitions, platformization is a process, further requiring a processual approach to study.

³⁰ Airbnb uses Amazon CloudWatch for "nearly all of its cloud computing functions":
<https://aws.amazon.com/solutions/case-studies/airbnb-case-study/>

³¹ This Medium article breaks down the components of Airbnb's tech stack:
<https://medium.com/@poojaseenu1999/the-technology-stack-behind-airbnb-6b23fe425612>

Considering the historical phases of platformization can challenge narratives of “natural” platform success and show “incremental evolution rather than revolution” (Helmond, Nieborg and van der Vlist, 2019, p. 123). The Airbnb story told in the previous chapter exemplifies this.

Beyond meeting the technical requirements for being a platform, Airbnb has also emerged as a cultural platform in the more metaphoric sense. Its massive adoption of over 150 million users³² gives high visibility to its user interface, making it an influential medium to communicate its affective branding to “Belong Anywhere.” Its marketing has pushed the ethos of global citizenship and connection via homes and neighborhoods around the world. Therefore, Airbnb is a platform in the technical and cultural sense. This gives a stage to Chapter 2’s discussion of the cultural hook of belonging, which is a device Airbnb uses to make productive users. In Gillespie’s consideration of the term “platform,” he points out that the non-computational meanings of a platform (a stage, a place of opportunity, a political device) obscure and distract from its technical activities (2010). Following this, Airbnb’s technical features quite literally afford and advance its cultural platform of belonging anywhere. For example, user narratives in listing descriptions and reviews reshape urban space in the cosmopolitan imaginary (Törnberg, 2022); the platform’s cultural platform is advanced by its technical one. Considering Airbnb a platform in technical, cultural, and social senses helps theorize what it does and how it does it. Within these contexts, platforms govern users (Gorwa, 2019), privatize the web (Helmond, 2015), and make data profitable within the digital walls of business frameworks (van Dijck, Poell and de Waal, 2018). Each of these offerings from platform literature are helpful in exploring Airbnb, which I also more broadly refer to as a sociotechnical system to refer to the social conditions in which it is made and the social contexts in which it is used.

³² The Zebra has reported 2022 Airbnb stats: <https://www.thezebra.com/resources/home/airbnb-statistics/#:~:text=Airbnb%20fast%20facts%20and%20user%20demographics&text=Today%2C%20it%20has%20over%20150,5.6%20million%20active%20listings%20worldwide.is>

4. Macro Level: Sharing Economy and Semantic Web

Equipped with this framework for understanding Airbnb's components, this final section will contextualize them on a macro level. I position Airbnb as an instance of the sharing economy, made possible by the proliferation of platforms that facilitate "sharing" at scale. I then position the sharing economy within the wider semantic web and will discuss how the entities and associations that comprise its knowledge graph plug in with the world wide web, extending its influence in knowledge production and meaning-making well beyond the boundaries of its platform. I argue that concepts and sociological questions that emerge from understanding the semantic web are useful in my work, as they help articulate the components, processes, and implications of Airbnb.

4.1 Sharing economy: A grouping of economic actors and activities, enabled by platforms, that facilitates peer-to-peer exchanges of goods and services and leverages the imaginary of sharing as a branding strategy to grow crucial usership of these platforms.

This definition acknowledges the debates around the role of the word "sharing" in what we commonly refer to as the sharing economy. It positions sharing as an imaginary that not only contributes to the concept's rise to popularity but has brought the platforms that identify with it into everyday life. That said, there are many definitions of the term across disciplines that have varying degrees of celebration or criticism. Scholarship has broadly acknowledged the term as an umbrella buzzword with several variations (platform economy, digital economy, collaborative consumption), subcomponents (gig economy, on-demand economy), and critical counter terms (platform capitalism) (Srnicek, 2017). This has contributed to "widespread ambiguity and even confusion about the term" (Frenken and Schor, 2019, p. 122), and its lack of a clear definition has inspired much debate in academia and journalism. For example, Görög's systematic literature review on the term found 26 different expressions to describe the concept in its

various nuances and points out much of the ambiguity lies in the word “sharing” (2018). “Sharing,” indeed, seems to be the sticking point in academic debates about the term. I offer an understanding of it here that it is an *imaginary* (Bruni and Esposito, 2019a); it is not truly sharing in all definitions of the term, yet it offers a set of values, connections, and cultural meaning in its positioning and brand promises that align its actors and activities with a decentralized ethos of sharing.

Sharing has been a social phenomenon for centuries, studied across disciplines. Today it is still argued that “sharing is a distinct, ancient, and increasingly vital consumer research topic” (Belk, 2009, p. 715) as it “reproduces social relations and solidifies cultural practices” (Frenken and Schor, 2019, p. 122). I argue this conceptualization of sharing exists in Airbnb in the social relationships that develop between users, creating their own set of cultural practices, which I will discuss in Chapter 5. One major example of how the platform reproduces social relationships is how it allows users to sign in via their Facebook accounts. In 2011, Airbnb debuted Social Connections which integrated with Facebook’s application program interface (API) and introduced a socially networked experience between users. For example, guests could search for properties by looking for which of their Facebook friends had also stayed there (Shah 2018). A prominent example of how Airbnb solidifies cultural practices is with Experiences. Cultural concepts such as “Harry Potter Tours” in Edinburgh, “Hutong Tours” in Beijing, or “Street Art Tours” in Cartagena bubble up through the platform with enough frequency to then characterize neighbourhoods in these placemarks as being known for these cultural practices. I will expand on these ways Airbnb reproduces social relationships and solidifies cultural practices in later chapters, but for now offer them to position Airbnb as a sharing economy platform.

However, most contemporary social science scholarship rejects the consideration of platforms like Uber and Airbnb as “sharing.” Slee argues that the sharing economy has gone full-circle from the “generosity of ‘what’s mine is yours’ to the self-interest of ‘what’s yours is mine’... and the ‘sharing’ in the Sharing Economy has been reduced to simple market exchange” (Slee, 2017, p. 7). In the *Sociological Review Monograph “Unboxing the Sharing Economy,”* Arcidiacono, Gandini, and Pais point out that although the concept of sharing “has always been

central to sociological thought, and that goes back to authors such as Polanyi, Marx and Sombart,” our current digital landscape has given rise to “the most extreme manifestation of the evolution of the relationship between society and the market” (2018, p. 278). They argue that popularization of the use of “sharing” originates in the rise of social web enabled “collaboration” that has become celebrated as “the rise of consumption without ownership” (2018, p. 276). This ownerless consumption has shifted the mode of accumulation away from the necessity of owning and toward the possibility of renting; or making some extra cash with your underutilized resources.

Regardless of the nuances of “sharing” definitions and whether platforms facilitate a true version of the phenomenon, central to the sharing economy’s success is the *ethos* of sharing. The “semantically hyperpositive discourse” around it has been embraced with “revolutionary potential” by the masses in a way that renders the traditional meaning of it irrelevant (Arcidiacono, Gandini and Pais, 2018, p. 276). Extending this further, Frenken and Schor argue that the “positive symbolic value of sharing” is enough to make hundreds of platforms want to identify with it, even if more capitalistic businesses models are appropriating the concept. Therefore, “the confusion about the definition of the sharing economy is self-propelling due to the performativity of the term itself” (Frenken and Schor, 2019, p. 123). The debate I am interested in is not what the *definition of sharing* is, but how the concept is coopted by platforms like Airbnb to perpetuate and capitalize on the world view of their users. Recalling the previous section, Airbnb is both a technical and cultural platform from and through which its ideals can be perpetuated.

Central to each of these critical observations is the functionality of exchange and facilitation of worldwide reach that comes with and through the internet. Within today’s sharing economy, Coyne and Onabolo point out, local cooperatives have the potential to grow to a global scale, and the “shared digital economy arguably amplifies, extends, and accelerates the creation of such innovations” (2017, p. 369). Indeed, a diverse and prolific array of mainstream sharing economy sites have cropped up in the 2010s. As of 2014, the organization Peers³³ listed

³³ Discussed by Slee (2017), Peers is a self-described “grassroots, member driven organization that supports the Sharing Economy movement”

75 sharing economy bodies, covering focuses from pet sitting (Gudog), boating (BoatBound), housework helpers (NeighborGoods), parking spots (ParkAtMyHouse), and many others (Slee, 2017). Slee acknowledges a dichotomy in the sharing economy landscape: on the one hand, smaller scale cooperatives like the ones just mentioned that facilitate personal exchanges, and on the other, a few globally scaled, massively funded corporations with the power to shape policy, acquire competitors, and invest in their technologies (2017).

It is widely acknowledged that Uber and Airbnb are the two main pillars of the sharing economy (Frenken and Schor, 2019; Slee, 2017; McIntyre, Srinivasan and Chintakananda, 2020), despite being the two most contested examples of “sharing.” This is no accident, as Chapter 2 drew the connection between Airbnb’s dominance and its financial backings by Silicon Valley, leveraging the term “sharing” to further a branding story of collaboration (Gallagher, 2017). The concept of the sharing economy emerged alongside the development of Airbnb. After the 2007-2008 financial crisis, a convergence of tech innovation, the search for new means of economic value creation, and the normalized use of social networking platforms created a culture that embraced the concept (Arcidiacono, Gandini and Pais, 2018). Airbnb’s value production, like other sharing economy sites, relies on “collaboration, access to, and the socialization of” assets and services, offered by users, through its user interface and platform affordances (Arcidiacono, Gandini and Pais, 2018, p. 276).

Although I am critical of the use of “sharing” in the term “sharing economy,” I argue it is still a useful way to situate Airbnb. It offers two critical points of departure: first, situating Airbnb within the “sharing” imaginary is key in understanding the entrenching of platforms in our daily life as far as values are concerned, and second, this collaborative model has required the web as we know it to fundamentally platformize. To operate, it requires social infrastructures of trust between people (or, users), technical infrastructures of platforms and the broader world wide web (to facilitate exchanges), and material infrastructures of inventory (cities that support neighborhoods and homes worthy of visiting). Throughout the course of this thesis, I will return to findings that demonstrate how Airbnb has leveraged and commodified the “sharing” ethos of the culture they have built and continued to perpetuate. This is key in creating the desire to travel, and central to the way the content of cities is input and therefore

presented in the platform. The tensions present in the sharing economy debate also manifest in the user interface and deeper into what I have learned about the company's aims, for example as hotels and "professional" design standards drive the growth of Airbnb. The technical structure of the platform is the mechanism through which "sharing" and cultural values of home are made global.

4.2 Semantic web: A layer of standardized identifiers applied to the content of the world wide web to make its content meaningful to both bots and end users, shrinking the smallest unit of the internet from documents, or pages, to the entities that reside on those pages.

The semantic web, otherwise known as Web 3.0, is not separate from the world wide web as the common user experiences it. Rather, applies standardized identifiers to the content of the web to give it "machine-readable context and meaning" (McCarthy, 2017, pp. 22-23); in other words, to make this content meaningful to bots as well as to human users. This results in the semantic web being a "loosely connected group of technologies, standards, methods, organizations, and people" who have the goal of "improving data operability across the web" (Iliadis *et al.*, 2020). The semantic web became widespread in the early 2010s, radically changing the way digital content is connected and therefore accessed online. Before then, the world wide web in its various scales existed as links between *documents*, most typically in the form of web pages, with unique Uniform Resource Locators, known as URLs (Halford, Pope and Weal, 2013). The first public mention of the semantic web occurred in 1994 at the inaugural international world wide web conference, when the founder of the modern internet, Tim Berners-Lee, bemoaned the flat, meaningless structure of the document-based web (Poirier, 2019). Thus began a concerted international (albeit Western) effort, led by governments (Halford, Pope and Weal, 2013) and collaborated on by a range of stakeholders, to standardize the "protocols needed to enable a Semantic Web" (Poirier, 2019).

The basic unit of the internet shifted with the introduction of the semantic web, evolving from a 'document' based web to a 'data entity' based web. Data entities, or just "entities" as I have defined them, are "real world things, such as people, places or products" (Halford, Pope

and Weal, 2013, p. 176), whose meanings are defined, named, and linked by web developers (Mccarthy, 2017). These entities can still be found on web pages, but are now identified as independent inhabitants of those pages, “free from the constrains of any document within which they might appear”(Halford, Pope and Weal, 2013, p. 177). These entities are created when developers “wrap” content in metadata that structures it in a meaningful way; a “key feature” of Web 3.0 is “increasing data interoperability on platforms through structured metadata modeling” (Iliadis *et al.*, 2020, p. 6). If entities serve as the new nodes of the network, so to speak, their metadata signifies both their qualities and their meaning in relation to other entities. In the semantic web, search engines discover these *entities*, which can be myriad rich content and data including images, videos, PDFs and other files, or other defined snippets of information (MOZ, 2020). They are recognized by Uniform Resource Identifiers, or URIs, more specific and precise than their URL predecessors (Halford, Pope and Weal, 2013). Therefore, the *locator* of the document-based web has given way to the *identifier* of the semantic web.

Inherent to the purpose of an *identifier*, URIs require a naming process. For URIs to be workable in this massive network of entities, this process needs to be universally agreed upon and practiced by the makers of the web. “Publishing data in a consistent format is key to making a transition from a Web of documents to a Web of data” (Halford, Pope and Weal, 2013, p. 177). This requires “the assumption that real world things are objectively known and knowable as representations within a global information infrastructure” (Halford, Pope and Weal, 2013, p. 178). It also requires the builders of the web to name them. Chapter 5 details how users are governed to name and describe entities of Airbnb, and Chapter 6 explores the standards, classifications, and associations that further add identity to entities. As just discussed, these entities gain further meaning via the associations made between them in Airbnb’s knowledge graph. The components of Airbnb discussed thus far in this chapter follow the same principles as the semantic web, making them workable (and searchable) outside the confines of its platform. The point to be made here is that Airbnb exists in a digital world that is standardized to be connected to other databases by actors who add meaning on top of its user generated content, expanding its influence outside of its platform. This further necessitates an exploration

of Airbnb's, and other platforms', entities and knowledge graphs as sources of information that both contribute to and circulate in the semantic web.

Improving web search, and therefore making the internet more accessible to end users, was at the heart of early semantic web efforts (Poirier, 2019). Within this emerging model, the content of the web was made much more discoverable by the popularization of search engines in the 1990s. These search engines (still) operate by deploying bots, commonly referred to as spiders, that crawl these web pages, surfacing relevant pages to end users. Spiders do this by following the links between web pages to make an index of them and organize them much like a library for the purpose of easier discovery and retrieval (MOZ, 2020). As mentioned, before the semantic web, the most basic unit of the internet was the document (Halford, Pope and Weal, 2013), and people discovered these documents via the organizing links between them. This created the web of documents that Berners-Lee lamented had only the meaning that humans prescribed to them and lacked machine readable meaning. Because the quest for smarter search drove the expansion of Web 3.0, the standardization of these unique identifiers has been in service of enabling their entities to "be linked with other data points on other web pages" (Poirier, 2019). These smaller, more specific units of data that comprise the semantic web require an even more intricate and complex system of links to connect them and make them searchable. "Once these data entities are established, multiple and heterogeneous data can be *linked to* them and, further, complex *links between* entities, and what is known about them, can be made" (Halford, Pope and Weal, 2013, p. 176). Returning to the examples of Google and Bing's knowledge graphs, the semantic web extends the capabilities of thinking infrastructures to a broader system of meaning making and discovery.

Sociology is only beginning to grapple with the specifics of the configuration of the semantic web. As referenced throughout this section, Halford, Pope, and Weal brought a discussion of the Semantic Web to the discipline in 2013. Their invitation to the field was to consider "how a sociological analysis of this emergent infrastructure helps to uncover its potential effects on data, knowledge, and expertise" (174). They point out that digital sociologists understand "technical developments are neither inevitable nor neutral," and argue that "the making of a Semantic Web will involve politics and power, difficult choices and

contingent outcomes. It is important that we understand how this new Web is being constructed and what that means for the future” (Halford, Pope and Weal, 2013, p. 174). The epistemological and sociological implications of the semantic web have still only barely been explored (Iliadis *et al.*, 2020; Iliadis *et al.*, 2023), and I hope this thesis adds to the discussion. My exploration of Airbnb’s processes interrogates the how the building blocks of its knowledge graph are made, which matters not only to users of Airbnb but are made to be workable in the semantic web. Situating Airbnb as a sharing economy platform, built with a knowledge graph whose entities interact with other knowledge graphs in the wider semantic web sets up this object of study as sociotechnical system open to explore. In the final section of this chapter, I will connect the framework just introduced and set a pathway for working with it.

5. Conclusion: Working with this framework

By starting small, this chapter has defined Airbnb’s foundational building blocks as *entities*, or data points that represent real world things within the platform. This definition gives us a starting point to now examine entities as an object of study, and we can begin to theorize how they are made and how they work within the larger systems of the web. Chapters 5 and 6 explore how they are co-constructed by users, developers, engineers, marketers, input forms, and their relationships to each other, for various reasons and with different theoretical points of entry. Introducing *associations* as the connections between entities brings a social consideration to Airbnb’s technology mentioned above. If meaning is made via these associations, then tracing how they are architected may cast light on the values and cultural views of place the platform brings to end users.

At a meso level, imagining the regions of Airbnb as *placemarks* brings an understanding of the cultural, geographical, economic, and digital forces at play behind how the platform sees place, draws boundaries around it, and approaches the production of it. Articulating Airbnb’s data structure as a *knowledge graph* signals its massive size, complexity, and diversity of entities, and invites us to consider how it makes knowledge and meaning through its structure. The term also aligns Airbnb with the other major platforms that use the term, situating it in a class of tech giants that most of the world’s digital users interact with, and

thus signifying its importance to study. Understanding Airbnb as a *platform*, comprised of a suite of technologies and connections to other tech infrastructures and databases, plugs it into the broader platform society, entrenching its importance and role in broader knowledge production. This helps me consider Airbnb as a set of sets (DeLanda, 2016), or more specifically a system of systems (including its knowledge graph and its placemarkets), that connects to the semantic web).

More broadly, situating Airbnb as a player in the *sharing economy*, despite the contestations of the term sharing, acknowledges the importance of branding and storytelling in the platform's rise to success. This offers an invitation to consider the affective affordances, language, and design details of the platform as culturally significant devices. They make meaning out of the consumable content of places around the world and play a major role in creating the desire to travel, which I will continue to unpack in subsequent chapters. Understanding sharing as an imaginary is a useful to move beyond the debate of "if" platforms like Uber and Airbnb are the sharing economy, and into a deeper understanding of *how* they grew into powerful players in the global economy. Finally, bringing forward a definition of the *semantic web* to serve as the context for this research aims to cast light on the larger implications of an entity-based digital world. When the makers of the web are also the ones who apply identifiers (rather than locations) to the entities that represent real world things, there are major epistemological implications at play. I introduce the semantic web in this chapter to extend the importance of unpacking the way our tech is made from one platform case study, Airbnb, to our current iteration of the internet.

This work seeks to make the familiar strange in service of casting light on the processes of the web that tend to be invisible to, or taken for granted by, end users. These invisible processes have thus far been taken for granted in Airbnb scholarship as well, and I contribute an articulation of them to advance out platform literacy. A part of this is critically exploring Airbnb's platform and how it fits into the rest of today's platform society and semantic web. The goal is not to open the black box to see everything that's inside, but to know more about the *approaches* of black boxes to understand their processes when we are not privy to their proprietary details. What do we take for granted about the platforms and websites we use every

day? Introducing clarifying definitions of the components and context of Airbnb is the first step to do investigating – and articulating - this. This framework is helpful in making sense of the messiness, the complexities, and the collapse of parts and wholes that knowledge graphs, platforms, the sharing economy, and the semantic web bring into today’s social life. My research puzzle applies to the wider platform society, guided by broader sociological questions, and therefore situates Airbnb as an exemplar for unpacking processes at play in the major platforms of today: Google, Facebook, Amazon, and others. This chapter’s framework is the first step toward working through this, to help us theorize the processes of the web. Next, Chapter 4 will describe my approach to answering these questions.

Chapter 4: Methodology

1. Introduction: Flashes of insight

We learn by living... let us be at home as far as may be in the characteristic life and activity, the social and cultural movements, of the city which is our home ... For here is that experimental social science... the practice which illuminates theory... we must live the life if we would know the doctrine... our quest cannot be attained without participation in the active life of citizenship.

Patrick Geddes, "Cities in Evolution," 1915 (p. 60)

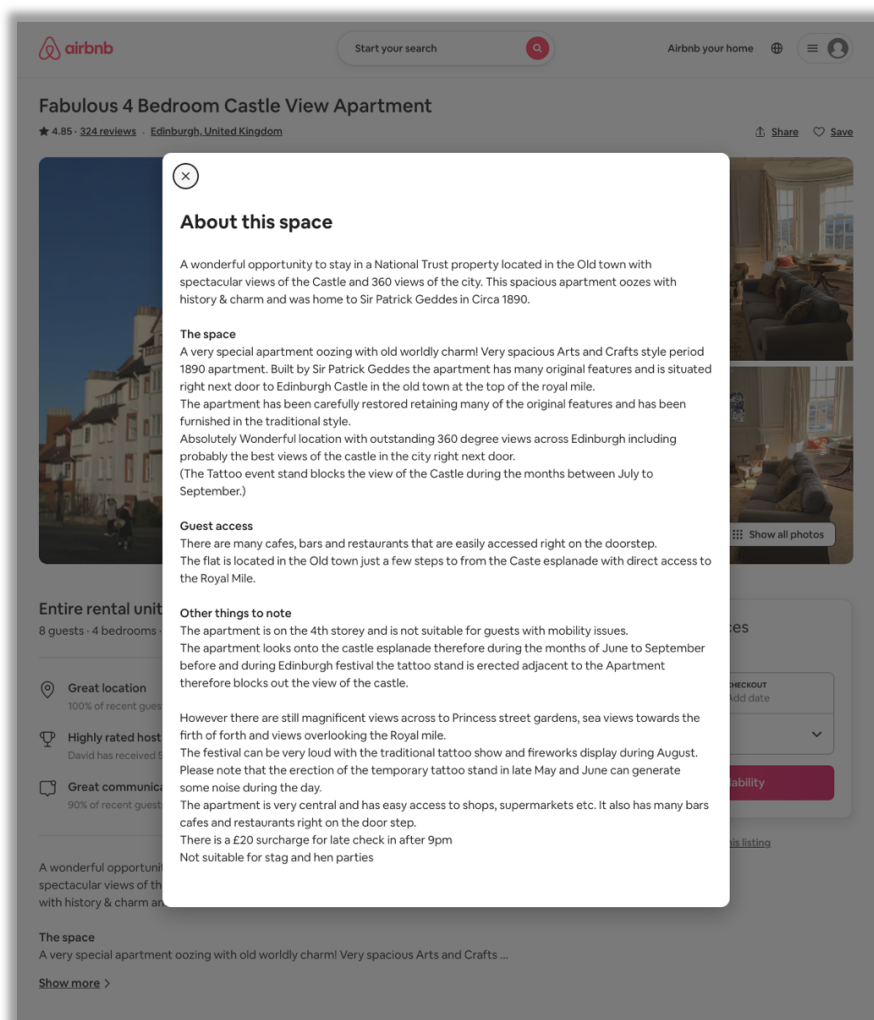
A group of 6 ladies from London were on the tour, and when [our tour guide] talked about Patrick Geddes up at Ramsay Court, he said that's where Geddes lived. One of the ladies was like wow that's our Airbnb! Hah! So I asked her a few follow up questions- did you know it was his place when you booked it? She said no, it was just honestly the closest place to the Castle for 6 people to stay. She said it was full of antiques, super cool, and all the rooms connect. They did not have contact with the host. They loved the proximity to the Tattoo, which is why they were there. Although they were from London and had been to Scotland before she had not been to Edinburgh.

My field notes entry from August 17th, 2022

Figure 1: Airbnb Listing for Patrick Geddes' House, Screenshot by McGowan, June 2023



Figure 2: Screenshot of description for Patrick Geddes' house on Airbnb, screenshot by McGowan June 2023



Patrick Geddes was a Scotsman who is credited with planning and leading the regeneration of Edinburgh's Old Town in the 1880s. Academically trained as a biologist, revered as a polymath, and considered by some as one of the early influential sociologists, Geddes rejected disciplinary boundaries (Studholme, 2007). Despite his academic fluidity, he has been more recently credited with pioneering Civics, an applied sociology in urban planning (Law, 2005). He advocated for urban processes to be analyzed and understood, seeing them as embedded in the social context of the broader region, and considered city planning a site to advance social progress (Meller, 2005). Despite this progressive orientation, his work has rightfully drawn criticism for embedding colonial ideals of knowledge and power in city planning

around the world (Hysler-Rubin, 2013). Nevertheless, his approach to “learn by living” and desire to illuminate theory through practice (Geddes, 1915) continues to resonate with city planners and urban sociologists over the years. Today, he lives on in Edinburgh via urban encounters, especially touristic ones, perpetuating his contribution to the making of Edinburgh’s sense of place in a new context. He features in the stories of Edinburgh tour guides. His likeness, words, and philosophies appear throughout Central Edinburgh from the Portrait Gallery to inscriptions along the Royal Mile. The Outlook Tower he built as a civic observatory has been converted into the Camera Obscura, an “award winning³⁴” tourist experience. His home is listed on Airbnb.

The value Geddes placed on interdisciplinary, grounded, and “lived” approaches to attend to urban sociology can be found in this chapter’s engagement with contemporary methodological scholarship, advancing this outlook in a digital context. But this opening vignette does more than bringing Geddes into focus; the excerpts that begin this chapter introduce how “flashes of insight” are generated from the entanglement between various methods (Mason, 2011). In living an “Airbnb Experience” tour in Edinburgh, I encountered ways the digital, material, and social work together in contemporary place making narratives by following Geddes. The buildings that our tour guide pointed out are material examples of his planning values, boasting communal green space and vantage points for civic observation. Seeing a particular building prompted a group of Guests to exclaim that it was their Airbnb, highlighting the shift between the past intention of the structure (for residents) to the current use of it (for tourists). This illuminates the methodological importance of considering historical context and taking change and process seriously. The women staying there did not know Geddes or his historical legacy, and to them the home served a utilitarian purpose: to accommodate their big group close to the event they were in town to attend. Despite the guests being unaware of Geddes, the Airbnb description for the listing (figures 1 and 2) uses his name to market the flat and describes its original historical features in detail. The insight here is found in the juxtaposition between the presentation of place and the encountering of it, spanning past

³⁴ The museum’s website boasts awards from TripAdvisor, Scottish Thistle Awards, Green Tourism, and more, accessible here: <https://www.camera-obscura.co.uk/>

and present, online and off; considering all together show how some users (guests) can make different meaning from technology use than intended by other users (hosts and producers). This insight also illustrates the process and benefits of the iterative facet grounded research design taken throughout this project.

The following sections will describe my research design, methods, ethical considerations, data analysis, difficulties and limitations, and reflections on the process. I start with a chronological account of how I designed my research. This narrative style aims to highlight how my iterative approach gradually developed my theoretical position via practicing and exploring it across various empirical contexts. After beginning with “mixed method” pilot studies, I then added theoretical structure and purpose to my next round of studies with Jennifer Mason’s concept of Facet Methodology (2011). My use of this research orientation gives a strategic, sociological configuration to the STS call for investigating biographies of artifacts and practices, or BOAP (Hysalo, Pollock and Williams, 2019; Pollock and Williams, 2009). I then describe the methods, concurrent data generation and analysis, and ethical considerations of each substantive facet study: my overarching netnography, interviews with producers, Homes hosts, guests, and Experience hosts. I conclude by advancing my methodological facets into substantive ones that comprise the subsequent chapters of this thesis.

2. Theoretically Iterative Research Design

Instead of integrating the parts of an empirical study in a formulaic and pre-designed kind of way, this involves researchers thinking, imagining and writing their way across and through different facets and clusters of facets as they follow particular lines of enquiry, and chasing the flashes of insight where they seem to appear. (Mason, 2011, p. 81)

Like my object of study, my approach to this research has been multifaceted and iterative, lively and participatory, messy and unbounded. It was this way from the outset. With such a dynamic and complex topic, my intuition has been to explore, describe, and articulate insights that surface rather than to prescribe a method of investigation. Thankfully my funding invited this open research style: to “examine, evaluate, and explore the complex and dynamic

behavior of the urban system using innovative and diverse methodological approaches³⁵.” This section will describe how I developed my research design in a narrative format, staying true to how it evolved chronologically. First, I recount how pilot studies helped me develop an empirically grounded ontology of Airbnb, recognizing it as multifaceted, processual, and spanning digital, material, and social realms. I then discuss how integrating two research design approaches – biographies of artifacts and practices and facet methodology – brought strategic focus and epistemological intention to a diverse yet complimentary series of studies. I briefly introduce these studies in a narrative, showing how each is theoretically grounded in the previous one, highlighting the insight found in their entanglements. This has been a four-year journey, commencing with the first of many challenges: determining where to start.

2.1 Formative Pilot Studies

I began with pilot studies, to design my research by doing. Researchers across the social sciences have long advocated the use of pilot studies as an iterative research step, noting that they are “a crucial element of good study design” (Van Teijlingen and Hundley 2001, 1). Smith argues for a processual and mixed methods use of pilot studies which creates a “dynamic toolkit” for which to understand the “depth and breadth” of complex subjects (Smith, 2019, p. 601). My pilot studies included smaller trials of larger studies that I carried throughout my work, and more experimental studies as well. I started with Airbnb’s *platform* and investigated the evolution of its interface design. I analyzed archived captures of the Airbnb homepage³⁶ alongside media coverage and blog posts about the company’s rise to prominence to create a deeper understanding of the platform’s emergence and existence. I next turned my focus to the *material* nature of Airbnb in Edinburgh with a study of keyboxes. I explored the physical, social, and symbolic nature of these objects by photographing them in two Edinburgh neighborhoods, following the social and political controversies they create in news media, and considering what

³⁵ Quote from the Join PhD Studentship Future Cities call for funding from the University of Edinburgh and University of Glasgow, 2019

³⁶ I worked with the Internet Archive’s Wayback Machine³⁶ to browse over 22,000 archived captures of Airbnb’s home page from 2009 to 2019, creating a representative sample of 40 screenshots that depict milestones in the evolution of the platform’s home page over the past ten years. This tool collects captures of websites, archives them for historical research, and can be accessed at <https://archive.org/web/>. The About page states: “The Internet Archive, a 501(c)(3) non-profit, is building a digital library of Internet sites and other cultural artifacts in digital form. Like a paper library, we provide free access to researchers, historians, scholars, the print disabled, and the general public. Our mission is to provide Universal Access to All Knowledge.” (“Internet Archive Wayback Machine”)

they can reveal about the host and guest relationship. My final pilot study turned to the *social* nature of Airbnb with a qualitative study of hosting. Through initial semi-structured interviews, I asked four (4) Airbnb Hosts about their attitudes toward and experiences with hosting on the platform. I then analyzed the resulting interview data to identify emerging concepts related to emotional labor, relationships with neighbors, shifts in attitude toward check-in processes, and other intriguing themes. More than an exploratory research practice, these pilots proved relevant throughout my comprehensive thesis.

Each of these pilots also played a key role in shaping my broader research design, both theoretically and practically. The Platform Pilot foremost developed my understanding of Airbnb as dynamic and multifaceted, evolving considerably since it was founded in 2007. While this is a quality that could seem obvious – we see platforms regularly evolve in our daily use – I did not intend to focus on this quality before the pilot, and this quality is not attended to in Airbnb scholarship. It sensitized me to the importance of studying Airbnb’s historical context and began developing my processual ontological and epistemological stance (Abbott, 2016). This ultimately helped me understand how fruitful a biographies of artefacts and practices approach (Pollock and Williams, 2009) could be to platform research, influencing my overall research design. The study played a foundational role in conceptualizing Chapter 2’s “What Makes Users/Users Make,” using a critical reading of Airbnb’s historical development to situate my work in the social construction of technology tradition (MacKenzie and Wajcman, 1999), and seeing users as playing an active role in shaping it (Oudshoorn and Pinch, 2003), not only in the development phase but also through its use (Bijker and Law, 1992; Wessels, 2013). This inspired me to interrogate the sociotechnical qualities of Airbnb’s platform, inspiring an interest in both the role of users (Hosts and Guests) and the people who build and design the technology.

The Keybox Pilot leveraged an object to illuminate the controversies regarding Airbnb in Edinburgh, from policy to activism, and alerted me to the platform’s crossover between material/digital and tourist/residential realms. Findings from this pilot study are discussed in relation to my interviews with Hosts in Chapter 7. Keyboxes were a useful probe to understand broader hosting practices and the way the platform nudges certain social behaviors. The Host Pilot sensitized me to social and emotional practices of hosts and their complicated relationship

to the platform, their homes, neighborhoods, and identities. It inspired me to ask questions in future interviews about participants' interactions, meaning making, and relationship to the platform, centering their use of technology in further discussions.

Moving empirically between the platform, the material, and the social shed light on the importance of continuing to pursue methods that explore how each co-produce and impact each other. Theoretically, the work done in each pilot study did not seem bounded from the others, but rather informed and shaped my holistic practice; considering them collectively was crucial to building my foundational understanding of Airbnb in Edinburgh. I began to recognize the phenomenon as a fluid and ever-evolving system of hosts, guests, materialities, controversies, technologies, media, activism and policy; this gave me an ontological foundation to work with. *The Philosophy of Social Research* asserts that “although research methods may well be treated as simply instruments, in fact they operate within a set of assumptions” (Hughes and Sharrock, 1997, p. 11). My pilots helped develop a set of assumptions to work within: that Airbnb is a socially shaped, fluid, multi-faceted phenomenon that brings together technology, materiality, and social relations. They enabled me to recognize that my research design should not only consider this complex nature but investigate the relationships between these components as well.

2.2 Adaptive ontology and epistemology

Because I consider this phenomenon processual, unbounded, and co-creating, it would be contradictory (and logistically impossible) to attempt a conclusive and exhaustive study of it, or to pursue finite findings about it. It is a phenomenon that contributes to “blurring the boundaries of the social,” a wide ontological orientation in sociology in opposition to the neatly bounded, purely social ontological perspective (Karakayali, 2015). The nature of Airbnb, and similar platforms, aligns with characteristics and practices articulated in *The Platform Society*: they are inter-dependent, temporal, and operating with an imperative to capture, circulate, and commodify the vast amounts of data their users generate (van Dijck *et al.*, 2018). The variation of methods and points of entry these pilots afforded helped me take seriously the complexities

the phenomenon generates, perpetuates, and obscures. My aim became to “attend to the qualities” of Airbnb’s “richness and vibrancy” (Mason, 2017, p. ix).

Next, it was crucial to identify where and how I could generate meaningful data about Airbnb’s role in placemaking across the digital, material, and social realms. In my pilots, I found people’s reactions to key boxes, tourism in Edinburgh, Airbnb listings, and the evolution of the company itself to be ripe with meaning. I decided to therefore produce data “found in situations and interactions” (Mason, 2017, 8), in particular the interactions between various elements of the Airbnb system. I determined that continuing to look at this phenomenon from various perspectives and with different ways of seeing would generate a necessary multi-faceted look at the complexities of Airbnb in the city. I therefore took an “adaptive” approach, not following one particular “methodological canon for its own sake,” but developing a methodology that “felt adequately engaged with the reality that I experienced” (Hine, 2007, p. 667) in my pilots. I designed several more substantial studies in this epistemological spirit: a study of the platform’s technology from a front- and back-end view, further interviews with hosts, guests, and producers, which constructed my multi-sited ethnographic object of study (Hine, 2007). I also decided to continue engaging in concurrent data collection and analysis, grounding my insights in findings, following sensitizing concepts (Charmaz, 2014) and leveraging them to shape the next set of inquiries (Glaser, Strauss and Strutzel, 1968). This inductive approach assumes an epistemological starting point that meaning is found in social interactions (Chamberlain-Salaun, Mills and Usher, 2013).

2.3 Biographies of Artifacts and Practices with Facet Methodology

This ontological and epistemological positioning informed my imperative to continue using a mix of methods. To determine my next round of studies, I took inspiration from the STS tradition of pursuing a biography of artifacts and practices (which I will refer to as BOAP) proposed by Pollock and Williams in 2009. This framework employs a “strategic ethnography” that explores relationships between technology and society at a variety of scales and timeframes (Pollock and Williams, 2009). It requires “mutually complimentary studies” to develop a biography of the technology in question, enabling the researcher to “question some

taken for granted assumptions concerning innovation,” (Hyysalo, Pollock and Williams, 2019) which was an emerging aim of my work. This approach invited me to explore Airbnb across several sites and from different perspectives to consider the entanglements between these settings (Hine, 2007), employing “a string of investigations” as the antidote for the shortcomings of “snap shot” studies (Hyysalo, Pollock and Williams, 2019). Within the longer timeframe of a BOAP approach, initial, or more specifically in my case, pilot, research is “extended to a string of further studies – building upon existing knowledge and the various ideas/issues that unfold from this work, reflecting upon puzzles and gaps in understanding and emerging theorizing” (Hyysalo, Pollock and Williams, 2019, p. 7). BOAP research often considers a wide range of data, combining “ethnographic and historiographic methods including the collection of documents, in-depth interviews and records of field observations” (Hyysalo, Pollock and Williams, 2019, p. 10). The approach encourages researchers to determine the epistemological goals, perspectives, properties, and framing of each study. For example, ethnography generates first-person perspectives of researchers that consider the messiness of the field, while interviewing can be more focused but should reflect on the views of participants (Hyysalo, Pollock and Williams, 2019).

BOAP has several key principles that have developed in STS research practices since the 1990s (Hyysalo, Pollock and Williams, 2019). These include striving for detail as well as breadth, seeking adequate temporal and spatial reach at varying scales, and conceptualizing these components not as distinct “layers” but “multiple enacted contexts” (Hyysalo, Pollock and Williams, 2019, p. 8). Considering how the actors involved are part of linked ecologies, attending to the intersections between those ecologies, and generating an empirically honest understanding of the roles of different actors in shaping technology is also important to the approach. Finally, BOAP takes the materiality of technology seriously, and explores directly the “detailed dynamics of sociotechnical change both empirically and theoretically” (Hyysalo, Pollock and Williams, 2019, p. 8). BOAP is an ambitious and demanding approach to studying technology, so much so that it has encountered opposition by researchers on the grounds that it is unrealistic in terms of the timeframe, resources, and scale of most projects (Hyysalo, Pollock and Williams, 2019). Indeed, when designing my research, I felt overwhelmed by the expansive

nature of Airbnb and the investigative possibilities available to me. I needed a framework to make my emergent research strategy more coherent.

This led me to Jennifer Mason's concept of Facet Methodology. Facet Methodology invokes a metaphor of the light refracting planes of a gemstone that shine light on components of a research problem (2011). It is an "orientation" that employs creative mixed methods to "seek out the entwinements and contingencies" of a phenomenon from various points of view in pursuit of "flashes of insight" rather than "objective truths" or "total knowledge" (Mason, 2017, 42). It encourages "creativity, inventiveness and an open, dialogic and 'playful' approach to epistemology." The "flashes" pursued by Facet Methodology seem a fruitful, realistic, and interesting approach to knowledge generation with such a fluid and unbounded research topic. Crucially, Facet Methodology is not simply a metaphor for mixed methods; rather, it employs a unique and rigorous approach to integrating methods with each other. It has an epistemological stance that values strategic "flashes of insight," rather than attempting to understand everything in its nuanced³⁷ entirety. It "involves a *dialogic multi-dimensional logic*" that draws on the specific possibilities and strengths of various investigatory approaches and encourages them to "flourish in relation to each other" (Mason, 2017, p. 42). It emphasizes the way multiple approaches work in concert with each, rather than adopting a *parallel logic* where "there is no strong imperative to link" them (p. 39), or an *integrative logic* that examines various parts of a whole as a "layered cake" or "jigsaw puzzle" (p. 40). Therefore, rather than generating a wide account of a phenomenon or a series of analogous interpretations, researchers practicing Facet Methodology "produce intersecting explanations which are based on the dynamic relation of more than one way of seeing, of asking questions and of researching" (Mason, 2017, p. 42).

I suggest that facet methodology has the ability to advance the practicality of BOAP's rigorous, multi-dimensional requirements. Facet methodology invites a strategic approach to BOAP in that it encourages the researcher to isolate what facets of the biographies of artifacts

³⁷ This work has given me newfound sympathy for Kieran Healy's suggestion to "fuck nuance" Healy, K. (2017) 'Fuck Nuance', *Sociological Theory*, 35(2), pp. 118-127., shifting my goal from needing to understand every nuance of Airbnb's technical and social components to realizing the value of finding patterns in the fine grain, then applying them more generally. In an ever changing, unbounded research context, I sought the forest for the trees, so to speak.

and practices will shed the most light on our sociological understanding of them based on the research puzzle at hand. It offered creative license for me to reflexively construct my research sites (Hine, 2007) in pursuit of these “flashes” rather than universally applicable “truths.” My deeper historical exploration of Airbnb took seriously the biography of both its technological artifacts and the social practices that create and sustain it. In this way, BOAP became my research sensibility, and facet methodology the way to operationalize it. Combining these approaches offers a new way for platform scholars to attend to both the historical, social, and technical specificities of a platform in a manageable, strategic set of smaller studies.

Within this context, I chose to focus on three methodological facets: the technological platform, the builders, and the users. First, I returned to the platform, conducting interface walkthroughs (Light, Burgess and Duguay, 2018) to build datasets of homes listings, guidebooks, and other features. I followed front-end clues from features (like maps “powered by Google Maps”) and product icons (like Plus Certified) to trace their historical development and back-end biographies in blog posts, media coverage, and conference proceedings by Airbnb developers. This work informed my articulation of Airbnb’s components and contexts discussed in Chapter 3 and gave insight into the platform processes that are the focus of Chapter 6. It raised questions that inspired my next facet study: an infrastructural inversion to investigate the social conditions and politics of classification and design decisions of Airbnb producers (Bowker and Star, 1999). To do this I recruited and interviewed key informants who worked at Airbnb, as well as knowledge graph and semantic web experts, which also informed Chapters 3, 6, and 7. My final facet study sought to answer the “so what” of the platform and aimed to investigate end users’ encounters of Airbnb. To recruit Airbnb guests, I booked and participated in Airbnb Experiences in Edinburgh throughout August 2022 to meet people who use the platform. This put me ethnographically back in the material city and facilitated conversations with guests. Most importantly, however, it led to unanticipated conversations with Experience hosts, centered around their use of the platform. This raised additional questions about platform governance for Homes hosts, and I returned to additional host interviews to explore this concept. This informed Chapter 5’s discussion of user governance as well as components of Chapter 7’s exploration of placemaking.

Contextualized within this iterative research design, the remainder of this chapter will describe the methodological details of each study, grouping them an ongoing practice of netnography deepened with interviews, including a discussion of “encounters” and participant observation that occurred between them. I will sustain engagement with the theoretical implications of facet methodology and BOAP throughout the discussion, embedding ethical reflections and approaches to analysis within each section. I conclude with a reframe of these facets, shifting them in analysis from methodological to substantial (Mason, 2011) to set up Chapters 5, 6, and 7.

3. Facet Studies Methods

If we are interested in technical objects and not chimerae, we cannot be satisfied methodologically with the designer’s or user’s point of view alone. Instead we have to go back and forth continually between the designer and the user, between the designer’s projected user and the real user, between *the world inscribed in the object* and *the world described by its displacement*. For it is in this incessant variation that we obtain access to the crucial relationships: the user’s reactions that give body to the designer’s project, and the way in which the user’s real environment is in part specified by the introduction of a new piece of equipment. (Akrich, 1992, pp. 208-209)

Because of the “pluralist disposition” required of facet methodology, and the aim to “maintain an ‘investigative epistemology’” throughout my research (Mason, 2011, p. 83), the way this section speaks to specific methods as separately bounded investigations risks undermining my integrated research design. However, for the sake of documentation and academic transparency, this section will describe my approach to each substantial facet study in detail: netnography, producers interviews, Homes hosts interviews, encounters with guests, and Experience host interviews. As Mason notes, facet studies can (and should!) vary in size, scope, and breadth, as long as they provide strategic insight in relation to each other. Some of the tactics I’ve used throughout my research are small in task- for example, leveraging Inside Airbnb data to isolate the descriptions of Airbnbs in Edinburgh to make a word cloud, making visible which words are most used to describe listings- but add depth and examples to my discussion. I will not describe each smaller method in detail in this section; rather, I give an account of those approaches alongside findings in the coming chapters. Here, however, I will discuss my

approach to more substantial facets in this section to detail the empirical work that informed this research.

From 2019 to 2023, I conducted various ongoing empirical research on and with Airbnb, returning to several methods as additional questions and the need for clarification arose in my work. As discussed in the previous section, this adaptive approach was firmly planted in active investigation and enriched by ongoing concurrent analysis and data generation. When taken together as a set of practices, this work is a netnography, which employs a variety of “technocultural research practices” to develop “technocultural understanding” (Kozinets, 2020; Gambetti and Kozinets, 2022) of Airbnb as a wider phenomenon. These practices include historical internet archival work, platform walkthroughs (Light, Burgess and Duguay, 2018), and ongoing consideration of press coverage and grey literature surrounding Airbnb. I further enrich my netnographic approach with interviews, speaking with Airbnb Hosts (13), Airbnb Producers (4), Airbnb Guests (7), a knowledge graph (1) and semantic web (1) expert. These 26 total interviews began in March 2020 and continued until February 2023, unbounded throughout my other work and conducted as needed when new questions arose. To recruit guests and Experience hosts, I booked and attended walking tours (4) and Airbnb Experiences (7) in Edinburgh. These efforts not only grew my interview sample but deepened my netnography across different sites (Hine, 2007), allowing me to see the booking and reviewing experience and compare the online representation of Experiences with the offline. As established, these individual methods meet each other as facet studies, and the following sections detail my approach to each one.

3.1 Ongoing Netnography

Since 1999, various terms including “cyber ethnography,” (Ward, 1999), “virtual ethnography” (Hine, 2008; Hine, 2000), and netnography (Kozinets, 2002), and have been used to refer to an evolving set of research practices that seeks to understand the complex entwinements of social, technical, and cultural phenomena (Lane and Lingel, 2022). Kozinets coined the term “netnography,” positioning the practice as ever changing, evolving “across

domains, contexts, phenomena, countries, and researchers” and a way to generate deep “technocultural understanding” (Gambetti and Kozinets, 2022, p. 2). He considers netnography to go beyond time spent in online spaces and to include peoples’ use of, interactions with, and processes of the digital technology in question. Hine also pioneered the field of “virtual ethnography” in STS, pointing out that researchers can use it to understand “the conditions under which technologies come to be how they are” (Hine, 2015, p. 23). She further argues the ontological perspective that technology is socially constructed and “underpins an ethnographic approach to the Internet that understands things could have been otherwise” (Hine 2015 p. 23). She offers “sensitizing concepts” to consider in online ethnography, aimed at helping researchers explore and unpack the complicated, multifaceted nature of technology in use. These include considering technologies as both socially constructed “cultural artifacts” and “cultural contexts” that gain different meanings in use by various actors (Hine, 2005). She urges virtual ethnographers to be reflexive about how their methods “mediate” their findings (Hine, 2005) and to explore what people take for granted about technologies, not least the work that is required to sustain them (Hine, 2015).

True to the temporal demands of BOAP and the complex, evolving notions of netnography introduced above, my approach spanned several years. It started with my pilot study’s historical look at Airbnb’s homepage evolution (in 2019) and was then deepened by my further digital and physical wanderings. From 2019 to 2023, I “walked through” Edinburgh on Airbnb, taking screenshots and documenting them alongside field notes of the Homes, Experiences, Guidebooks, landmarks, restaurants, concepts, descriptions, ratings, and other entities and affordances. Light, Burgess, and Duguay propose this walkthrough method, pointing out how direct use and engagement with a platform’s user interface can “examine its technological mechanisms and embedded cultural references to understand how it guides users and shapes their experiences” (2018, p. 882). The aim of this practice was to explore how the components of the platform – from listings to neighborhoods to experiences – co-create a digital representation of Edinburgh. Rather than scraping quantitative data from the platform, I conducted my investigation as an end-user would, wanting to experience Airbnb as a “cultural artefact” (Hine, 2015) that unfolded as I searched and clicked on links. This practice generated

rich and copious field notes that contextualized screenshots of my walkthroughs. I used still images as well as screen recordings to document the process of searching, clicking on results, following links from listings, and generally exploring like a user would.

To analyze this work, I noted sensitizing concepts (Hine, 2015) that emerged which I then investigated further and which I detail in subsequent chapters. I will discuss these in subsequent chapters, but one helpful example that illustrates my approach is the Airbnb feature called “Guidebooks.” Guidebooks are only visible from a listing when exploring what the Host recommends doing in the area. I traced how this feature enables recommendations from Hosts combine to create additional places within neighborhoods, ultimately shaping how Edinburgh is represented in the user interface. I manually documented a dataset of 205 entities in Edinburgh, including popular tourist destinations such as Edinburgh Castle (600 recommendations) and the National Museum of Scotland (588 recommendations), to critically acclaimed restaurants like The Kitchin (144 recommendations) to neighborhoods like Portobello (41 recommendations). I will discuss more details of this practice and resulting findings in Chapter 6, but the important methodological insight here is that paying careful attention to the interface sensitized me to the existence qualities of Guidebooks, their relationship to categorization, and a particular data structure of Airbnb that associates and links the entities that are input into new configurations. The user-interface as research site drew a new boundary around what to study (Hine, 2007), now including Guidebooks in my data. The reflexive process of slowing down to take field notes of what I was exploring in the platform enabled me to identify easily miss-able but important features and design signals (Light, Burgess and Duguay, 2018).

Grounded in my user experience, I then turned to additional data sources to look behind the platform interface and investigate its underlying technological architecture; to crack open the black box³⁸. I found the term “knowledge graph” used in Airbnb’s public relations materials, which inspired me to explore the concept further by turning to additional source material about Airbnb’s data structure, resulting in the previous chapter’s discussion of them. My investigation of the concept draws from texts (blog posts and conference proceedings) written by Airbnb

³⁸ The aim here was not to understand the thorough contents of Airbnb’s “black box,” but to understand enough about its mechanics to surfaces the processes it facilitates. See Chapter 6 for a through discussion on this.

engineers that describe the structure, building blocks, classification features, and algorithmic intelligence of its knowledge graph (Chang, 2018; Wei and Liao, 2019; Wu and Grbovic, 2020) as well as technical source material about Airbnb’s knowledge graph (Bhayani, 2022). I attended the digital conference Online Data World in 2020³⁹ which explored knowledge graphs to deepen my understanding of the concept, taking field notes and transcribing sessions. I interviewed two experts: Mike Dillinger, on the structure of knowledge graphs (an engineer at LinkedIn who architects the platform’s knowledge graph), and Henry S. Thompson, on their relationship to the semantic web (a professor of web informatics at the University of Edinburgh)⁴⁰. These data and materials shed light on the knowledge graph’s evolution and growth over the past several years and articulate ways it standardizes, relates, and recommends the content of places around the world. Again, I detail how I engage with each source alongside findings in Chapter 6.

This practice of exploring the front end of the platform and then investigating the thinking, politics, social experiences, and labor that fuels the back-end continued throughout my netnographic work. When I learned of a new feature or change from participant interviews, news media coverage, or worldwide events like the Covid-19 pandemic, I returned to the platform to see what changes manifested in the user interface. This was not a linear or bounded practice, but comprised an ongoing dialectic which I documented in my fieldnotes, screenshots, and writing. This included various practices like creating an Airbnb Experience (short of publishing it), booking, attending, and reviewing Airbnb Experiences (which I will describe further in the next section), taking regular screenshots of the platform’s home page as it evolved over the years of this work, and using Airbnb to book accommodation in my own personal travels, both with friends and family who were visiting Edinburgh and for myself in other places.

The walkthrough method sits within the conceptual framework of ANT, assuming a “relational ontology” that mutually shapes social and technical processes via their interactions with each other (Light, Burgess and Duguay, 2018, p. 886). My use of the walkthrough method,

³⁹ The 2020 conference took place November 30th – December 2nd 2020, and the theme was “Knowledge Connexions Online” and focused on “building a global knowledge ecosystem.” More information is archived here: <https://connecteddataworld.com/knowledge-connexions-online-conference>

⁴⁰ Both have agreed to be named in this work.

combined with my understanding of the back-end development of the platform, helped me understand its technology as a mediator, not simply an intermediary (Latour, 2005). Latour points out that cartographers do not impose a grid on the landscape, but rather trace the existing details of the landscape *within* a grid that helps them orient what they find into an ordered framework that can be useful to others (2005); this resonates with my approach. My netnographic practice began by following the components of Airbnb's interface as they reveal insights about their processes. This attempt of "light" actor-network theory (ANT) as a method requires a mix of materials and sources; I therefore combined what I observed and followed in the platform with descriptions of the hidden configurations of the platform's technology. This is in service of articulating "more sturdy relations" and discovering "more revealing patterns by finding a way to register the links between unstable and shifting frames of reference rather than by trying to keep one frame stable" (Latour, 2005, 24).

These methods helped me first identify and then deeply describe the platform processes that will be unpacked in Chapter 6, the ones that remain steady through the evolution and (re)configuring of Airbnb. They also offered sensitizing topics to explore further in my interviews and inspired the idea to center the platform in conversations with hosts and guests. These are examples of how my methods are not simply "mixed," but integrated, iterative, and entwined. Indeed, interviewing has long been a tool of ethnography (Hammersley, 2006). To me, these methods worked together in an ongoing dialectic; my netnography continued for the duration of my research, from 2019 to 2023, and facilitated and informed my other practice of interviewing Hosts, Guests, and Airbnb Producers. To understand what the processes uncovered by my netnography *do* and the social conditions in which they were created, Bowker and Star (1999) invite a practice of "infrastructural inversion," which "[recognizes] the depths of interdependence of technical networks and standards, on the one hand, and the real work of politics and knowledge production, on the other" (p. 34). To understand the social dynamics that work to shape Airbnb's technology, I turned to conversations with the producers and users of the platform. Grounded in my netnography, I will now discuss how I extend this STS approach sociologically by engaging with Airbnb producers, hosts, and guests throughout the duration of this research.

3.2 Producers Interviews

Airbnb, like all technological artefacts, is “the result of a series of specific decisions made by particular groups of people at particulate times and in particular places” (Wajcman, 2019). To more deeply understand the processes found in my netnography, I sought an understanding of who builds the platform and in what social contexts. From September to December 2021, I conducted five (5) semi-structured interviews on Microsoft Teams with current and former employees who worked at Airbnb between 2016 and 2021. I asked questions grounded in my netnographic findings and built on insights iteratively with each interview. Each person shared experiences of producing significant elements of the platform, and their accounts of life at Airbnb add sociological context to my technological exploration of the platform. One participant withdrew consent out of fear of Airbnb retaliation (employees sign a strict non-disclosure agreement not to speak about the company without approval from the press team). Therefore, this section will describe my approach to recruiting and speaking with the other four: a designer, a product manager, and two engineers who played integral roles in building the knowledge graph.

Because of Airbnb’s non-disclosure agreement for employees, obtaining access to Airbnb employees was expectedly difficult. To recruit participants, I used LinkedIn to search for people who work at Airbnb. LinkedIn’s network is also a Knowledge Graph⁴¹, and therefore enables powerful search capabilities for people who work at Airbnb and have 2nd or 3rd degree connections to my own profile. To solicit interviews, I had to pay for LinkedIn Premium to be able to direct message people I was not connected with, which is a financial barrier⁴² to anyone looking to recruit and interview tech professionals in this way. My strategy was to start with people who were connected to my direct contacts, citing mutual friends in my solicitation messages to connect and ask for interviews. Most messages went unanswered. Of the about 5% who did answer, many respondents cited Airbnb’s “strict policy on sharing company

⁴¹ LinkedIn Engineering Blog post about building their knowledge graph: <https://engineering.linkedin.com/blog/2016/10/building-the-linkedin-knowledge-graph>

⁴² The cost of LinkedIn Premium was £49.99 a month. I once again thank my Future Cities studentship for the funding to support this work.

information” as their reason for declining to be interviewed (quote from message correspondence with one Airbnb employee). Indeed, Airbnb’s employee Code of Ethics⁴³ states that employees “must obtain approval from the Communications Team before making any statements on behalf of or as a representative of Airbnb (including ‘off the record,’ ‘background’ or ‘not for attribution’ comments) to journalists, bloggers, influencers, industry analysis, investors or otherwise through any public forum, panel or public speaking engagement” (Airbnb, 2020, p. 12). This made recruitment difficult and necessitated specific ethical care with the participants who did agree to speak with me.

The ethical imperative to protect the identities of participants was central in my efforts. Before beginning recruitment, I applied for and received ethical clearance from the Edinburgh University Research Ethics Board. I created a project information sheet and participant consent form that I distributed during recruitment (see appendix for full documents). The information form detailed my research aims to invite people to take part with a full understanding of what I was exploring. I stated that my aims of the research were to “understand the social contexts in which Airbnb’s technology is architected and the ways in which marketing and user analysis impact its structure...to talk with developers, engineers, marketers, and analysts at Airbnb to hear more about how their social and human experiences at the company may manifest in the end user representation of cities.” The information sheet also explained that I was the sole person responsible for collecting and managing data generated in this study. It outlined the risks of participating in this study by stating, “the participants will be adults who work for or have worked for Airbnb, and therefore reasonably assumed to be at minimal risk of vulnerability. However, given the potential sensitivity about being asked about professional social contexts and politics, I will take great care to protect the anonymity of participants.” The project information sheet also outlined the benefits of taking part in the study as “contributing to the wider understanding of how platforms like Airbnb... contribute to cultural production.” I also created efforts to protect the identities of participants, their right to withdraw from the study at any time, and their right to select how they would like to be presented in my research outputs.

⁴³ Airbnb’s Code of Ethics, published December 2020, accessible here: https://s26.q4cdn.com/656283129/files/doc_downloads/governance_doc_updated/Code_of_Ethics.pdf

I also created a participant consent form, requiring participants to acknowledge they read and understood the project information sheet. It detailed that their consent to participate in the study included consent to be recorded, they have the right to access the transcript, I will anonymize any outputs and participation in the study, and I will destroy the recordings if requested by the participant. All participants who remained in the study agreed to be quoted directly if they were referred to with a pseudonym and I took care to remove identifying information about them. They all gave consent either written consent or verbally recorded consent before we began our interviews. Therefore, throughout this writing, I have taken great care to use pseudonyms when referring to all participants and have removed any identifying background information about them to the best of my ability. I share only limited background information about their roles and only choose details that give weight and context to the information they disclosed. Although I began my ethical commitment to this study by being up front about my research aims and seeking consent and transparency with the study, my ethical approach evolved as I began this research.

The barriers I encountered in recruitment alerted me to additional potential harms that could come to anyone who agreed to participate in this study. I consulted Airbnb's most recent Code of Ethics (Airbnb, 2020) and sought out non-disclosure agreements⁴⁴ by Airbnb employees to understand the scope of potential retribution, finding the risk is greatest for current employees. These roadblocks and risks inspired me to shift my recruitment method, not wanting to put current employees in harm's way. I thus began deepening my use of LinkedIn's knowledge graph to search for people who do not currently work for Airbnb, but whose most recent previous job was at Airbnb. I found this approach to be ethically less risky and tactically more effective, and soon various ex-employees agreed to speak with me. I initially connected with participants on LinkedIn; however, I have since removed my connections with them, as this is visible in LinkedIn's knowledge graph and might be used to expose their connection to this research. I am incredibly grateful for their participation and their accounts are invaluable to this work.

⁴⁴ An example of a publicly leaked Airbnb employment NDA from 2020 can be accessible here: <https://fintel.io/doc/sec-airbnb-inc-ex1020-2020-november-16-18582-143>

Despite recruitment difficulties, the participants who agreed to speak with me were interested in my work and generous with their time, sharing lively accounts of their experiences working in a range of positions at Airbnb. I kept my questions semi-structured and individually tailored to the roles I knew each person played at Airbnb. Generally, the questions included gathering background identity information such as “tell me about yourself” and “how did you come to work at Airbnb,” asking about their role at the company with questions like “tell me about the team you were on,” and “how did your team work with other teams,” and eventually getting more specific with questions concerned with design and development decisions, such as “how do tagging and classification decisions get made,” and “how did you build AI into the knowledge graph?” I played into my own past experience as a digital strategist working in online advertising, positioning myself as sympathetic and understanding of their experiences working in tech. I identified themes in each interview before the next, combining them with netnographic findings, asking each participant a different set of evolved questions from the last. These themes included sensitizing concepts such as “platform immunity,” “platform governance,” “sense of place,” “categorization of inventory,” “Airbnb Plus,” “belonging,” “machine learning,” and others. I transcribed interview recordings with the automated tool Otter.Ai, which enables a text highlighted playback experience in analysis, enabling easy correction of transcription errors. I used pseudonyms throughout this process as well.

It is important to acknowledge the historical nature of the accounts they shared; their work at Airbnb was in a past professional setting. I took inspiration from Donald MacKenzie’s approach of framing interviews with key elite actors in finance as “oral history interviews” (2007; MacKenzie, 2011)⁴⁵. I make no claims of saturation nor statistical significance, and anticipate potential misremembering or embellishment in our conversations as a result of the time that has passed between participants’ experiences and their account of them in our interviews (MacKenzie, 2011). However, they thicken my interface work and secondary research and therefore do not stand alone. They offer deep bits and pieces, sharing insight into the culture of work at Airbnb, and give “flashes of insight” (Mason, 2011) into how the practices

⁴⁵ I am grateful for the opportunity to witness and learn from MacKenzie’s practice of this first hand in my work as a Research Fellow with his AdTech project, which further deepened my understanding of the value of oral history interviews.

themselves constitute cultural assumptions of the producers. These interviews were rich with meaning, and participants often slipped into the present collective when referring to Airbnb. “We do x” and “we approach y” were phrases often used, indicating these conversations situated the participants back in the mindset of working for Airbnb. I endeavored to listen sociologically in these discussions, taking the lived experiences of participants⁴⁶ seriously rather than trying to vet them for technical or historical correctness (Hine, 2015, p. 24). It was their memory of what was significant about their approach, attitudes toward work, memories of their social and cultural experiences, and humanizing of the technical that I was interested in, rather than technical accuracy.

3.3 Homes Host Interviews

Chronologically, my interviewing began and ended with a focus on hosts. As in my Producers study, I sought and was given ethical approval before I began recruitment, sharing project information sheets and consent forms specific to hosts in my communication with potential participants that followed the same approaches just outlined (see appendix for details). I obtained consent from all hosts interviewed, and have also taken care to remove identifying details and use pseudonyms in my findings discussions. In my pilot study in 2020, I relied on my social network of friends and colleagues in Edinburgh to recruit participants who host their homes on Airbnb⁴⁷. In this pilot I built a sample of four (4) Edinburgh-based Airbnb hosts by leveraging acquaintances and snowball sampling. I conducted interviews between March and May 2020, intentionally leaving time between each interview for the concurrent gathering and analysis of data that a grounded theory approach necessitates (Charmaz and Belgrave, 2012). I conducted interviews in person (when able to) and via Microsoft Teams video chat as the pandemic restrictions necessitated. As noted above, I kept this first round of interview questions intentionally broad, preparing a thorough list of about 45 questions and grouped them thematically under the broad headings of “tell me about yourself,” “tell me about your Airbnb listing,” “tell me about how you manage your listing online,” and “tell me how you

⁴⁶ I committed to this practice with all types of participants: Producers, Hosts, and Guests.

⁴⁷ It is important to reiterate the bias of this sampling strategy; the Hosts I spoke with are socially connected to myself and each other, with little demographic diversity.

feel about hosting in general.” These wider headings helped me keep interviews conversational and semi-structured, whilst the detailed questions under each reminded me of more specific topics to discuss.

These interviews explored how hosts became Airbnb users, how they manage their listings, how they “prepare the scene” offline in physical homes (Bruni and Esposito, 2019a, p. 222), and how they facilitate check-in. I also asked about hosts’ relationship to their neighborhood, if they are aware of and to what extent internalize the controversies known in the city around Airbnb, and if they use Airbnb as guests when they travel. At times, we touched on the relationship of hosts’ listing content to representations of Edinburgh, including its role in the “thematization of destination” (Farias, 2010, p. 225) through how they brand and market the spaces they rent out, positioning them as participants in the production of local knowledge to share with their guests (Spangler, 2020). Finally, I inquired about hosts’ attitudes toward their interactions with Airbnb’s technology, including features like smart pricing, suggestions within the interface, and reviews.

Bookending my overall interviewing with a focus on this type of hosts, I conducted the second round of four (4) additional Homes host interviews in January and February of 2023. These interviews included the same broad questions I asked participants in 2020, but evolved to include a tighter focus on how hosts interact with Airbnb’s user interface. I reached out to the original four Hosts from 2020 to interview again, but each of their circumstances had changed and they therefore declined. Some had moved away from Edinburgh, and some had stopped hosting on Airbnb. Therefore, the interviews in 2023 were with additional participants, again recruited via my social connections. These additional interviews provided a helpful opportunity to ask clarifying and extension questions that surfaced in other facet studies about how hosts relate to and understand Airbnb’s technology. They gave confidence in my initial data, enriched my understanding of how hosts work with and through the interface, and provided a perspective on hosting post-Covid. The broad temporal range of Homes host interviews not only gave me an opportunity to advance my grounded theory, but also highlighted the ways the platform has evolved (and stayed the same) before and after the pandemic and over several years.

As in the case of my Producers interviews, I recorded all interviews and used the tool Otter.AI for preliminary transcription, listening back to the audio and further manually transcribing recordings to retain a closeness with my data, correct any transcription errors, and begin to organize evidence into themes. To further analyze these interview data, I leveraged Charmaz and Belgrave's (2012) notion of "action codes" in iterative analysis throughout the interviews. These framed my observations about hosting practices with verbs such as "working," "balancing," "meeting," and "evolving," and identified my observations about hosting attitudes and practices with emotional words, such as "worry," "expressed," "fear," and "felt." I then organized these observations, or codes, by sub themes to consider the relationship between hosting practices and hosting attitudes, beginning in 2020 and continued through 2023. This method helped me begin to see a clearer picture of my participant's hosting experiences in conversation with my exploration of how Airbnb makes users, and what those users make.

3.4 Guest Encounters

To round out my interview facets with producers and hosts, I planned a study of Airbnb guests⁴⁸ to take place in August 2022. To recruit participants, I planned to "hang out" in touristic areas of Edinburgh during this high-season time. I followed the same ethical approval process as outlined in both my producers and host facets, applying for and obtaining approval before going into the field. I created and printed physical copies of consent forms specific to this study (see appendix for details) and took them with me to give to anyone I interacted with. I justified my recruitment approach with findings from a 2019 Scottish Government report that hinted at the density of Airbnb guests in public places. This report found that 1.60 million visitors to Scotland stayed in an Airbnb in 2018, and Airbnb listings in the country rose three-fold from 10,500 in 2016 to 32,000 in 2019. Edinburgh accounts for the vast majority of listings, with over 31% (or 9,994 listings) of all Scottish Airbnbs located in the capital city (Government, 2019). Considering there were 14,300 hotel rooms in Edinburgh in 2018⁴⁹, Airbnb listings made up about 40% of all

⁴⁸ I consider Guests to be anyone who has paid to stay in or experienced an entity available to purchase through the platform.

⁴⁹ Reported by Edinburgh Evening News on 22 May 2018, accessible here: <https://www.edinburghnews.scotsman.com/business/does-edinburgh-need-cap-new-hotel-developments-585319>

Edinburgh tourism accommodation in that year. And although tourism numbers dipped overall during Covid, the Airbnb data organization Inside Airbnb currently shows 6,161 listings in Edinburgh⁵⁰ in 2022, indicating a bounce back trending toward pre-Covid numbers. These numbers suggest Airbnb Guests make up a significant portion of the tourists and visitors who come to Edinburgh, centering the platform itself as a significant entry point to and mediator of the city.

I determined that a phenomenological approach would best serve my research aims for this facet and aimed to generate rich descriptions about how participants experience staying in Airbnb listings. In their handbook advocating for a phenomenology in tourism research, Goolaup, Soler, and Nunkoo point to how this approach “adds significant value to prior knowledge” (2018, p. 68). My hope was that these interviews would build on the knowledge I developed from my other studies, like how the platform works, from what affordances it uses to present and market place, to what ‘real world’ entities it surfaces to end users in Edinburgh. I sought to elicit rich descriptions of “how” and “what” via these conversations, in the form of brief, casual interviews with tourists who were out and about in the city. I therefore created a semi-structured list of “open ended questions concerning the participants’ feelings, perceptions, and understandings” of the practice (Choi, 2018, p. 237). I was not concerned with generating a broad, exhaustive account for why and how tourists encounter the city through Airbnb. Rather, I set out to listen to how a small sample of visitors to Edinburgh “live” the phenomenon⁵¹ of Airbnb in their travel experience, hoping to cast light on a few ways the platform mediates, assembles, and makes place for visitors. This included asking how guests encounter, experience, use, and feel about Airbnb, and how they may or may not have evolved their perceptions of Edinburgh before, during, and after their travel experience.

To recruit Airbnb guests for short interviews, I joined an array of walking tours, took a bus tour, went to Fringe⁵² shows, and approached people in restaurants, pubs, and beer

⁵⁰ Accessed July 2022, here: <http://insideairbnb.com/edinburgh/>

⁵¹ I consider phenomenology the study of how meaning is made in lived experience

⁵² Edinburgh’s Fringe Festival takes place annually in August and is the world’s largest performing arts festival. I included Festival settings in my field sites for recruitment and netnography. More information about Fringe 2022 can be found here: <https://www.edfringe.com/learn/news-and-events/the-first-steps-towards-recovery-as-the-edinburgh-festival-fringe-2022-comes-to-a-close>

gardens. Immersing myself in the vibrant, material, decidedly offline city was an enriching activity to add to my netnography. However, the hectic setting of the Festival(s)⁵³, my own sensitivity to not impose my research on groups of people travelling, and my awareness to not disrupt the experiences people paid to have for the sake of the hosts' good review feedback all contributed to a hesitation to ask for formal interviews. This came from me as well as from the tourists I spoke with; I would strike up conversations with them, but when I asked about where they were staying, many declined to go into detail. Ethically, although I shared project information sheets and consent forms, I sensed that even attempting to discuss their accommodation while they were staying there seemed imposing and potentially inappropriate. Surprisingly, many tourists I spoke with were staying in hostels or hotels as well, rather than Airbnbs, which seemed reserved for larger groups. In lieu of formal interviews, I took copious field notes after each tour, journaling about any mention of Airbnb (as evidenced in the opening vignette of this chapter referencing the group of women staying in Patrick Gedde's Airbnb). After a discouraging week of gathering rich field notes but no interview participants, I decided to evolve my recruitment approach to focus directly on Airbnb.

Therefore, from August 18th through August 26th, 2022, I booked and participated in seven (7) Airbnb Experiences in Edinburgh. Although this was an effort to recruit Airbnb guests to interview, the practice itself expanded my netnography, creating a fruitful space of entwinement between my methods in several ways. First in searching for and booking Experiences, I was able to explore a new set of platform affordances, such as showing how many other Guests have booked for each Experience date (Figure 3). This enabled me to strategically book Experiences with higher numbers of other Guests, increasing my potential sample pool of participants.

⁵³ In addition to the Edinburgh Fringe, several other festivals take place in August, including the Edinburgh Art Festival, the Edinburgh International Festival, the Edinburgh International Book Festival, the Edinburgh International Film Festival, and the Royal Edinburgh Military Tattoo. More information can be found here: <https://www.visitscotland.com/things-to-do/events/edinburgh-festivals>

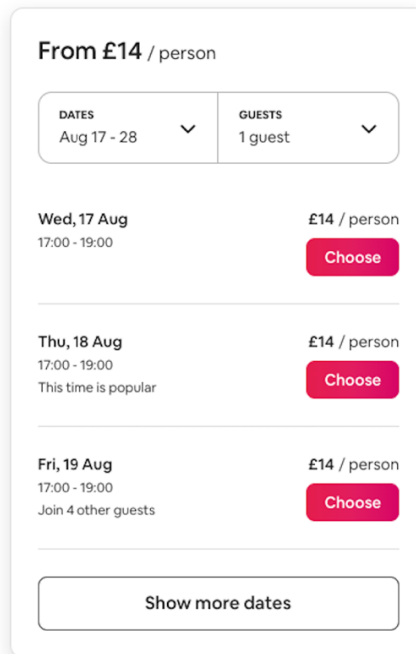


Figure 3: Data showing how many other Guests booked specific Experiences

I decided it was an ethical best practice to make myself known to Hosts in advance of showing up to their activity. The platform also enables Guest – to - Host messaging once an Experience has been booked, so I was able to introduce myself, my research aims, and give Hosts time to consider giving or withdrawing consent for me to make myself known to their Guests and actively recruit participants (Figure 4). This drew mixed responses, and in most Experiences, I followed an intuition to simply engage in casual conversation with fellow Guests and not actively recruit for interviews. I recognized these spaces as crucial to the livelihood of Hosts and did not want to be the cause for a negative review or Guest experience.

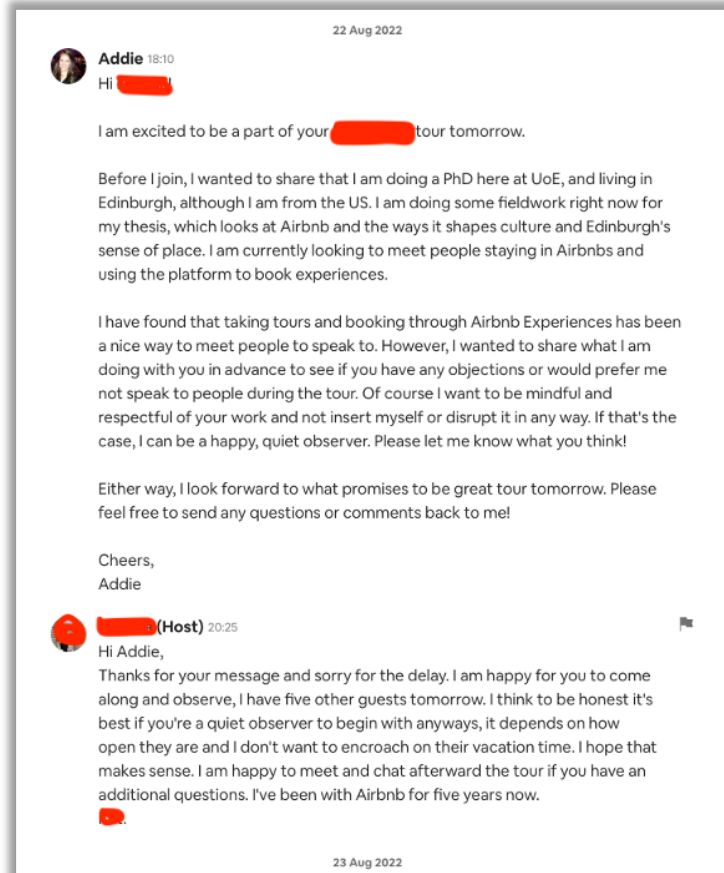


Figure 4: Correspondence between McGowan and Airbnb Experience Participant, August 2022

Despite these limitations, I was able to engage formally with seven (7) guests beyond casual conversations captured in fieldnotes. I met Deborah⁵⁴, an American woman in her 40s living in Germany who was travelling with her family of 5, on an Airbnb Experience. She generously gave me her contact information and participated in an hour-long Microsoft Teams interview once she returned home from her trip, which I recorded and transcribed. One Airbnb Experience host (who I call James) responded enthusiastically to my message about recruiting participants during his Whisky Tasting Experience. He offered me a residency of sorts, inviting me to join four (4) of his whisky and beer tastings in September 2022. He would introduce me to his Guests before each tasting and offer a complimentary additional pint to anyone after the Experience who would talk with me further. In addition to facilitating more intentional

⁵⁴ As with all participants, this is a pseudonym to protect this participant's identity.

conversations with guests in each tasting, it enabled me to hold a formal, recorded focus group with six (6) guests. In both my interview with Deborah and these focus groups, I asked questions relating to participants' lived experiences with Airbnb, their perceptions of Edinburgh before and after booking and visiting, and their attitudes toward the platform. Keeping consistent with my other interview practices, I recorded these interviews and focus groups, transcribing them with Otter.ai and considering themes in data that emerged in these conversations as well as field notes from more casual conversations. I detail these themes and findings in Chapter 7 and relate overarching findings from this unbounded approach in Chapters 5 and 6 as well.

3.5 Experience Hosts Interviews

My final facet study emerged from these efforts to recruit guests, grounded in insights gleaned from time spent moving between the digital platform and the material city. The research done on and with the technical platform drew attention to the importance of Airbnb Experiences in its architecture, both as a visible cultural element of destinations and as a significant contributor to the knowledge graph. As I booked and participated in Airbnb Experiences, the resistance I encountered in recruiting their guests gave way to hosts offering to be interviewed instead. This led to five (5) formal, in-person semi-structured interviews with Airbnb Experience hosts conducted in August 2022. These interviews involved a discussion after each Experience I participated in that centered around their use of Airbnb's technology. As in my other studies, I obtained ethical approval and shared information sheets and consent forms with participants before our interviews. I asked open-ended questions, specifically tailored to what I learned about their hosting style during the Experience that asked about their use of the platform, their attitudes toward Airbnb and the broader travel tech ecosystem of tools⁵⁵. These were detailed, rich discussions and the Hosts were generous with their time and forthcoming with their experiences. These interviews were much less structured than my Homes host interviews, and I let several big-picture framing questions guide these discussions. "Tell me

⁵⁵ As I will discuss in Chapter 5, Most Experience Hosts are professional tour guides and leverage other travel tech platforms like TripAdvisor and Get Your Guide to manage their businesses.

about how you use Airbnb,” was the general starting point of our discussion, and I asked follow up questions focused on the guides’ experiences with the platform.

During each discussion, participants volunteered to use their devices (a mix of mobile phones and laptops) to show me a back end look at how they present, manage, negotiate, and feel about the platform in their Hosting practices; “here, let me just show you” became a common phrase in our discussions. Methodologically, this practice introduced additional concepts to ask about and inspired me to continue to evolve my approach. For example, I quickly found that Hosts have no visibility into the review solicitation and process for their Guests, which was a frustration for them. I therefore in turn showed them the prompts I received from Airbnb to review their Experience, both on my device during our interviews and by emailing them screenshots of each step in my review after we met. This evolved our use of the platform from an interview elicitation tool to a collaboration device, shifting their initial show-and-tell orientation to a participatory interaction as multi-sided platform users; myself the guest and them the host each sharing our experience with the interface. This practice of “participant-induced elicitation” gave agency to hosts and framed the interview more as a collaboration between two platform users than an interview between myself, the researcher, and the host, the participant (Hänninen, 2021). Keeping true to my adaptive analysis from other facets, I transcribed and began loosely identifying interview themes from each discussion to the next, following topics and asking about experiences that arose with each host.

This practice of working through and with the platform together with a subset of its users shed light on sociological themes of user governance, including how hosts present their Experiences in descriptions, photos, and video, and what other travel tech ecosystems hosts can use. I discuss details, findings, and insights from this practice in depth in Chapter 5. However, this practice also gave “flashes of insight” (Mason, 2011) into the obscured inner workings of the platform as well, connecting this method back to my netnographic efforts and deepening my holistic understanding of the platform’s technology. For example, several hosts expressed confusion over the attributes that appear on their listing, such as “super storytelling” (see Figure 6). We shared a moment of clarity when I showed them one of the choices in my review

solicitation questionnaire, asking “Was anything extra special?” about this Experience. As shown in Figure 5, “Super Storytelling” was one of the options given to me:

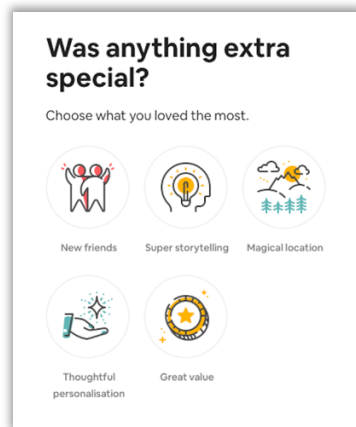


Figure 5: A question given to McGowan in her review of an Airbnb Experience

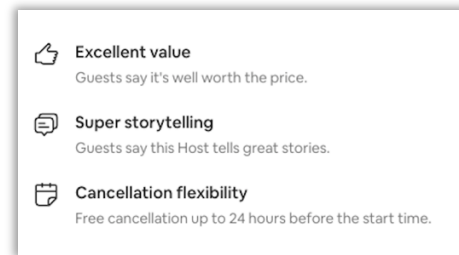


Figure 6: The user-interface manifestation of the review prompt answers on the Experience listing

This exemplifies the entwinements between my netnographic practices and Experience host interviews, which were enabled by my quest to recruit guests and my physical immersion into the field.

This time spent with Experience hosts also gave me a look into the broader world of Edinburgh tourism beyond Airbnb. Several Airbnb Experience listings represented professional tour guiding companies on the platform, and I got to know guides beyond the formal interviews I recorded that focused on Airbnb specifically. For example, as I will explore in Chapter 5, the owners of one local guide company are the “hosts” on each Airbnb Experience listing they offer, but the actual tour guides who interface with Guests in each activity are their employees. This enabled me to not only formally interview the owner who works with Airbnb’s platform, but also get to know the guides who work for the company. Several of them invited me to “hang out” after Experiences and tours at pubs around the Royal Mile, and they were warm, friendly, and generous with their time, knowledge, and whisky. This informal field work generated a deeper understanding of their identities, practices, and attitudes toward Airbnb, tourism, and tourists. Several hold master’s degrees in history, are comedians with Fringe Festival shows (which I attended), and take great pride in their work. I took field notes reflecting on time spent

with this group, and although this data is not directly related to Airbnb, it was helped shape my holistic understanding of the tourism industry in Edinburgh.

4. Conclusion: Toward Substantive Facets

Disciplined lack of clarity: now this may be what we need.

John Law, *Making a Mess with Method* (2007, p. 597)

This has been a messy process, but I have found insight in that. Much of the methodological scholarship I lean on has a fondness for disorder and makes no requests for researchers to clean up their data into neat analysis. As John Law argues, “simplicity... won’t help us understand mess” (2007, p. 595). It is evident in my description of each methodological facet study that none of them are neatly bound from the others. This not only required a creative discipline in writing and organizing *this* chapter, but in making sense of the untidy, interwoven, and complex datasets these methods generated. In total, my corpus of data includes:

- 1) over 100 screenshots and recordings captured of the platform’s interface throughout my four years of research⁵⁶ with corresponding field notes,
- 2) exported spreadsheets of over 6,000 Airbnb listings in Edinburgh,
- 3) a manually compiled database of over 200 Airbnb guidebook entities in Edinburgh,
- 4) dozens of photographs of keyboxes I took around Edinburgh with corresponding field notes,
- 5) a curated archive of media coverage and blog posts about Airbnb,
- 6) transcripts from 26 interviews with Airbnb Producers, Hosts, Guests, and subject matter experts,

⁵⁶ This is a rich and expansive dataset, also including automated and marketing emails sent to me by Airbnb, advertisements served to me on platforms like Instagram, InternetArchive Wayback Machine historical screenshots of Airbnb from 2008 to 2019, and screenshots captured by others and used in grey literature about the platform.

- 7) copious field notes from my time spent in offline touristic spaces in Edinburgh, including walking tours, hanging out with tourists and guides, and booking and participating in Airbnb Experiences

As each approach was grounded in and informed by other approaches, data generated by specific facet studies could not be epistemologically separated in analysis; insights grew and evolved alongside each method in my concurrent gathering and analysis. Therefore, making sense of this entangled dataset required me to let go of needing to understand everything neatly and completely, and instead seek out the more holistic “flashes of insight” (Mason, 2011) they offer. Scholars like Maares and Gerlitz argue in favor of this “holistic” approach to data analysis, especially in the context of digital methodology. They recognize this as a strength of the field, advocating that the rich “analytic capacities” of digital social research “derive from the assembly of methods, data, tools, user practices, context of application and so on” (Marres and Gerlitz, 2016, p. 41).

I conclude this methodological discussion by describing how the iterative quality of facet methodology extends throughout my writing process, which is the work of Chapters 5, 6, and 7. In practice, as discussed in each section of this chapter, I kept a series of memos with “sensitizing concepts” that I identified within each study, generating a loosely coded web of themes. I endeavored to listen sociologically to what my data say and to be flexible with my interpretation, taking further notes on overarching and connecting themes. This practice gave way to my ultimate methodological, and indeed analytical, practice: writing. Van Manen beautifully articulates the power of “writing qualitatively,” offering that “it is precisely in the process of writing that the data of the research are gained as well as interpreted and that the fundamental nature of the research questions is perceived” (2006, p. 715). He suggests the act of writing is epistemological, as it produces a lived research experience for the author “that not only describe and analyze phenomena of the lifeworld but also evoke understandings that otherwise lie beyond their reach” (Van Manen, 2006, p. 715).

This chapter’s opening vignette connects Patrick Geddes’ approach to theorizing the urban condition via lived and participatory experience with my own empirical research. It

illuminates the pathways between past and present, digital and material, tourist and residential perspectives, furthering my commitment to the processual nature of Airbnb. I admit to not connecting the threads of this example until I wrote this chapter; only when I returned once again to my field notes to create an account of what I did was I was able to realize this connection. The insight presented with this example underscores the power of writing as an analytical tool, which I have practiced throughout this work. My initial plan for the structure of this thesis kept each methodological facet contained as a chapter, framing my discussion by participant groups and methods; I would rely on the standard “discussion” chapter to bring insights together. However, discussing this research in various contexts and framings and continued and sustained (re)writing, those boundaries made less and less sense. Ultimately, these *methodological facets* gave way in analysis and writing to *substantive facets*, carved with theoretical themes: user governance, platform processes, and placemaking. This exemplifies how we can deepen our engagement with facet methodology from “doing” into analysis.

Each of these facets are presented and analyzed in the next three chapters. I sustain methodological discussion and reflection alongside my analysis, which unfolds throughout each theme and builds on this chapter’s discussion. My aim is to illustrate the process and benefits of my methodological approach, but also show how the process of writing about what I’ve done was itself iterative and analytical. As mentioned earlier in this chapter, I will also include details of smaller tactics (such as word cloud generation, creating an Experience, etc.) within this discussion. Chapter 5 considers my Homes hosts and Experience hosts facets together, exploring how themes of user governance are experienced by these groups in a variety of ways, and our understanding of this is enriched with my netnographic insights. Chapter 6 turns a deep focus to Airbnb’s digital technology, putting platform walkthroughs in conversation with Airbnb producer interview data and technical source material, taking seriously Airbnb’s artifacts and practices (Pollock and Williams, 2009). Chapter 7 explores thematic facets of how Airbnb creates mediated and lived place in Edinburgh, further discussing combined interview data, keybox pilot insights, and local media perceptions of Airbnb in Edinburgh. Through writing these chapters, I advance my initial methodological facets to substantive facets, illuminating the rich potential of a facet methodology approach.

Chapter 5: Facets of User Governance

1. Introduction: Conceptualizing user governance

To produce value, platforms must attract users and empower them to participate by creating or consuming content or services; however, users' preferences and voices can run counter to each other's interest or to the interests of platform companies themselves. The rise of digital platforms has thus brought renewed attention to how companies govern [those users]. (2020, p. 866)

Digital platforms are full of contradictions. They are open to users and other platforms, yet that openness is controlled via rules and protocols. They invite diverse user generated content yet rely on classification systems to make that content workable and standardized. They are built to facilitate complicated operations yet strive to have simple and easy user interfaces. Multi-sided platforms like Airbnb invite users with competing goals and interests to interact with each other, mediating those relationships by the platform's design that is made and continuously optimized to increase conversions. As Shestakofsky and Kelkar point out in the quote above, these contradictions generate tension between the platform and its users. This messy convergence of opposing interests bids platforms to govern how users interact with the technology and each other, shaping their activities to align with the imperatives of the company. Articulating the ways platforms control usership as "platform governance" can help make sense of the practices these companies employ to mediate, shape, and manage the relationship of users to each other and the platform (Shestakofsky and Kelkar, 2020).

This chapter explores facets of how Airbnb governs users, contributing empirically grounded insight to the notion of platform governance, situating it in the both the social and technical system of Airbnb. To begin, it's important to first unpack the term governance. As related to the traditional conceptualization of running a state, Fukuyama defines governance as the "ability to make and enforce rules, or deliver services," by a government (2013, p. 350). She makes the useful distinction, however, that governance is separate from the political agendas it enforces: "it is about the performance of agents in carrying out the wishes of principals, and not about the goals that principals set" (2013, p. 350). This invites a dual enquiry about governance:

first, a focus on *how* the neutral act of governance is performed and executed, which enables us to apply the concept beyond politics and into other realms of social life. Second, a focus on the not neutral aims of that governance, in other words the *why* behind the governance practices we see performed and executed. Using the concept of governance as social theory, Stoker extends our thinking of governance further by arguing that it is “ultimately concerted with creating the conditions for ordered rule and collective action” (1998, p. 17); this moves our analysis beyond acts of governance and into how sites are conditioned to be governed in the first place. Indeed, this aligns with Foucault’s notion that power is dispersed throughout social relationships and governance happens when the actions of others are controlled at a variety of levels (Foucault, 2019). Using these definitions together, I consider governance as the practice of creating an environment in which power can be executed via processes of ordering and control, dispersed throughout and between social interactions. Within this context, Chapter 2 deeply described how and why Airbnb is a site of governance.

The term *platform* governance, therefore, attends to the ways in which digital platforms “bring into existence – and exert control over – communities of users” (Shestakofsky and Kelkar, 2020, p. 864). Gorwa defines platform governance as “more than just a capacity, but a specific and complex network of interactions spanning different actors and behaviors” (2019, p. 856). The consideration of governance as a dynamic network is the starting point for this chapter. I have already explored how Airbnb makes users and introduced the notion of governance to argue it is a mechanism of building platform durability. This chapter extends that discussion empirically and focuses the discussion from platform governance to *user* governance. It does this by describing how governance is exercised within users’ interactions with each other and the interface in a variety of ways. It explores how Airbnb governs a major facet of Airbnb usership, hosts, via both technological affordances as well as via the relationship labor (Shestakofsky and Kelkar, 2020) of its employees and users. It also keeps in mind throughout that Airbnb is, after all, still a company (Gorwa, 2019). Therefore, its user governance practices are in service of meeting its duties to stakeholders, which include constant and exponential growth in both users and conversions as discussed in Chapter 2.

I also focus on governance as an important consideration in understanding the socio-technical shaping of the platform's content. If we are to recognize the entities of Airbnb as the foundational building blocks of the platform's placemaking processes as introduced in Chapter 3, we must consider *who* creates those entities and the *context* and *conditions* in which they are created. This chapter considers the experiences of hosts in the production of those entities – their profiles, listings, descriptions, photographs, etc. – as governed and therefore shaped by the interests of the platform. However, it is important to also note that to look at governance inherently invites us to consider human agency as well; governance is introduced to organize, order, and regulate the actions of agents (Gorwa, 2019). This chapter aims to strike a balance between exploring the power of platforms, but in a way that goes beyond technological determinism, considering the agency of human actors involved in the co-construction of Airbnb (Wessels, 2013). These actors include Airbnb hosts as well as those who work for and use the platform in other capacities, and their agency is expressed in their negotiations with the platform, each other, and even in practices of subverting this governance.

The following sections explore Airbnb's host governance within two frameworks: user governance by platform affordances and user governance by relationship labor. My conceptualization of these two user governance mechanisms came from a combination of methodological facet studies: interviews with Homes hosts, interviews with Experience hosts, netnographic time spent in the platform, and my historical look at Airbnb's biography. Overall, the aim of this chapter is to articulate how Airbnb's governance is experienced, managed, asserted, and at times, challenged by the users who populate the platform with content. I start by describing who is being governed with a profile of both the Homes and Experience hosts I interviewed and a look at hosting demographics more broadly in Edinburgh. This shifts the discussion from separate methodological facet studies of each hosting group to the substantive facets of user governance this chapter explores, considering Homes and Experience hosts as one community that is governed. The substantive sections of this chapter then discuss Airbnb's facets of Airbnb's platform governance practices in the two frameworks just introduced: how hosts are governed by the technical platform as well as by relationship labor.

2. Who is being governed?

This section will discuss who participated in this research, how they feel about Airbnb, how they negotiate their hosting identities, and how they became hosts. These demographic and experiential findings build an understanding of the users who are being governed by Airbnb and the conditions and qualities of their platform use. The empirical work that informs this study of usership took place over several years, from 2020 to 2023, and included by interviews with two types of Airbnb hosts: Homes and Experience. Hosts are defined by Airbnb as “members who publish and offer services”⁵⁷; in other words, they are the users who generate the inventory of the platform. As discussed in Chapter 4, I took an adaptive approach, analyzing interview data as I generated it, looking to my findings to inform each next interview. Netnographic time spent on and with Airbnb’s platform also shaped interview topics and approaches, with observations about specific features and platform affordances prompting and informing questions.

Overall, this chapter considers conversations between myself and thirteen (13) Airbnb hosts: eight (8) Homes hosts and five (5) Experience hosts. I believe that this sample, although small, provides “flashes of insight” (Mason, 2011) about Airbnb’s user governance practices (Pollock and Williams, 2009) that can be applied to hosting more broadly. This is because features, platform affordances, and company policies are implemented throughout groups of users; what one host experiences will likely also be duplicated en masse to others due to the dispersed nature of platforms. However, it is important to acknowledge Airbnb, like all digital technologies, as an “interpretively flexible object [...that] means different things to different people” who use it (Hine, 2005, p. 7). My descriptive, narrative approach to discussing how user governance is experienced by various hosts aims to give voice to this flexibility. Ultimately, I conceptualize Airbnb hosting as a set of relationships between the platform and its users, this the platform governing the social connections users build with each other.

⁵⁷ Airbnb’s terms define users for those residing in the EU, Switzerland, or the UK, last updated on 10 Feb 2022, accessed here, October 2022: <https://www.airbnb.co.uk/help/article/2908/terms-of-service>

Of the thirteen (13) participants, six (6) identify as women and seven (7) identify as men. The majority of Homes hosts are women (and the Homes hosts who are men are partnered with women hosts, interviewed as a couple), and the majority of Experience hosts are men⁵⁸. All the Homes hosts I spoke with live in the space they Airbnb, meaning they let out a spare room(s), or their entire flat when they are away, and their listing is their primary residence. In contrast, all the Experience hosts I spoke with are full-time, professional tour guides, using Airbnb as a marketing channel for bookings. The hosts I spoke with range in age from their late 20s to late 50s, all are white, and all consider themselves residents of Edinburgh. They all hold higher education degrees. These demographics could be the result of my sampling strategy, relying on my existing homogenous social contacts; nevertheless, it provides a still relevant look at a type of people who Host, and therefore who have authority to share their knowledge of place and populate Airbnb with content, in Edinburgh. Figure 5 below lists the participants and their basic demographic information:

Name (changed)	Type of Host	Gender Identity	Age Range	Started Hosting
Josie	Home	Woman	50s	2014
Alison	Home	Woman	40s	2016
Lauren	Home	Woman	20s	2019
Arthur	Home	Man	20s	2019
Lisa	Home	Woman	30s	2022
Nathan	Home	Man	30s	2022
Philip	Home	Man	20s	2022
Ginny	Home	Woman	20s	2022
Kristin	Experience	Woman	30s	2018
John	Experience	Man	30s	2022
Emmett	Experience	Man	20s	2019
Brody	Experience	Man	30s	2018
David	Experience	Man	30s	2017

Figure 5: Participants in Host Study

⁵⁸ It is worth noting the gendered difference of the private “home” versus the public “experience,” connecting to unpaid emotional labor of the digital housewife Jarrett, K. (2015) *Feminism, labour and digital media: The digital housewife*. Routledge. in the context of online (and offline) listing management

On Airbnb there are generally two types of Homes hosts: residential hosts and professional hosts. Who I call “residential hosts” are those who Airbnb their primary residence, either listing a spare room or letting out their home when they are away. As of September 2022, just over half of the Airbnb Homes listings in Edinburgh (52%, or 4,058 listings) were hosted by residential hosts, or people who only had one listing⁵⁹. While this does not necessarily mean these hosts are “live-in,” as they could have a single investment property that is not their primary residence, this does mean that most Airbnb listings in Edinburgh are run in the more traditional “sharing economy” imaginary rather than a more professional, multi-property approach. This is the model in line with Airbnb’s origin story, implying that hosts are residents of the area they welcome guests to. For example, Alison⁶⁰ lets out two unused bedrooms in her family home’s second floor. And, since 2014, Josie leaves Edinburgh for the month of August, letting out her entire flat for the festival month. On the other end of the spectrum, Professional hosts with more than one listing comprise 48% of Edinburgh’s Airbnb listings. InsideAirbnb data shows that of these professional hosts, the two largest groups either have two listings (29%), or a staggering 10 or more listings (35%). Recruiting professional hosts for this study proved difficult, and every professional host I contacted either did not answer or declined to participate in the study, saying they were not interested.

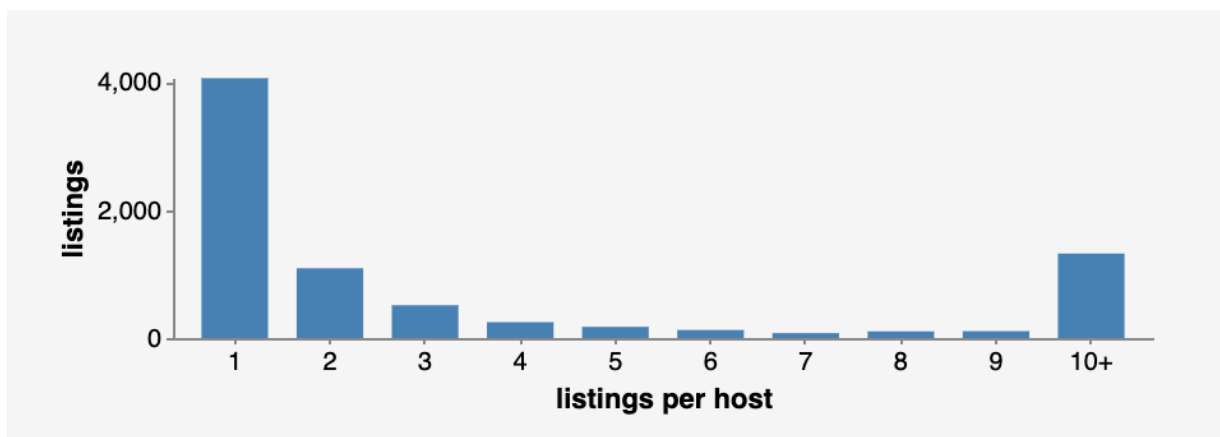


Figure 6: Listings per Host in Edinburgh (Source: InsideAirbnb 2022)

⁵⁹ Data from InsideAirbnb, last updated September 2022, accessed January 2023 at: <http://insideairbnb.com/edinburgh>

⁶⁰ All names have been changed to ensure the anonymity of participants

In contrast, all the Experience hosts I spoke with are professional tour guides. Some of the Hosts run their own tour companies, using Airbnb alongside other online booking and marketing services. For example, Brodie runs an independent tour guide company and uses Airbnb as a marketing channel for their various offerings. Others use Airbnb exclusively to market their tours. Emmett works as a guide with a local company but created an alternatively focused tour of his own material that he markets via Airbnb. Each of the Experience hosts I spoke with had a higher education degree in a related field, such as an MSc in Scottish History or Literature. Some, like Kristin, are working toward specific tourism accreditations, like earning a coveted Blue Badge from the Institute of Tourist Guiding⁶¹. Broader data about Airbnb Experience hosting is not available in the same way as Homes hosting, however of the 88 Experiences shown for Edinburgh on Airbnb, the majority seem to be run by tourism professionals based on profile data and host information⁶². Figure 7 below shows an example of Experience listings in Edinburgh, screenshotted by me in January 2023.

⁶¹ A Blue Badge is the highest accreditation tour guides can earn, signaling a national certification of expertise in Scottish tourism, as well as elite professionalism in the hospitality industry. In the conclusion of this chapter, I will explore the tensions between the professional tour guiding industry and the casualization Airbnb enforces on Experience hosts in the platform. Information about Blue Badge and other accreditations can be found here: <https://www.itg.org.uk/examinations/how-to-become-a-tourist-guide/>

⁶² The number of Experiences in Edinburgh fluctuates regularly, but this figure was accessed January 2023, available here:

https://www.airbnb.co.uk/s/Edinburgh/experiences?tab_id=experience_tab&refinement_paths%5B%5D=%2Fexperiences&flexible_trip_lengths%5B%5D=one_week&price_filter_input_type=0&price_filter_num_nights=5&query=Edinburgh&place_id=ChIJlyaYpQC4h0gRJxfnfHsU8mQ&date_picker_type=calendar&checkin=2023-01-18&checkout=2023-02-28&source=structured_search_input_header&search_type=autocomplete_click

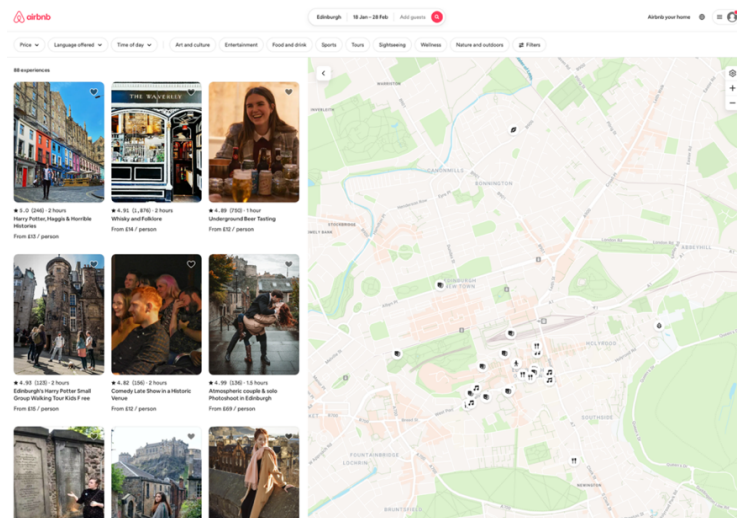


Figure 7: Experience Listings in Edinburgh, January 2023

All thirteen hosts I spoke with have generally positive feelings toward Airbnb, although each also recognize its controversial elements and struggle with various aspects of the platform, which I will explore in detail in the following sections. John, who runs a series of whisky and beer tastings in Old Town, shared that “I use it lovingly, and it’s maddeningly frustrating.” Brody who owns the local guiding company called Airbnb “a necessary evil,” continuing that he doesn’t think it’s a “bad company... Airbnb Experiences was set up with quite a good intention.” Arthur and Lauren, a couple who let out their spare bedroom, were initially “nervous” about hosting, but shared that once they had a few guests they realized it provides good money for the relatively low effort required of them. Phillip and Ginny, who also let out their spare room, shared that “it’s honestly the best money-maker we’ve done.” Josie, who lets her entire flat out during August, prefers Airbnb to past festival letting agents she has used. She shared that Airbnb take a 3% portion of her booking revenue, when in the past other companies took up to 20%, and she prefers the lower maintenance, self-service platform format of Airbnb to a professional letting company. The general positive attitudes toward hosting on Airbnb my sample have suggest a willingness to continue using the platform despite its governance.

Each of the hosts I spoke with justified their own use of the platform while acknowledging its controversial nature in Edinburgh in various ways. They all identify as doing “a bit” of Airbnb, contributing to the discourse that they do the “right” kind of Airbnb hosting,

rather than professional hosting which they feel negatively impacts the city. For example, Alison is aware of the reputation Airbnb has in Edinburgh for displacing affordable housing stock but feels her hosting practices are not contributing to this issue. She said, “we’re doing it in a way that we haven’t taken something away from a first-time home buyer. These are two rooms that are sat empty in our house. And I think that’s sort of the essence of Airbnb.” She connected this with the origin story of Airbnb, saying that this was the “original intention” of how to use the platform, identifying with the myth-making (Pfaffenberger, 1988) around its inception that contributes to the culture of usership discussed in Chapter 2.

Josie also expressed an awareness of Airbnb’s controversial nature in Edinburgh, and this awareness has impacted her hosting practices. She said her neighbors are “less worried about people doing a bit of Airbnb,” so she makes sure to perform this type of hosting via making it clear to them that she only hosts in August and communicating regularly to them about it. She also justifies her hosting by telling others that she uses the money to pay for a second degree, which she does, and shared in our interviews that “if we have to spend 250 grand to get a flat in Edinburgh... It feels like we should be able to make money off it.” These sentiments support a broader trend found in an Airbnb Host survey done by the Scottish Government in 2019. When asked how they would describe how many Airbnbs there are in their neighborhood, just under half (49%) of Edinburgh residents surveyed felt there were “too many,” while 64% of Edinburgh Airbnb hosts said there was a “reasonable” number (only 6% said there were too many)⁶³. The acknowledgement of Airbnb’s controversies extends to Experience hosts as well; David the guide said it “breaks my heart” to see Airbnb keyboxes in front of “gorgeous, Georgian buildings,” but feels his work with Airbnb Experiences is harmless. Other Experience hosts shared this sentiment, saying that Experiences are better than Homes as they do not contribute to the “housing crisis.” These feelings indicate various methods of justification for hosts, both present in my interviews and in the broader survey data from the Scottish Government study. Hosts are aware of various controversial elements of Airbnb, but feel their specific practices are not contributing to the problems.

⁶³ Scottish Government Study accessed January 2023, available here: <https://www.gov.scot/publications/research-impact-short-term-lets-communities-scotland/pages/5/>

It is also important to note that Airbnb makes new tourism actors as it makes Hosts, and many of these are therefore loyal to the platform. David, who is a full-time solo business owner of his tour company, was able to quit an unrelated full-time job in 2019 because of his success with Airbnb Experiences. He said, “it was a much easier set up from the start than TripAdvisor, you know, and there was much more support.” He tried to build his business with street marketing but found that most visitors to Edinburgh arrive with tours already booked. He shared that Airbnb provided him a place to be visible by people planning their trip online before ever coming to Edinburgh. This allowed him to be visible as part of Edinburgh’s tourism scene before people arrived. Therefore, he said, “Airbnb was the first thing I had success with. And once you get a few reviews under your belt it multiplies quickly.” Other Experience hosts had similar experiences. Kristin, who uses Airbnb as the primary marketing tool for her guided tours, says she is “loyal” to Airbnb as it enabled her to start and run her business. Emmett is also able to run a tour he created which is independent of his other tour guide work with a local company because of Airbnb. Of the Homes hosts I spoke with, Josie was the only one who let out her flat more traditionally before Airbnb. For the others, Airbnb’s ease of getting started, the casual nature of turning hosting off and on, and seeing the success of friends who also Airbnb, motivated them to begin hosting. Lauren shared that “it’s really easy” to set up a listing, and she was able to do so right from her smartphone. Alison’s friend who is a Superhost helped her create her listing, giving her tips and easing her anxieties. Enabling these hosts to start and maintain successful businesses is a way the platform creates the context for loyal users who defend the platform (van Doorn, 2020).

Overall, the Hosts I spoke with are of professional age ranges, highly educated, middle class, and living in Edinburgh. They are aware of Airbnb’s controversial nature in Edinburgh and negotiate their hosting identities by sharing specific practices that diffuse these issues, such as only doing “a bit” of Airbnb, putting in face time with their neighbors, and running Experiences. These practices simultaneously defend the platform while defending their use of it. All Homes hosts in this study are residential hosts, and all Experience hosts are professional guides, and most of both types of hosts have been able to become touristic actors because of Airbnb. All the Hosts have a generally positive perception of Airbnb, sometimes qualified by their own hosting

practices. They appreciate both the independence and support the platform offers, although freely acknowledge the limitations and controversial elements of Airbnb.

Recalling the introduction of how Airbnb makes users in Chapter 2, and with hosts being an essential, foundational group of those users, I will now draw attention to the details of their everyday, mundane use of the platform and how they are governed to uphold Airbnb's business goals and growth imperatives. The following discussion dives deeper into themes of their lived platform negotiations, giving substance and firsthand detail to a rich description of Airbnb's impact on the presentation of place. Contextualized within this section's overview of who these hosts are and how they feel about hosting, I will now explore the more intricate experiences they have with user governance as it manifests in both the technological platform and in the relationship labor of Airbnb employees and users.

3. Governance by Platform Affordances

I have thus far introduced the notion of user governance to describe how Airbnb's interface prompts, guides, restricts, and controls users, ultimately governing their platform use to align with the growth imperatives of the company. I have used examples from Gallagher's *The Airbnb Story* (2017), Airbnb resources (Airbnb, 2014), blog posts written by their design team (Philips, 2017), and fledgling yet rich scholarship about hosting (Bruni and Esposito, 2019b; Bruni and Esposito, 2019a) to argue that mechanisms for controlling the content of the platform via Host input and relations are embedded in its design and affordances. This section will add examples shared by hosts in our discussions to the understanding of *how* Airbnb governs its users with the affordances and features of its technical platform, ultimately shaping and influencing the visual and descriptive content they input into the platform. This happens in several ways: by how Airbnb's interface invites (and censors) specific classifications and content in the form of descriptions, photos, and video in hosts' representation of place and experience; via subtle yet powerful algorithmic restrictions and censorship; technical connections Airbnb has (or inhibits) between users and the broader digital ecosystem; and through the way the review system governs relationships between Hosts and Guests. Collectively, these examples offer a rich empirical case of how platforms more broadly enact user governance "via technical

design choices” (DeNardis and Hackl, 2015, p. 761). Articulating these activities together as “technical user governance” enables an understanding of this as an ongoing process, regardless of the evolving tactical details.

3.1 Governing Content Creation

Nearly all Homes and Experience hosts experience user governance in the ways they input content into the platform. This exists in simple, overt interactions with the user interface such as when users fill out forms, and in more subtle and covert acts of user censorship such as by back-end technical processes. Through these content governance mechanisms, Airbnb can regulate the qualities of Homes and Experiences that make up the placemarkets on the platform, ultimately using micro governance to shape more meso representations of place and control the general guest experience. This is a fundamental finding that applies throughout the remainder of this thesis and will be built on in subsequent chapters, reminding us that the content we see on platforms is not simply individual expression, but manifestations of the “institutional and technological structures underlying this content” (DeNardis and Hackl, 2015, p. 762). This section will share themes and user experiences of this form of digital user governance, arguing that it is used to make the messiness of offline “place” orderly and appealing in the online environment.

The first experience of user generated content governance is in how the platform requires users to classify their listings. For both Homes and Experience hosts, Airbnb’s preexisting classification mechanisms and form fields greatly impact the way they create their listings, and therefore influence the type of content that populates Airbnb’s knowledge graph. Exploring the influence of the platform’s technology on the type of content that populates it can help us understand the co-constructed nature of entities, introduced in Chapter 3 as the building blocks of Airbnb’s knowledge graph. These findings from host experiences help us understand them not as purely user generated content, but as content shaped by the interests of the platform. The following examples from my host interviews show the knowledge graph in action, how its structure requires hosts to make certain classification and description decisions, and ultimately ends up representing place in oversimplified ways for the sake of the data

requirements of Airbnb. This sheds light on how the data structure of the platform governs the way hosts represent their homes and experiences on Airbnb.

An important part of this is how existing classifications govern the way new content is input and categorized on Airbnb, which users must use when creating listings. This can create feelings of anxiety among certain hosts and shape the way others relate to the platform. Several hosts shared that the pre-existing classifications available when setting up their listings did not accurately describe what they offered, so they simply chose the best ones. For example, Kristin worried that her Harry Potter themed walking tour did not fit any of the existing categories when creating her Experience, saying “because it’s Harry Potter, film, and then history. Where do you put it?” These categories have a nested structure within the knowledge graph, requiring Hosts to start broad and continue to classify to narrow down. Kristin ultimately tagged her Experience as “Edinburgh, UK” (making it one of 88) then “Entertainment” (narrowing it to one of 16 others also tagged as Entertainment), then “Movies, TV, or Radio” (making it one of 6 others), and finally specifying “Film” as the media type, making her tour one of three. Of course, these classifications make sense for her tour, but this was a source of stress for her as it confines the way she can present, classify, and be found within the user interface. I participated in her tour, and it was rich with historical anecdotes about the history of Scotland, discussed women’s rights through recounting Edinburgh’s witchcraft trials, discussed the social controversies of J.K. Rowling and transgender rights, and connected Harry Potter to the wider literary history of Edinburgh. Clearly these nuanced elements of the Experience are not captured in the classification of it as Film. Other Experience hosts found the available classifications to be odd and amusing, not anxiety inducing. For example, John laughed as he showed me the back-end options for tagging how guests will arrive at his Experience. The options included “Motorbike,” “Helicopter,” and “Limo.” He joked that the “Silicon Valley Bros” building the technology are very out of touch, or perhaps a bit too aspirational in the type of Experiences they hoped to see. While these are subtle, seemingly benign examples, it is important to remember that it is their frequency that matters. Every Experience created in the platform is subject to these classifications, and over time and repetition shape the bigger picture of Edinburgh in the

knowledge graph. I will further explore the way these co-constructed entities feed placemaking processes of Airbnb in Chapters 6 and 7.

Listing descriptions and titles are also governed via input forms, not only in classification options but in nudges to users about what to write about listings and neighborhoods. Homes host Lauren described how easy it was to set up her listing because of the guidance and tips embedded into the interface. This is direct evidence of what Airbnb's Content Strategy Lead, Marissa Phillips, blogged about for the company, recalled from Chapter 2; "[we insert] helpful tips about writing a description for their home," she shared. Indeed, Lauren recounted that although "there are so many sections to fill out, like a summary and description of your neighborhood," she said Airbnb's forms "give one sentence of a tip of what to fill out in each one, which is helpful." She followed these prompts to quickly complete her listing from her phone. This is an empirical example of how Airbnb's making of users also contributes to the production of local content; in suggesting ways for the platform to make it easy for Hosts to create listings, and ultimately get more conversions, it asks hosts to give information about their area, and suggests language and descriptions to be used so this can be done quickly and easily. Alison enlisted the help of a friend who is a Superhost on Airbnb in creating her listing, and she was given the advice to fill out every part of the listing in detail, "even if it feels really cheesy to write a caption, right like beautiful cornice, or you know original fireplace, teak furniture, and you feel really corny sitting writing it, but she was saying that anything that draws people into the picture and gets them to notice things." Alison did this not only for her home, but also for her neighborhood and the surrounding area as well. In this way, Airbnb is guiding the way places are represented online to make Homes desirable to book, nudging hosts to promote specific attributes of homes and neighborhoods in their listings.

Airbnb governs the photographic and video content of listings as well, shaping how places are visually represented in the interface. Every Experience host mentioned Airbnb's tight regulation of what types of visual content can be used in their listing. These examples suggest the platform's current imperative is for Experiences to depict guests "enjoying" themselves, rather than showing the Experience host or setting. This centers guests in Airbnb's digital representation of Edinburgh, displacing hosts, and contributing to framing of place as

consumable that I will expand on in Chapter 7. Most Experience hosts expressed a tension with this form of governance, articulating feelings that centering photos of guests in their listings is contrived, staged, and does little to represent the specifics of their Experience. This conflicts with Airbnb's culture of usership as authentic; hosts say Airbnb wants photos of people participating in Experiences, but the platform cautions against staging photos.

Several examples bring this governance to life. David pointed out that this is not aligned with the "genuine stuff" Airbnb is after; he continued, "you're not allowed to stage photographs of your own tour." He called this negotiation between this practice and the platform "fake authenticity." In the end, he said, he took photos of guests to appease the platform's wishes but describes them as "actually more set up than if we were to just stand there and smile." Kristin also shared that "Airbnb are obsessed with people in the pictures," rather than favoring photos of the guide or the setting. She said, "it could be a stranger on Google Maps, it doesn't matter," if it conveys guests participating. Brodie said while he is allowed to market his Whisky Tasting Experience on Airbnb, the platform does not allow photos of alcohol on the listing; he is limited to using photos of guests during the Experience, limiting how he can market to potential. John's experiences supported this as well. He shared, "you're not supposed to be looking at the camera... it's not supposed to be a picture of you... It's supposed to be pictures of [your guests] doing the thing." Overall, the Experience hosts shared that taking photos of Guests was awkward and felt inappropriate to ask of people who booked and paid for a genuine Experience. So, to comply with these photo requirements, every Experience host I spoke with ended up hiring a professional photographer, as well as compensate friends or models, to agree to be in a dedicated photoshoot.

This user governance is enacted in both suggestions to hosts as they create Experiences and via back-end automated censorship by the platform as they update them. John had his laptop open during our interview to show me the back-end interface of his listing, which offered a privileged view into the Hosting experience. He showed me first-hand what happens when he uploads photos that do not meet the standards for Experience listings. "Let's chuck in a lot of photos and see what happens," and as he uploaded photos of himself, the whiskey from his tasting Experience, and the venue, and pressed "submit," we got an immediate error message.

“Your photos are not compliant,” it said, and the images disappeared from his listing. This direct user governance restricts certain photos and not others, without a clear definition of what makes them “compliant.” This necessitates the hosts to speculate what content is best, practicing trial and error, governing via their interactions with the interface, governing through censorship. In another example, Kristin expressed frustration that she is unable to change the cover photo of her Experience. She does not definitively know why, but she reckons it is a combination of it being the first photo she ever used, and “it’s got a guy in it, so that’s probably why they kept it in.” This assumption acknowledges both Airbnb’s tactical power over the content she uploads and the reasons behind it, in this case the imperative to keep those consuming place, rather than the place itself, visible in the platform.

Although implemented at an individual level, Airbnb’s rules and restrictions for visual content contribute to a wider scale pattern of staged representation of place. The requirement for Experiences to show photos of guests, rather than the setting, changes the shape of the content and focus away from Edinburgh and the destination, and putting the consumer front and center. This presents place as something to be consumed, which I explore more in Chapter 7. During Emmett’s walking tour, he shared his frustration with how Airbnb imposes limitations on how he manages his listing and presents his tour. He said he initially uploaded photographs of Edinburgh’s architecture along his tour route, but Airbnb gave feedback that they wanted to see photos instead of people having fun and “experiencing” his Experience. But getting these photos requires a different practice than simply documenting the Experience.

Technical platform user governance continues beyond the initial listing creation, both inviting hosts to continue “optimizing” their listings regularly and keeping other elements durable in the platform. Several hosts described ways the platform continues to solicit specific content once their listings are published, nudging them to continuously update the platform via listing maintenance. Lauren said that she gets regular suggestions from Airbnb for what to add to her listing, calling out what is “missing.” For example, she got a notification from Airbnb saying that “if you can offer a workspace, you’ll be more likely to get booked on certain days.” This inspired her to buy a desk for the spare room and reconfigure the space, extending the platform’s governance offline into the arrangement of her home. She also shared that when she

blocks a weekend, making her listing not available, she will get a notification from Airbnb encouraging to make it available once again. This notification connects availability with booking data, recalled Lauren, saying “if you make it available, you’re really likely to get booked.” The platform leverages past user data to suggest tactics hosts can do to get more bookings.

Airbnb’s governing of host content extends beyond the specificities of the subjects being featured and into dictating that hosts should use new forms of media as well. This is exemplified in the way Airbnb nudges Experience hosts to add videos to their listings, and how Airbnb offers to produce those videos in exchange for ownership of the material. Hosts described receiving frequent emails from Airbnb soliciting raw video footage and photos to edit into videos for their listings in exchange for the corporate rights to own and use the footage. This practice enables Airbnb to “co-opt assets” created by users to grow the image, value, and perception of the company (Stark and Pais, 2020). Several Experience hosts resisted this at first, but eventually agreed, sharing their photographs and video to be edited and then owned by Airbnb. In this process, Airbnb’s user governance makes users productive for the platform in two layers. First, by ensuring the Experience content potential guests see is consistent, engaging, and up to Airbnb’s standards, and second, by obtaining ownership of user generated content to use in its own marketing materials and to block hosts marketing in the same way on other channels.

This specific practice of user governance gave several hosts feelings of unease, some meeting it with disappointment, resistance, or full subversion. For example, Kristin said that Airbnb created a video of her photos, encouraging her to use it on her listing. However, she is now aggravated that she was told she “can’t use it” in other marketing channels. This not only governs her listing on the platform but restricts her business activities elsewhere. As John is also a photographer by trade, he was wary of giving Airbnb the intellectual property of his photographs and raw video. However, he continued to be asked and eventually agreed, and the video compilation created by Airbnb is now the first image on his Experience listings. Emmett also finds it “annoying” that Airbnb keeps telling him to add video but will not approve the video he made himself. He believes this is because it features him talking, and Airbnb wants the video to be focused on his guests; this has thus far fueled his resistance to send them content. Brody complied with this user governance with the intention to subvert it. He said Airbnb came

to video one of their whiskey tastings, but made it clear the content was now their intellectual property, and he was told not to use it on other platforms. However, he used software to screen record the video, and still uses it on other sites, undermining Airbnb's user governance.

By pushing hosts to upload video content, Airbnb is enforcing a decision to feature a consistent media format across all Experiences, urging hosts to comply. This builds steady representation of Experience within placemarkets, showing how Airbnb controls user generated content. In soliciting photos and raw video to be editing, Airbnb positions its own video production capabilities as a solution to the problem it created, in exchange for the rights to host's intellectual property. This user governance creates a content production engine for Airbnb's marketing team. This process is a micro example of solutionism (McIntyre, Srinivasan and Chintakananda, 2020) discussed in Chapter 2. The platform simultaneously creates a problem (needing to feature video in a listing) and positions itself as the solution (Airbnb will create this video for you), which further produces valuable content in the form of videos for Airbnb (but we own the video). These fundamental examples of how Airbnb governs user content production illustrate the platform's control over its entities.

3.2 Algorithmic Governance

Themes of how hosts acknowledge, understand, and negotiate "the algorithm" arose throughout my interviews. This introduces a type of algorithmic governance that considers both the technical workings of it (for example, which keywords it flags to censor host to guest communication) and also the "myths in which definitions of what 'works' and is 'successful' are constructed by the same political relations the technology engenders" (Pfaffenberger, 1988, p. 250). Algorithmic governance therefore exists as a "the new disciplinary panopticon," (Stark and Pais, 2020, p. 60), and within Airbnb that gives power to "the algorithm" beyond its sheer technical capabilities. Airbnb offers content in its help center that teases ways "the algorithm" works, without giving specific details about its logics. This works to perpetuate the mythology surrounding its algorithms and invites hosts to comply with vague requests to offer well priced, quality, and popular listings (see Figure 8 below). A simple Google search for "Airbnb algorithm" returns pages of listings with advice for how to "beat," "hack," "cheat," and "rise" through its

search engine as a host. From YouTubers offering hosting coaching advice, to press coverage, to consultancies offering paid services, the businesses surrounding Airbnb's search algorithm is vast and, more importantly to this chapter, perpetuates the cultural power surrounding it. I will now discuss examples of how this fetishization of the algorithm works to govern hosting practices from my discussions with hosts.

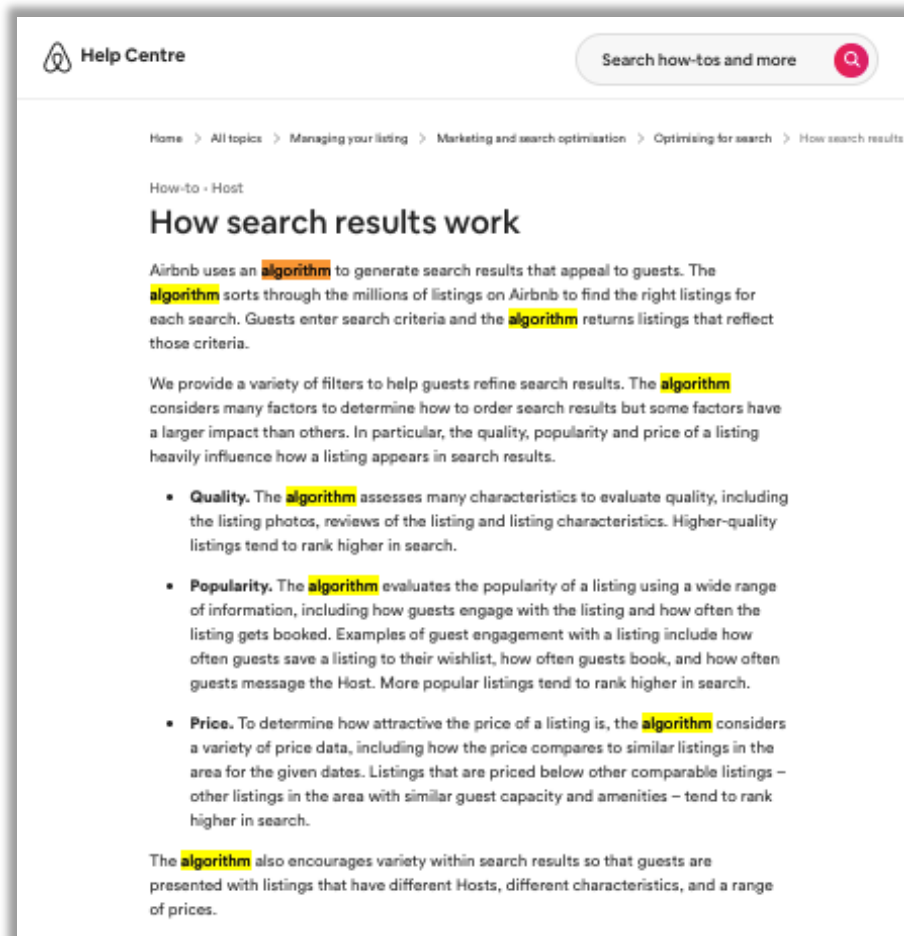


Figure 8: Airbnb's Help Centre "How search results work" article⁶⁴

⁶⁴ This help centre article was accessed Feb 2023, and can be found here: [https://www.airbnb.co.uk/help/article/39#:~:text=The%20algorithm%20sorts%20through%20the,help%20guests%20refine%20search%20results.%20\[search%20algorithm\]](https://www.airbnb.co.uk/help/article/39#:~:text=The%20algorithm%20sorts%20through%20the,help%20guests%20refine%20search%20results.%20[search%20algorithm])

Several Homes hosts spoke frequently about “the algorithm” and the way it guides their listing management to be more visible in the platform’s search engine. For example, Arthur admitted not fully understanding “the algorithm,” but acknowledged it shaped his behavior. He said that “Airbnb deliberately doesn’t tell you how the algorithm works, so you’ve got to find out from trial and error” and from conferring with other hosts about what works. Indeed, he said “the hardest thing” about hosting for him was “finding out the settings you need to make as a host to maximize your listing with the Airbnb algorithm.” Over time, and via trialing various listing edits, Arthur said he believes he is beginning to succeed. He believes “making it as easy as possible for people to book, so not setting up restrictions where you have to review everyone” before they book make his listing “more visible.” He also said that giving a short cancellation period helps, too. It is important to note here that Arthur’s perception of appeasing the algorithm includes making his home more available more often to more guests, ultimately making him a more productive user for Airbnb. The way he speaks about “the algorithm” as a fetishized object (Pfaffenberger, 1988) separates it from the business imperatives of Airbnb the company, and isolates it as something to interact with, understand, and comply with for his own individual success against other hosts. This obscures Airbnb as a governing entity and puts the focus on the algorithm it employs. This exemplifies how Airbnb’s algorithm controls hosting practices by keeping the “algorithm” secret but rewarding (or at least seeming to reward) practices that make booking conversions easier, more frequent, and enticing more people to use the platform. Again, this negotiation with the platform moves hosts to act in the best interest of booking conversions, ultimately serving the business imperatives of the company, not the algorithm.

Hosts also look to other listings in the area for inspiration for how to succeed within the algorithm, which motivates users to manage their listings in ways that will convert more stays for the company. In this way, host awareness of “the algorithm” seems to reproduce use patterns from one listing to another within a placemarket, scaling the productivity of one user to many. This distributes Airbnb’s algorithmic management (Stark and Pais, 2020) between users, ultimately embedding it throughout the platform. For example, Lauren talked about “looking at other Edinburgh properties listed and looking at what they said in their title and

what type of pictures” to help her determine what content she should add to her listing for it to show up well within Airbnb’s search functionality. This shows the impact existing listings can have on new ones in terms of creating standards and patterns of representing place and home. She specifically looked at ones with “like 500 reviews” to find clues for what made them “successful,” or booked at a high frequency. The more successful she deemed a listing in terms of reviews, the more influence it had in shaping Lauren’s listing management practices. As mentioned, Alison adopts this practice as well, turning to help from her friend who is a Superhost in managing her profile. She does what her friend does in terms of including detailed pictures of architectural features of her home, writing keyword rich descriptions, and including robust neighborhood information, placing her home within the broader community on the platform.

Myths surrounding proper algorithmic management inform how frequently some hosts update their listings; several believe regular updates will help them appear higher in the platform’s search function. This type of indirect algorithmic user governance keeps a high level of user productivity in the form of content updates and optimization by hosts. For example, Alison adds new content as her neighborhood changes to keep her listing current because she believes that will help her be found by the search algorithm and ultimately get more bookings. When a new sandwich shop opened down the street, she added a mention of it to the information about her area, “co-opting” the neighborhood’s offerings to market her own listing (Stark and Pais, 2020). Most every Experience host also said they “should” update their listing more than they do. Home hosts who admit to not updating their profiles regularly expressed that they know they should make more regular updates to be more competitive in the algorithm. Josie said she does not update her listing frequently, but qualified that by saying, “which is not what you’re meant to do.” This shows algorithmic governance persists even when hosts resist or ignore its suggestions; hosts still feel its governance when they brush it aside. This is another example of how myths surrounding the algorithm make hosts feel they should feed the most recent and rich content into the platform. This fetishizing of the algorithm connects “correct” use of the platform with being found in search, obscuring the business

imperatives of the platform to make users as productive as possible, working to keep content representing place as up-to-date as possible.

In addition to driving content management and production, “the algorithm” governs host’s relationships to guests, embedding governance into their interactions on the platform. A particularly powerful example of this is the message monitoring between hosts and guests, specifically around restricting content that could drive users to another platform. Kristin said she is not able to give people an exact location for where to meet her guests before they book; to send an address, especially with Google Maps, flags that you are attempting to do business outside of the platform. She said Airbnb “just doesn’t want you to do outside business.” Other hosts have experienced similar restrictions, such as not being able to send links, having blocked messages when attempting to send an email address or phone number, and experiencing that the messages simply get erased when they violate these rules. I have experienced this in my own use of Airbnb, attempting to communicate with Experience and Homes hosts. Messages are capped at a certain number and not sent if I include an email address. This quiet algorithmic censorship quite literally blocks certain types of interactions, but also governs hosts to only message guests in ways the platform will approve out of fear they will be blocked.

Nevertheless, in the face of this governance, hosts find ways to subvert the platform’s power over their interactions. Kirstin pays attention to certain key words Airbnb monitors and tries and uses alternative descriptions in her messages. Similarly, Brody said that “Airbnb monitor all the messages we send back and forth, just to be sure we’re not encouraging [guests] to go off platform to the website.” He said he was “called out a few times” for doing this when they first started, saying he got a message from Airbnb warning him not to communicate with guests outside of the platform. However, he continues to find ways around this governance by changing the verbiage he uses in messages to guests, trying to stay a step ahead of this algorithmic censorship. He does his “best to guess what those keywords might be and just try to avoid using them.” When this happens, he said, “normally people figure out what I’m saying in a slightly roundabout way and they end up booking on our website rather than Airbnb.” Balancing hosting practices with algorithmic censorship seems to have become a common practice of hosts.

An important final example of algorithmic governance is how it shapes how much hosts charge for their Homes. This directly implicates algorithmic governance into the life chances of users. One way this happens is through a feature called “Smart Pricing,” which is Airbnb’s algorithmic mechanism that automatically changes hosts’ nightly prices “based on demand.”⁶⁵ This “demand” determines a listing’s price by considering “daily trends,” “seasonal shifts,” and “special events” in a host’s area, but little detail is given to hosts about its intricacies. Although the language around Smart Pricing assures hosts that it is optional, several hosts shared that they receive frequent suggestions to “turn it on” for their listing. Furthermore, some Homes hosts have experienced changes in search visibility when they turn on the feature. For example, Nathan and his partner Lisa noticed a substantial drop in bookings in autumn 2022, just after they had become Superhosts. Nathan shared that he searched for his listing from the perspective of a Guest, and “we weren’t even coming up” on the map view of the area. He realized that “what became apparent is that our rate was... a bit high. And Airbnb was like hiding us. And we kept getting notifications or like questions about whether we wanted to use adaptive pricing.” They kept resisting the Smart Pricing feature, as they wanted to keep the pricing initially specified. However, after some deliberation, they agreed “this isn’t working. We’re not getting any bookings. So better to get, you know, one booking for less than no bookings for more.” They therefore lowered their nightly price and enabled Smart Pricing. “Suddenly the bookings came back,” Nathan said. Although not fully sure, hosts assume using this feature gives them favor in search algorithms. This exemplifies how hosts make sense of Airbnb’s algorithmic management of their listings, convincing them to use certain features that benefit the platform.

3.3 Governance in Traveltech Ecosystem

Airbnb’s governance also impacts Hosts’ engagement with the broader traveltech ecosystem in the form of restricting use of or connecting with other platforms. While this matters less to my sample of Homes hosts, who are all residential and therefore do not use

⁶⁵ Airbnb’s help article about Smart Pricing can be accessed here: <https://www.airbnb.co.uk/help/article/1168>

other business management systems, it greatly impacts the practices of the Experience hosts I spoke with. Every Experience host I interviewed uses more than one digital platform to manage their guiding businesses and market their offerings to tourists. Common other traveltech marketing and listing platforms used include TripAdvisor, Viator, Get Your Guide, and FareHarbor. Each of these use application program interfaces (APIs) to connect and integrate with each other, acknowledging that their users will use a suite of systems to manage their businesses. The exception to this technical ecosystem is Airbnb. While Airbnb's platform connects selectively to the wider platform ecosystem (Poell, Nieborg and van Dijck, 2019), it does not integrate with other traveltech tools, deliberately restricting hosts from working with other platforms, requiring every element of the booking to happen on its platform. Most Experience hosts expressed awareness that Airbnb does not want them to be listed on other platforms and uses technological governance to ensure they are "exclusive" to Airbnb. This ultimately forces a casualization of Experience hosts, making them present on Airbnb as people who do not work full time in tourism. Airbnb's brand values authenticity, and language surrounding Experience listings in the platform positions Experience hosts as "locals" rather than professional guides. This extends governance from usership of the platform to the way Experience hosts manage their businesses and negotiate their identities as professionals.

Hosts generally feel restricted by this governance but nevertheless feel using Airbnb is still worth the extra work. For example, John finds Airbnb a "necessary evil," as it contributes substantially to his booking numbers, but managing which guests book from which platform causes more work, stress, and anxiety for him. "With Airbnb I have to manually enter the bookings... it's a pain in the ass," he said. Beyond it being cumbersome and time consuming, it also causes scheduling conflicts with his staff. Airbnb offers the option for guests to book a Private Tour, and hosts cannot turn this feature off. The week prior, John had a group who booked a private Experience, but also had a group book for that same time on TripAdvisor. Because the two systems did not speak to each other, and he had to scramble to find another guide to handle the Airbnb booking. Brodie said Airbnb takes the most time to use because of their lack of configuration with other systems, but ultimately they have the lowest booking fees (20% for Experiences, compared to TripAdvisor, which is 30%) so he views this as a tradeoff.

Kristin has experienced this as well and finds it frustrating that she cannot make changes to Airbnb's bookings once they are made like she can in other platforms. She also believes that her Experience description cannot be the same on Airbnb that it is on other platforms as well, once again referring to algorithmic governance. She takes care to make her Airbnb description different to other platforms to not get "caught" by Airbnb for not having an exclusive Experience on the platform. She said, "I think it's to do with the algorithm. They're scanning the words in my opinion, so any blurbs that I've got [on other platforms] are not identical to Airbnb." Each of these hosts are governed in various ways by Airbnb in their use of other traveltech platforms too, from being made to duplicate work, needing to reschedule because of conflicts caused by the lack of connectors, or being afraid of being "caught" not following Airbnb's rules.

3.4 Governance by Reviews

Arguably the most powerful mechanism Airbnb's interface uses to govern hosting practices is its review system. Like review systems on other platforms, it affords peer to peer regulation between user groups, dispersing authority and monitoring throughout its interface and users (Bruni and Esposito, 2019b; Petersen, 2018). Every host I spoke with acknowledged the power reviews have to change not only how they relate to guests, but also influence substantial elements of their Homes or Experiences, and therefore, the content of the platform. Reviews govern many elements of hosting, from the reputation and status of hosts to their interactions with guests, to the revenue and profitability of their hosting, and even to the material configurations and state of their homes. Each of these are related to each other, creating a feedback loop that infrastructuralizes governance in the everyday workings of the platform and ultimately produces a hierarchy of host status, with the most compliant and top reviewed hosts categorized as "Superhosts" (Roelofsen and Minca, 2018). Most hosts I spoke with articulated that both the quantity of reviews as well as the quality make a significant impact on their bookings and spend substantial emotional and professional labor relating to guests in service of inspiring good (or avoiding bad) reviews. Several distinct themes of how reviews govern hosts emerged from my interviews: reviews shape practices of hosting, they are

a mechanism for surveilling host behavior, and they are used to selectively feed data back to hosts to nudge their further use of the platform.

Reviews shape both visible practices of hosting, like dictating where an Experience meets, and less visible practices, like how much emotional labor hosts do behind the scenes to keep guests happy. Kristin regularly updates her listing and Experience content based on guest feedback, even though the feedback is “not always fair.” For example, she has changed where her tours meet, when her tours start, the age range of guests she welcomes, and even the content she includes in her tour as the result of reviews. She said that one guest once gave her three stars (out of five) for being “late,” but the reality was that the guest was in the wrong meeting spot; this inspired her to change her meeting place, so this did not happen again. In a less visible manifestation of review governance, Josie said her hosting practices are always underscored with a “mental worry” about reviews. She wonders constantly if her home is up to the expectations of guests. She said that in 2019 she had “this American woman who was quite demanding,” who argued that she did not have a mattress, which confused Josie. Josie concluded that her mattress, which is the one she sleeps on regularly, must not be up to the standards of her guest. She therefore ended up buying a new mattress for this guest, “because I suppose you live in fear of them putting that stuff on your review, so basically anything they ask for I would do.” In another example, Lauren got a review from a guest criticizing the layout of the bedroom, which inspired her to rearrange the furniture for fear of future negative reviews, ultimately having a material impact on her home. Reviews nudge hosts to continuously rethink their offerings, both online and off. In showing me his Experience data dashboard, Brodie told me that “what Airbnb only ever do is they only show you the things you can improve. They never show you the positive feedback, which is interesting. I mean, you can see the reviews but when you're looking at all the all the data that they only ever give you things to improve like they never say 95% of customers found the tour to be engaging. You know what 5% of your customers thought this was boring.” This exemplifies how Airbnb uses reviews to deliver action-oriented feedback to hosts, suggesting they make optimizations to their Homes and Experiences that will lead to happier guests.

Reviews also contribute to a stratification of hosts, naming the most highly rated hosts “Superhosts.” The number and quality of those reviews alongside a high booking and low cancellation rate make a host a “Superhost” (Gunter, 2018), and “Superhosts” can charge higher prices for their listings (Liang *et al.*, 2020; Benítez-Aurioles, 2018). In short, the more a host complies with guest demands and “ideal” use of the platform, the more revenue she will make. The status and reputation of hosts among potential guests is tightly correlated with reviews. This status manifests in the platform with several signals to users, from a host’s rating score, to the quantity of reviews they have, to the presence of a “Superhost” badge on their profile. The Superhost badge demarcates a “metric of comparison” that orders hosts who obtain it with the highest reputation on the platform (Roelofsen and Minca, 2018). In this way, reviews end up impacting the less visible, yet dependent, variables of hosting as well, such as the price a host can charge, and therefore the revenue they make (Hati *et al.*, 2021).

Several hosts feel that reviews are a surveillance mechanism for Airbnb to keep watch over their practices. Brody made the point that reviews give guests a mechanism to govern hosting in line with the platform’s goals and rules. He shared that guests are “given a fairly lengthy questionnaire at the end, and can rank us on all sorts of things,” which he observed is a way that “feedback from customers” is used to authenticate the type of business they are running, ensuring it is in line with Airbnb’s rules and regulations. As Brodie runs a guiding business with his partner and a team of other guides, the person meeting guests is not the same as the host on Airbnb’s interface. This is a signifier that they are not a “local,” but a professional company, which is against Airbnb’s Experience host policy. Indeed, in my own reviewing of Experiences, Airbnb asks questions of guests that include the host’s name on most questions (although I blacked it out in the screenshot below), connecting the individual as a person to the Experience.

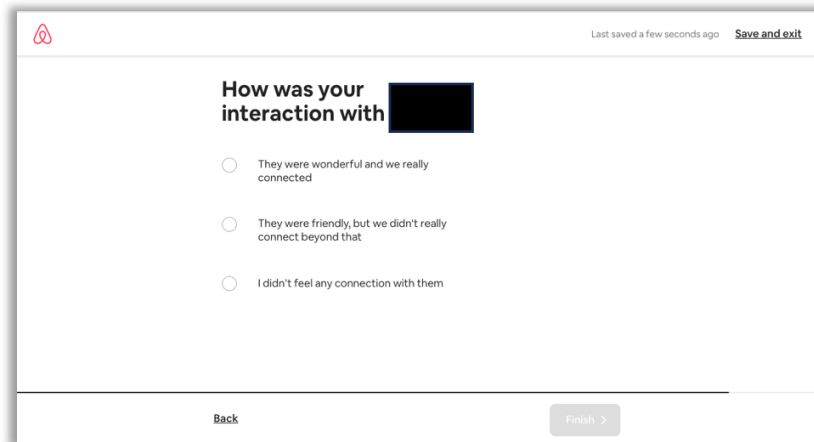


Figure 9: Screenshot from McGowan's review of an Airbnb Experience from August 2022

From influencing the type of content that hosts input into the platform, to nudging listing management and updates, to restricting communication and relationships to guests, to leveraging reviews to further govern hosting practices, this section has explored ways hosts experience Airbnb's technical platform governance. As introduced in Chapter 2, each of these are in service of making productive users and keeping up the conversions between hosts and guests for the platform. This chapter thus far has given rich examples of how user governance is experienced and has an impact on various levels of the components of Airbnb, from shaping its entities to controlling the connections users have with other platforms. This involves making sure users only use Airbnb rather than other traveltech competitors, building trust into the host and guest relationship, and ensuring a standard of listings that keeps both groups of users coming back. Ultimately this governance impacts the way Edinburgh is presented online and, in turn, impacts the material configurations of Homes and Experiences offline as well. The next section will explore this governance through the lens of relationship labor (Shestakofsky and Kelkar, 2020), unpacking hosts' relationships to the platform, other hosts, guests, and to their neighborhoods in a social context.

4. Governance by Relationship Labor

As introduced in Chapter 2, Airbnb relies on relationship labor as a human extension of platform governance to ensure users are successful on and productive for the platform. Shestakofsky and Kelkar define relationship labor as the interpersonal activities conducted by employees of a platform with the platform's end users "in an effort to align [the users'] activities and preferences with the company's interests" (2020, p. 863). The concept of relationship labor broadens our understanding of platform governance from control embedded into the design and affordances of a platform, discussed in the previous section, to the work required of platform employees outside of its technical confines. This demonstrates my argument that technologies persist and build power over users via ongoing social negotiations and maintenance. As discussed in Chapter 2, this offers a counter to the notion of technological determinism, which obscures the governance, optimization, and labor of platforms, their workers, and users by focusing only on technology.

Shestakofsky and Kelkar's relationship labor considers the work platform employees do with end users in more social contexts; evidence of this type of work abounds in my interview data with both Experience and Homes hosts, which is the focus of this section. However, this section also extends our understanding of relationship labor beyond Shstakofsky and Kelkar's articulation of it from employee to user, exploring how Airbnb outsources it onto users and their relationships to each other and the broader community. My interviews found that both Experience and Homes hosts are encouraged by Airbnb to perform their own relationship labor, multiplying its reach well beyond the efforts of paid Airbnb employees. This takes several forms, from hosts being asked to recruit and help fellow hosts use the platform more successfully, hosts helping guests as agents of customer service, and hosts working between themselves as representatives of Airbnb and their neighbors and broader community. I will now discuss evidence of each type of relationship labor, both paid and unpaid, from my interviews with hosts in two focuses: labor done from platform to host, and labor outsourced to users.

4.1 Platform to Host Relationship Governance

Airbnb employees work in a variety of ways to help hosts successfully use the platform. While these specific practices have evolved over the years, the aim of them remains consistent:

to govern hosts to be productive, successful users of the platform in ways that uphold and reproduce Airbnb's business goals. As noted in Chapter 2, Airbnb's relationship labor began with the founders knocking on doors, visiting early hosts in their Homes to help them more successfully use the platform. This led to the launch of the Photography Project, which employed upwards of 5,000 photographers around the world in 2014 (Fairs, 2014). Since then, Airbnb puts employees to work in myriad ways to help users manage their listings, develop successful hosting practices, connect with other hosts, and comply with local regulation. This section explores employee to host relationship labor in more detail, sharing empirical examples from my host interviews that show the work required to keep, make, and grow the success of platform users.

Airbnb's Photography Project is one of the company's original forms of relationship labor (Gallagher, 2017), and several hosts experienced this offering in Edinburgh. Josie received a call from Airbnb when she first published her Home listing in 2014. The employee asked if there was anything she needed help with, and specifically offered to come take photos of her flat. She declined, as she felt good about the photographs she had taken herself, but remarked that "it was soooo nice... I was kind of blown away by that." Josie's delight at Airbnb offering to help her present her listing successfully suggests that this employee is performing a selfless or charitable act. However, it is in service of offering to provide photographs that, as discussed previously, will aid in the consistent and therefore appealing and trustworthy representation of Airbnb's product: Homes. This hints at an important contradiction in "the sharing economy" imaginary that users providing a service or asset – in this case Josie providing her home – are individual entrepreneurs, their success not tied to the success of the platform's parent company. This is likely the result of these platforms "framing themselves as neutral – rather than self-interested – intermediaries" (Shestakofsky and Kelkar, 2020, p. 868). Calling attention to Josie's reaction here is a helpful illustration of the impact of Airbnb's relationship labor on its overall brand success, even beyond bookings within the platform. Airbnb's Photography Project has evolved since Josie's encounter with it, with Airbnb offering photography to hosts "for a fee"⁶⁶. Indeed,

⁶⁶ Airbnb photography available "for a price quote," per the Airbnb help site, accessed 2022: <https://www.airbnb.co.uk/help/article/297/professional-photography-for-listings>

other Homes hosts I spoke with, who began hosting after 2016, did not remember receiving an offer of free photography. Airbnb's evolution of this offering upholds the constant process of making users productive for the platform, now offloading the financial burden of including a high standard of photography to hosts.

Tracing the evolution of relationship labor tactics like the Photography Project is a helpful way to illuminate a platform's shifting priorities. As discussed in the previous section, Experience hosts have been regularly called and emailed in 2022 by Airbnb employees encouraging them to add video to their listing. "All I ever get from them now are emails asking me to put video on my profile for some reason," David said. Airbnb not only uses this outreach to suggest that hosts put video on their listings, but also offer to create video from images already uploaded by the hosts and some hosts described. Brody said he "got a phone call the other day" (August 2022) from Airbnb to let him know that they have "introduced a new software on the platform where I think you can just upload a bunch of clips, and then automatically edit the clips to a soundtrack and [the platform] does the editing for you." The fact that Airbnb invested in developing this service as an offering in the platform's interface, sends emails inviting hosts to use it, and then *still* makes the decision to have employees call hosts and offer to help them utilize the feature indicates how high a priority video content is for the platform. Airbnb's focus on and investment in soliciting video content for Experiences, while divesting from Homes listing photography, implies Experiences are a growth priority for the company. It also suggests that user experience research done at the company connects video content with success metrics in the platform, perhaps higher conversion rates or more engagement with listings. The point here is less that the current priority is video, but that paying attention to the specific relationship labor tactics of a platform can illuminate its evolving priorities over time.

This relationship labor from platform to host also includes helping hosts navigate the ongoing regulatory changes in specific regions. For example, new short-term let legislation came into effect in Scotland in October 2022, requiring Hosts to acquire an operating license⁶⁷. As this

⁶⁷ Information about the legislation change is updated regularly by VisitScotland, this information updated on 19 January 2023 and accessed the same month: <https://www.visitscotland.org/supporting-your-business/advice/short-term-lets-legislation#legislation>

change was taking place, Lisa received multiple phone calls and emails (one of which is shown in Figure 10 below) from Airbnb alerting her to the changes and sending information about the laws coming into effect.

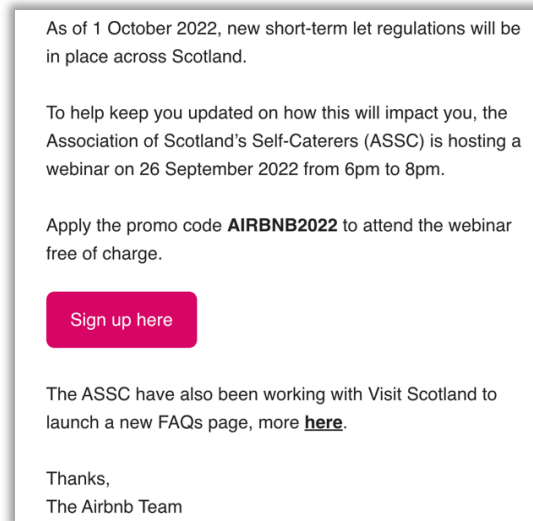


Figure 10: Screenshot of email sent to Lisa from Airbnb

Nathan gave an example of a friend of his who is becoming an Airbnb Homes host since this regulation has come into effect. His listing has not been able to be live yet as his application for this license is still pending; there is a form field on his listing for this that must be completed before it can go live. This brings the platform's interface back into governing users and brings implicates it into the legal realm of ensuring users follow local law. This example is a poignant reminder that Airbnb is itself subject to governance from the state, and this work to ensure hosts comply with new regulation makes it a tool for compliance. Therefore, this relationship labor is "directly informed by local, national, and supranational mechanisms of governance" (Gorwa, 2019, p. 857). These examples suggest ensuring users comply with local regulation is a top priority for the platform, as they put human resources behind guiding users toward compliance.

Airbnb made a notable investment in growing Experiences in Edinburgh between 2018 and 2020, illuminated again by attention paid to relationship labor tactics. Every Experience host I spoke with recalled an Airbnb community manager who put in significant effort to grow

the Experience hosting community in Edinburgh during this time. This employee would invest one-on-one time with hosts, helping them with marketing and daily management of their listings. Brodie shared that when he first listed his tours on Airbnb, a “rep” was proactive in helping him negotiate the technical details of the platform. For example, his tour includes tickets for Edinburgh Castle, which needed to be bought separately in advance by guests; however, Airbnb’s platform censored messaging between Brodie and guests, not allowing him to share this external link to purchase tickets. On a phone call, the Airbnb “rep” advised Brodie to message guests after booking to let them know, which was not censored in the same way post conversion and would then allow him to send an external link to buy castle tickets. Brodie was impressed at how “that person had the sense to toe the company line,” and suggest ways around restrictive technological affordances, helping him better use the platform in real-life scenarios. Kristin appreciated her “rep,” saying they made her life easier by helping her with the mundane tasks of running her Experience. From refunding guests who had to cancel, to rescheduling tours, to getting paid faster, she would rely on the “rep” to help her when the platform affordances fell short: “it was easy, you know, one email, done.”

This community manager would also organize group events to bring Experience hosts together and strengthen their relationships to the platform via their relationships to each other. These events included webinars, in person meetings, and awards celebrations. Brodie recalled there being an annual gathering organized by Airbnb in Edinburgh to bring all Experience hosts together, “and tell you what the platform is doing in the coming year.” David shared there was also “a kind of Scottish Experience Award ceremony thing, for Best Experience and Best New Experience” and other categories. Kristin fondly remembered one of the meetings in which she met about 20 other hosts, which helped her feel a sense of belonging in an Airbnb hosting community. She has since kept in touch with several of these to forge various collaborations. For example, a woman who hosts a portrait photo Experience gave her a discount on marketing photos for her tour, a woman who hosts a knitting Experience in suggested they team up to do a Harry Potter house scarf knitting Experience, and a woman who hosts a Harry Potter themed Home listing suggested they offer discounts to each other via cross promotion. These group activities were organized by Airbnb employees in service of making existing hosts productive

users for the platform, strengthening their loyalty to Airbnb, and building a foundation to outsource relationship labor from employees to users.

4.2 Outsourcing Relationship Governance to Users

Since 2013, a powerful growth strategy of Airbnb has been to delegate relationship labor beyond employees to the platform's users. If relationship labor is the work required beyond a platform's interface to encourage and govern users to interact productively with the platform, Airbnb does this in large part with user-to-user relationships. As discussed in Chapter 2, Airbnb's imperative to scale users inspired new ways to employ those users to exponentially extend the platform's productivity. This began with building a mentorship program where hosts can help other hosts use Airbnb successfully, creating a peer-to-peer support system amongst users (Gallagher, 2017). Since then, this user-delegated relationship labor continues to be practiced in various ways, between several different groups of users: from host to host, from host to guest, and from host to neighborhood and the broader community. The way hosts are "encouraged to assemble" to develop and defend practices that meet their own economic interests is "structurally aligned with Airbnb's own interests and objectives" (van Doorn, 2020, p. 1810). Van Doorn points out that this is used on a powerful regulatory level within local governments, activating groups of hosts to defend the platform and therefore their hosting businesses (van Doorn, 2020). This section turns this process inward to how hosts are encouraged to help each other be productive users of the platform as well. As evidenced in my discussions with both Experience and Homes hosts, this is a powerful way Airbnb reproduces platform governance and ensures user productivity even when employee relationship labor is scaled down.

Hosts help other hosts use the platform more successfully both casually and in ways more formalized by Airbnb. Hosts talked about how their community manager encouraged them to network with each other, share ideas, help each other succeed with the platform, and recruit additional hosts. This is a clear example of Airbnb's relationship labor being formally delegated from the employee community manager to a group of users in an official setting. In our interview, Brodie was quick to share his awareness and criticism of this strategy:

They want people to become trainers, and train new people and encourage them to join Airbnb Experiences... basically, they wanted the hosts to start bringing in new hosts to train them on how to be hosts. So you're essentially working for Airbnb doing the recruiting and the training but it's all voluntary.

He recalled there being about twenty people at the first year's Experience Host meeting, and that number grew at the next year's meeting as people started bringing others to recruit them to be Experience hosts. Brodie specifically mentioned how the Airbnb community manager framed this practice with "positive" language that leverages the grassroots ethos of Airbnb's culture of usership discussed in Chapter 2. He said that "some people really bought it, like oh yeah I can't wait to become a Superhost and get my little badge on my profile." But he rejected this sentiment, sharing that he is "not going to sacrifice any more of my time to help grow Airbnb, they are a huge platform, they have enough money, they could be paying you to do this and they are choosing not to because they know they can do it for free." Although not bought into by every host, these meetings aim to create the conditions through which user governance can happen effectively (Stoker, 1998).

An example of less formally delegated relationship labor is the way the Homes hosts help each other become hosts, set up their listings, and share management tips and practices in line with Airbnb's ideal usership standards. This is afforded and encouraged within the platform interface as of this writing (see Figure 11), with a call to action in the Homes host set-up page to connect to an "experienced Superhost near you." I am unsure if the Superhosts who participate in this mentoring program are financially compensated, but have found no other evidence of peer-to-peer relationship labor in other areas of Airbnb to be paid.

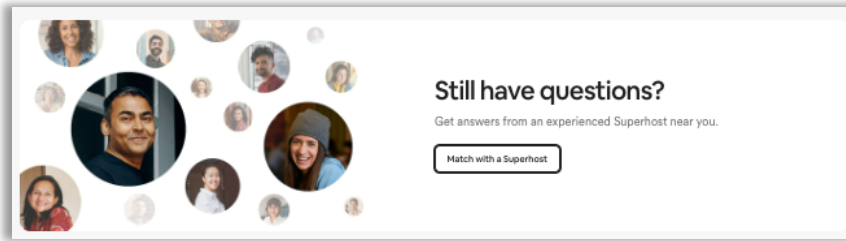


Figure 11: Screenshot from Airbnb Homes Host set up page⁶⁸, taken Feb 2023 in Edinburgh, UK

Unpaid peer-to-peer relationship labor also exists offline between networks of friends who share experiences, tips, and content with each other about hosting and even go so far as to sit with each other as they set up listings. For example, Allison’s friend who is a Superhost came over to help her fill out the details of her Homes listing, giving her tips for how to optimize it, such as giving detailed captions on each photo and encouraging her to fill out every detail of the form. She learned the practice of adding new information about her neighborhood and regularly updating her listing from this friend. Arthur and Lauren offer a digital guidebook to their guests that was created initially by a friend who also hosts, sharing the creative labor of producing this content whilst reproducing knowledge of place across additional listings. The comradery and willingness to help other hosts seems to create social bonds between users with successful platform use in the center.

These examples are not facilitated by Airbnb directly, but the platform still benefits from this offline relationship labor that occurs from host to host; sharing successful hosting practices ultimately increases and reproduces what makes the platform succeed. Collectively, this unpaid peer-to-peer labor eases the burden of the customer service work needed to be done by Airbnb employees, making productive users in more ways than one. As each user learns to use the platform more productively, she in turn helps others to do the same, creating patterns of use practices among users. For example, my interview data supports findings by Stors and Baltes’ (2018) qualitative work done on Berlin Airbnb listing descriptions that hosts often associate their homes with cultural components of their neighborhoods, from restaurants, to landmarks,

⁶⁸ Accessed here:

(https://www.airbnb.co.uk/host/homes?c=.pi0.pk12572802126_121257293244&gclid=CjwKCAiAuaKfBhBtEiwAht6H72kv8TQyNmPG7ZmipMOqMtyEGFA0hePCTvORaUVHII-QeO3sEtDAXRoC8SsQAvD_BwE)

to other “things to do”. My discussion with hosts found that their relationship labor with each other reproduces this practice of inputting cultural production, and indeed cultural content, with each other in way that “contribute to the discursive production of urban neighborhoods and thus co-produce them as touristic destinations” (Stors and Baltes, 2018, p. 166). In either directly facilitating host-to-host relationship labor (via the mentoring scheme), or in indirectly benefitting from the social relationships of hosts and their friends, Airbnb governs platform use in a way that positions it as a producer of cultural knowledge and new touristic areas in the city.

As Covid shut down travel around the world, relationship labor at Airbnb evolved yet again. CEO Brian Chesky announced on May 5, 2020, that the company would layoff 25% of its employees, requiring the company to rethink its structure around roles and teams⁶⁹. Most of Airbnb’s offerings paused or reshaped due to public health worries, travel restrictions, and lockdowns, and tracing more recent practices of relationship labor within the Covid context shows which priorities have shifted for the company. Experience hosts say they no longer have a dedicated community manager to help them negotiate their listings and have heard nothing about upcoming events or in person support. It seems as if the more creative investment in marketing has been deprioritized, such as the Photography Project no longer being free to users. In another example, before Covid, David was told by someone at Airbnb that they would like to fly him to California to give him a tour of headquarters; he has not heard any more about this since. The network of fellow hosts Kristin built has dissipated; many of them have stopped hosting altogether. In place of the prior creative help, more recent forms of relationship labor are focused on helping hosts with regulatory compliance on a local level, as evidenced by the webinars and informational calls offered to Homes hosts to ensure they understand how new licensing laws work. The point here is that Airbnb’s focus on specific relationship labor tactics will continuously evolve, but its use as a platform governance strategy more broadly persists.

5. Conclusion: What governance does

⁶⁹ Airbnb’s announcement about layoffs on 5th May, 2020, accessed February 2023 at: <https://news.airbnb.com/a-message-from-co-founder-and-ceo-brian-chesky/>

This chapter has discussed how hosts experience user governance within two themes: governance by the technical platform and governance by relationship labor. However, both work hand in hand to make hosts productive users of the platform. This chapter explores experiential details about the ways hosts negotiate, interact with, use, and subvert the platform, illuminating facets of Airbnb's power over users in how they currently manifest in the platform. Considering these mechanisms of control in their present state allows an articulation of several things Airbnb's user governance accomplishes more broadly. First, it creates order in the messy relationships between users (Shestakofsky and Kelkar, 2020), governing these relationships both in user interactions and creating a hierarchy of hosts who are rewarded for following the rules. It also shapes the practices of users to fit into the business logics that best serve the platform (van Doorn, 2020). An important example of this is how it professionalizes Homes hosts to make the accommodation content on the platform professional, safe, trustworthy, and appealing to guests. However, this works in tension with how it casualizes Experience hosts to perpetuate the narrative that users can interact with "real locals" exclusively on Airbnb Experiences rather than the same touristic guides accessible elsewhere. Articulating mechanisms of user governance as both technical and social contribute to our digital literacy of what platforms do, offering a clear and useful framework to platform governance literature. The emotional examples from hosts shared throughout this chapter add a lyrical appreciation to how user governance is experienced and managed. While I believe and expect the details of these mechanisms will change over time, the digital and the social are enduring tools of user governance that Airbnb will continue using.

In the case of Airbnb's platform governance, I define power in the ANT and Foucauldian traditions as "the ability to affect the actions of others" (Matthewman, 2017, p. 166). The way the interface guides users to enter certain types of descriptions and photos or fit their listings within specific classifications ensures control over the "user generated" content that makes up its inventory. Algorithms censor, reward, and police user interactions, and technical connectors enable data and functionality integrations with some platforms and not with others, imposing and restricting certain hosting practices on users. These various platform affordances embed power within human-technology interactions, diffusing governance throughout the design of

the platform (DeNardis and Hackl, 2015) in a Foucauldian way. Power is everywhere in Airbnb's platform, even when its technical governance is exaggerated or unseen like in the case of opaque algorithms as panopticon (Stark and Pais, 2020). Airbnb's control is also enacted through chains of social relationships between users and employees. Relationship labor done by employees ensures the "right" and "successful" use of the technology, not only restricting but also empowering Hosts to convert more bookings and get strong reviews. This work is then delegated to unpaid Hosts to not only help each other use the platform well, but recruit friends to Host, making more users. These practices of relationship labor further embed power relations into Airbnb's social network (Foucault, 1979), strengthening as users are grown into benefitting from networked effects.

Airbnb's user governance has evolved from the founders encouraging their first guests to promote their "product" at the ICSID/IDSA⁷⁰ World Congress to the dispersed and embedded processes described in this chapter. Over time and across the world, these small and specific examples add up to Airbnb's 4 million hosts interacting with over 1.4 billion guests "in almost every country across the globe."⁷¹ Articulating user governance as a stabilized "lineage" (Abbott, 2016) throughout Airbnb's evolution sheds new light on our understanding of how platforms order our social world. Theoretically, governance embeds the market power of Airbnb into the way it socially shapes the technological elements of the platform, experiences of users, and relationships between them. It adds notions of power to the consideration of Airbnb as a socially shaped technology, its affordances designed as a tool to reproduce homes and experiences in the shape of what sells well. Governance is enacted and reinforced through the micro social interactions between users and the technical platform, Airbnb employees and users, and from user to user. Building on this discussion of user experiences, Chapter 6 will focus closely on Airbnb's processes, adding ANT approaches of tracing associations between entities to my exploration of Airbnb. Matthewman argues that ANT owes an intellectual debt to Foucault, specifically in its examination of "power, materiality, the nature of the social, non-

⁷⁰ International Council of Societies of Industrial Design/Industrial Designers Society of America (ICSID/IDSA) World Congress, as introduced in Chapter 2

⁷¹ Figures found on Airbnb's press page, dated from December 2022, accessed Feb 2023:

<https://news.airbnb.com/about-us/#:~:text=Airbnb%20was%20born%20in%202007,every%20country%20across%20the%20globe.>

human agency and technological neutrality” (2017, p. 116). In this spirit, I will continue to build on these facets of user governance through my next chapter’s discussion of facets of platform processes.

Chapter 6: Facets of Platform Processes

1. Introduction: Splintering Airbnb

When our analytical focus centers on how the wires, ducts, tunnels, conduits, streets, highways and technical networks that interlace and infuse cities are constructed and used, modern urbanism emerges as an extraordinary complex and dynamic sociotechnical *process*. (Graham and Marvin, 2001, p. 8)

I begin this chapter's exploration of Airbnb's platform processes by imagining Airbnb as a material city, proposing a metaphorical meander through it. As we explore the platform, the Homes and Experiences listings presented to us are the building facades, shop displays, restaurant menus, ground floor windows, and hotel bars displayed on city streets. We wander through, clicking on listings, reading descriptions, scrolling through photos. We are presented with neighborhoods, restaurants, living rooms, and "things to do" that represent places we are considering travelling to. Like a material city, what we see on Airbnb is the front-end presentation of spaces and offerings that are powered by and connected to an intricate configuration of unseen infrastructures. Just as the city's electrical grid, plumbing, supply chain flows, Wi-Fi signals and cabled internet are obscured to the urban explorer, the input forms, classification logics, category tags, digital associations, recommendation algorithms and machine learning that power Airbnb are hidden from end users. As cities are in constant (re)production in their ever-changing landscapes, growing (and at times shrinking) development, and shifting populations, so too is Airbnb's content, design, configurations, and usership. What we see as we explore the platform is the result of processes that work to power the platform's digital representation of the city. They not only produce Airbnb's digital representation of place, but they also entice an entry point into the *actual* city by way of working to inspire guests to book Homes and Experiences with the platform. The front-end user interface exists to bring people from the digital into the material through a tightly governed, socially shaped, and always changing point of entry.

In their influential book *Splintering Urbanism*, Graham and Marvin demonstrate how closely tracing the networked infrastructure of cities can illuminate important social processes that shape them (2001). These processes are ever changing and reconfiguring relationships

between micro and macro, bodies and populations, and are facilitated and mediated by technical and material infrastructures. In short, “they are the dominant sites of global circulation and production” that “rely on each other and co-evolve closely in their interrelationships with urban development and with urban space” (p. 8). Attentively tracing city infrastructures leads to insights about how they are connected and networked to others, articulating a broader understanding of globalization and parts as co-configured by the whole. This invitation to consider cities as processes frames their components and inhabitants as parts of “infrastructurally mediated flow, movement, and exchange,” therefore subject to critical tracing and scrutiny (Graham and Marvin, 2001, p. 8). Graham and Marvin’s aim was to motivate social researchers to stop taking the hidden, technical, and material elements of city infrastructures for granted and consider city infrastructures with critical curiosity. Twenty years later, they appreciate the “infrastructural turn” their work helped inspire within urban studies and invite a continued exploration of the many additional questions that turn has brought up (Graham and Marvin, 2022).

Returning to the conceptualization of Airbnb as a material city through this lens offers an invitation to explore the platform’s hidden digital system from an infrastructural lens to illuminate facets of its social processes. I follow Graham and Martin’s approach to unpacking its technical makeup to surface the socially constructed placemaking processes of Airbnb as a platform; rather than tracing a physical urban infrastructure, I turn to the technological architecture of the platform. In this practice, user input forms become knowledge entryways, sorting and classifying user generated content to prepare it for use within the wider system of recommendation and personalization. Connections in the form of linking those entities in relationship to each other further define each entity, creating a whole “always smaller than its parts” (Latour *et al.*, 2012). This is a practice in asking “How Airbnb?”⁷² by shedding light on its inner workings to better understand and articulate the processes that endure through its constant change. In other words, to “problematize the material connectiveness sustaining” (Graham and Marvin, 2022, p. 169) its digital system. Through this lens, this chapter offers a

⁷² This question was inspired by Adrian Franklin’s provocation for us to shift from asking “Why tourism?” to “How Tourism” in his framing of “tourism as ordering” Franklin, A. (2004) 'Tourism as an ordering: Towards a new ontology of tourism', *Tourist studies*, 4(3), pp. 277-301.

close consideration of the technological system, resulting affordances, and behind-the-scenes social conditions of a platform as a method for making stable the processes it facilitates. Chapter 3 introduced the technical components of Airbnb: entities, associations, placemarkets, and how they comprise the platform's knowledge graph, and I now mobilize those components in this spirit of "splintering Airbnb," unpacking them further with a practice of "infrastructural inversion" (Bowker and Star, 1999) that explores the social conditions in which they were created.

This chapter is informed by several facet studies: netnographic platform walkthroughs, consideration of source material like Airbnb engineering reports, and interviews with Airbnb producers. Like Chapter 5, it reconfigures these methodological facets into substantive ones that give insight into Airbnb's platform processes. This offers a front-end/back-end dialectic that makes visible ways Airbnb orders the places, neighborhoods, and communities of Edinburgh, first through the foundational process of standardizing and classifying user inputs into entities in the platform, then by relating and associating those entities to each other in a way that creates meaning through social relations. It is a practice of "learning to look closely at technologies that, by design and by habit, tend to fade into the woodwork" (Bowker and Star, 1999, p. 34). Ultimately this chapter lays the groundwork for understanding Airbnb's role in placemaking I will explore in Chapter 7 by showing how the foundational and relational processes at work in Airbnb culminate in the platform's ability to recommend and personalize the content it recommends to each user. For now, *this* chapter investigates how the platform standardizes and organizes its entities to configure windows and entryways to the city, framing new areas of discovery for users. This makes touristic spaces from residential ones, designing the presentation of the city as worthy of exploring and consuming in a way that is personalized for each user.

At the same time, Chapter 2 has shown how Airbnb is in a constant state of evolution and progress, reconfiguring, reassembling, integrating additional platforms, and offering new features. Therefore, the thick descriptions this chapter generates create a snapshot in time of its representation of Edinburgh, a lyrical yet technical look at fixed moments to begin to see longer term processes. Therefore, the true finding is in the practice itself; as Latour (2005;

Latour *et al.*, 2012) invites us to consider, the processes revealed by the momentary configurations of the platform are the objects of enduring sociological focus. In this spirit, this chapter will describe and explore facets of each process in detail: standardization, classification, and association making. I then bring these processes to life in a discussion of Airbnb Plus, illustrating their entanglements and consequences in this rich empirical example. I conclude the chapter with a theoretical offering that stabilizing platform processes can help us further understand their impact on our social world and offer a way to study the complexities of Airbnb and other platforms.

2. Standardization

Systems of classification (and of standardization) form a juncture of social organization, moral order, and layers of technical integration. Each subsystem inherits, increasingly as it scales up, the inertia of the installed base of systems that have come before. (Bowker and Star, 1999, p. 33)

This section explores Airbnb's foundational process of standardization. In short, standardization is the process that shapes things to be workable within a broader system (Bowker and Star, 1996). Standards therefore inherently impose the rules and objectives of that system onto the entities that comprise it, changing them to fit in effectively as parts of a whole (Bowker and Star, 1999). I consider standardization a foundational process because it works to enable both the technical and social system of Airbnb. Technically, it is the first and necessary step that enables the other processes of classification and association making throughout its platform. Socially, standardization determines who Airbnb hires to produce the platform, and how they in turn shape the technical standards of the platform. This introduces a cycle of social shaping that deepens the discussion from Chapter 2, moving from how users shape the platform to how its producers do as well through standardization at various levels. To explore this process, I will first briefly introduce the technical power standardization wields in shaping its entities to work within Airbnb's knowledge graph. I will then broaden our understanding of this standardization with a discussion of who produces Airbnb, and the hiring standards the company sets and adheres to in selecting them. I then introduce the Airbnb producers I

interviewed and share themes of their experiences in negotiating standards with other teams. Taken together in this way, both data entities and producers are standardized to work within Airbnb's sociotechnical system.

Timmermans and Epstein (2010) draw on the interdisciplinary literature on standards, relying heavily on Bowker and Star (1999) and Brunson and Jacobsson (2002), to offer a sociology of standardization. They define this as "a process of constructing uniformities across time and space, through the generation of agreed-upon rules" (p. 71), which aims to "render the world equivalent across cultures, time, and geography" (p. 69). To consider standardization a *process* in this case acknowledges that it is made to happen within a set of negotiations between various actors over time, and it is something that therefore inherently changes its components. Timmermans and Epstein (2010) also point to the interesting contradiction between the definition of standard and the definition of standardization. A *standard* is a bar to reach, an aspiration to meet; Airbnb's photography project set a high standard for the way homes are represented on the platform, for example. But standardization, in contrast, has a deprecating tone. When homes become *standardized*, they lose uniqueness, reproducing sameness as a cookie-cutter. Here the notion of aspiring to sameness or conformity is essential to standards, which is an interesting tension for a system like Airbnb, which, as discussed throughout this thesis, capitalizes on notions of cultural diversity, selling uniqueness across the world.

Scholars of standards acknowledge that they develop and are reinforced socially, which invites a consideration of the textures, tone, and social fabric of the institutions that produce them (Bowker and Star, 1999). The corporate context in which Airbnb's producers are governed by and perpetuate standards is a homogenous one that selects like-minded people to (re)produce the values of the platform. A publicly available 2016 interview with Airbnb's "head of employee experience" Mark Levy gives insight into the intentionality of building a specific "culture of belonging" amongst Airbnb employees (Bajer, 2016). Throughout the interview, he reiterated that the broader mission of Airbnb to "create a world where anyone can belong anywhere" is supported by an "employee experience mission to ensure our employees feel that they belong here at Airbnb." He makes the connection between the work culture of employees

and the inscription power that has on the platform they are building; he said “this inside-out strategy helps bring our mission to life” in the end product. Levy further shared his philosophy that their employee experience “is what helps us deliver on our business goals,” acknowledging a direct connection between daily life at the company and the business efficacy of the technological product being built.

This sentiment is not only cultivated amongst employees but guides the recruitment and selection process for hiring as well. “If we are going to spread our mission around the world, we need to continue to grow our team by making smart and strategic hiring decisions and finding the right people who can scale with the company and are committed to what we do,” said Levy (Bajer, 2016). This sheds light on how Airbnb embeds cultural fit into their interviews and employee selection processes, performance reviews, promotional processes, and recognition. This is an important step to point out in understanding the nature of Airbnb’s technology, as it draws attention to not only who is shaping the technology, but who is *not* invited to contribute to the process. Producers are hired who will aspire to the “belonging” standards of the company and build products and features that standardize inputs accordingly, and people who do not already use and champion the platform are de-prioritized for the job.

In a 2019 interview about the hiring approach at Airbnb, former Head of Global Hospitality and Strategy Chip Conley adds detail to this sentiment by saying that an important criteria for being hired at Airbnb is showing a “commitment to the core values of the company,” and a way to do this is to demonstrate how long candidates have been end users of Airbnb (as hosts and/or guests) (Mardoyan, 2019). Therefore, the people who Airbnb choose to hire to shape the platform as employees are already influenced by the experience of being end users, exposed to the platform’s standards and excited by the notion of perpetuating them. This closes the loop from user, to builder, of the platform. Levy qualifies this point by saying being an Airbnb non-user “doesn’t mean we won’t hire them, but it means they are competitively disadvantaged compared to someone who actually has [used the platform] all things being equal” (Bajer, 2016). This offers a deeper understanding of the entangled relationship between users, producers, and technology being facilitated to perpetuate the platform’s ideals.

With this in mind, I will now briefly introduce the Airbnb producers who so generously participated in my “infrastructural inversion” study (Bowker and Star, 1999). This chapter is enriched by the four (4) key informant interviews I conducted with Airbnb producers from September to December 2021. Because of the limitations of interviewing Airbnb employees discussed in Chapter 4, I supplement their experiences with other publicly available technical source materials written by senior Airbnb producers. Figure 12 shows a snapshot of their roles, focuses, and tenure at Airbnb.

Name (changed)	Work type
Jack	Designer
Ben	Product Manager
Thomas	Engineer
William	Engineer

Figure 12: Participants in my Airbnb Producers Interviews

Each producer I spoke with shared their firsthand experiences with the culture of “belonging” Levy so intentionally cultivated at Airbnb’s offices. For example, Jack joined Airbnb as “already a fanboy,” who loved their story and loved that the founders came from a design background. “It felt very down to earth,” he shared of his time there, and said he liked the “broad mission about connecting people from different spheres.” He uses Airbnb when traveling as well and supports the “anti-tourism” ideals of the company. At work, he was a member of several Airbnb “affinity” groups self-organized by employees who identify with similar cultural backgrounds (like the “Asians at Airbnb” group) and interests (groups for “Gamers”).

The corporate culture described above sets a scene in which to better understand how Airbnb producers generate the institutional buy in needed in their architecting the standards of platform, and the conditions in which this buy in can be generated. Timmermans and Epstein name “buy-in” as an important social negotiation that shapes standards and ultimately standardization (2010). What is the setting in which these standards are set? Who is involved in decision making? What is the process? This notion of “buy-in” came up repeatedly in my discussions with Airbnb producers, present in not only how standards were arrived at, but also

what projects and initiatives were invested in. For example, when William arrived at Airbnb in an entry level position, he said “there wasn’t a clear project” assigned to him; so, the responsibility of determining, defining, and developing a project. Getting “buy in” to build that project fell on his shoulders. He decided to add a specific component to the knowledge graph, because he said this project “felt like technically feasible in the time I had.” In this case William needed to prove his own value to the company from the outset to succeed in his job, to identify and complete a contained project in a fixed-term contract, and to do that he needed to propose and justify a project for him to work on. This therefore shaped the very architecture of Airbnb’s knowledge graph; what he built has lasting impact on the structure of the platform, and he decided to build it because it was a project that he knew he could get buy-in for and be accomplished during his internship.

Thomas, another knowledge graph engineer, expanded on the experience of generating buy-in. He acknowledged that at Airbnb, “you can work on whatever you want to, as long as you can convince everybody else.” He shared experiences of being blocked by or needing to negotiate the sets of standards of other teams, as “every project interacts with so many others.” This recalls Bowker and Star’s metaphor of plate tectonics to describe sets of standards colliding, diverging, or creating friction with each other, always in motion (1999). His played a role in setting the standards of how the knowledge graph would get built, which required specific types of databases and connections between them. To do this, he said, “you have to talk to the database team. And the database team says, oh, yes, but we're retiring this kind of database, you have to use this new database. And then okay, let's go back to the drawing board and adjust that.” These blocks, frictions, and negotiations of standards from various teams and projects are surprisingly social, human, and messy when compared to the innovative stereotypes of tech and the slick interface of the platform. Thomas connected this process with additional standards each team had to strive for to be deemed successful. He said,

sometimes it's, you know, a political game, because the database team has their performance metrics, and they need to switch that many of them to the new database. So they need all projects to use [those metrics], whether it's the right technical decision or not. So that's, that's buy in. It's often everybody likes the idea.

But then when it actually comes to drawing up a plan, you actually need to be very savvy, to get everybody on board whose work touches [that plan].

This example shows how producers with successful social skills are the ones who ultimately get to build and shape the platform. It is their views, opinions, and approaches that comprise the Airbnb's process of standardization.

Most of Jack's design work at Airbnb focused on building and standardizing "trust" signals into the user interface, and he applied this work to a project of onboarding hotels onto the platform. He spoke with me about the difficulties of both symbolically and literally standardizing hotels to "fit" within the knowledge graph. Symbolically, hotels are the antithesis of Airbnb's brand story; they have been viewed as the anti-Airbnb, the competition since the company began and the problem Airbnb tried to solve. So, his team turned to the standard of "belonging" to flip this narrative within the company to generate buy-in to welcome hotels as listings; they had to consider hotels as "belonging" on the platform, too. They contributed to getting the platform ready to support hotel listings leading up to the company's initial public offering (IPO). This including creating design standards for hotel listings that were different from Homes listings. He said:

the user experience for a business [using a typical profile standard] just didn't make sense. A business wouldn't have or identify with pronouns. A business wouldn't want to be identified with just the first subset of the string of the name of the business. A business has different trust signals. For example, a business would [want to give] out its address, hours of operation, but you wouldn't typically ask that of a human, or to ask a human to display their address so publicly.

Jack talked about how Airbnb businesses required different affordances to be built, like linking to an individual's personal profile page, like "meet the staff" at a certain hotel. These new standards required to make hotel listings workable in Airbnb's system are an example of platformization (Poell, Nieborg and van Dijck, 2019), requiring existing professional travel industry actors to fit the standards and logics of Airbnb, and the more personal, casual expectations set from platforms to accept hotels. The personal standard set by the platform professionalizes homes but casualizes businesses. Airbnb's standard of belonging requires

homes to be consumable and hotels to be personable, standardizing both to be seen as similar options in the eyes of the Guest.

As established in Chapter 5, Airbnb standardizes listings via the form fields, affordances, and features that guide Hosts in creating listings for their Homes and Experiences. The type of photos, descriptions, and other content input by users are governed through platform affordances and relationship labor to uphold the standards of the platform, *standardizing* this messy content into entities called listings. Framed in this way, standards are the “why” mechanism of user governance and set “procedures for how to do things” (Bowker and Star, 1996, p. 3). Therefore, standards unify the efforts of Airbnb’s employees, guiding the decisions of a diverse array of teams and producers. For example, Airbnb has well documented standards for its producers to follow, including their “visual language design system”⁷³ through which the company embeds authority over its employees (Brunsson and Jacobsson, 2002). In this way, standards govern the decisions of producers in their daily work lives.

This section has discussed how standardization turns a diverse array of things into entities that have compatible attributes and can be workable in a larger system, both at a technical level with entities in the platform and a social level with hiring practices and selecting employees that will work well in the Airbnb employee system. Standards are the rules that govern the process of standardization. Airbnb uses many standards for a variety of reasons. Aspirational ones like high conversion numbers shape the platform’s design to govern what types of photographs and listings should be on the platform to reach those conversion standards. The standard of “belonging” guides the hiring process and employee experience, shaping the producers of the platform to uphold the cultural values of the company both personally and in what they build. Those employees meet working standards of needing to generate buy-in to determine what projects, teams, and people get prioritized at the company. Standards therefore ultimately facilitate the process of *standardization* of the content that is brought onto the platform and the people who shape it. As explored in this section, standards

⁷³ A 2018 Airbnb Design blog post outlines the standards all designers must follow. This is acknowledged to be flexible yet unifying: “unified design language shouldn’t just be a set of static rules and individual systems; it should be an evolving ecosystem.” Accessible here: <https://airbnb.design/building-a-visual-language/>

are agreed upon and enforced socially, and how that happens at Airbnb illuminates qualities of the entities, or very building blocks, of the platform.

3. Classification

Standards require containers of their descriptions in the form of classifications to be used in this wider system; classifications are therefore “an aspect of organizational, social, and personal memory,” and therefore work together to add meaning to standardized things (Bowker and Star, 1996, p. 3). Like standardization, classification is also a social act; classification systems “grow out of and are maintained by social institutions” (Bowker and Star, 1999, p. 61). Bowker and Star argue that tracing and analyzing “the nature of information infrastructures such as classification systems” can “demonstrate how they simultaneously represent the world ‘out there,’ the organizational context of their application... and the political and social roots of that context” (p. 61). This is a helpful point of departure for considering of Airbnb’s classification processes; their logics seek to perpetuate the organization of the offline world yet exist to further standardize its entities into its own online system. This inherently adds a new meaning and intention to each input in Airbnb, compounded further by the social experiences, values, and epistemological assumptions of the engineers producing the platform just introduced. A close analysis of the “finer grain” of classification systems allows us to move past the notion that the social world is projected on the natural, and “detect rather a coconstruction [sic] of nature and society” (Bowker and Star, 1999, p. 61). The following examples described by engineers and found in my own user experience shed light on the specifics of these classification processes in Airbnb, illuminating how the basic building blocks of the platform are co-constructed by hosts, engineers, platform affordances, and artificial intelligence, extended the governance discussion from Chapter 5.

This section will explore how classification as the next layer of standardization, one that connects entities to additional meaning. The two processes are entangled, and each does slightly different but related things in shaping the identities and meaning of entities. To do this, I first describe how Airbnb’s input forms (used to create a user profile or Home or an Experience listing, for example) guide end users in the initial self-classification of their listings dictated by

the standards of the platform. I then discuss how Airbnb engineers conduct further human and AI-aided classification of those inputs for use in the knowledge graph. This process is used to categorize Homes, Experiences, places, and Airbnb users alike; every entity in the platform is classified into its necessary category. My interviews found that producers not only use their own world views in their classification approaches, but also negotiate with the needs and requests of other teams such as marketing, further socializing the categorization process. Finally, a look at how users are classified in relation to content shows how identity work and assumptions shape the content of Airbnb.

3.1 Classifying Listings

To dig deeper into the role of Hosts in developing Airbnb’s inventory, I began the process of creating an Experience within the platform. The user interface guided me through 10 initial steps of data input, beginning the classification process with user self-selection. I first needed to sign in with my Airbnb account⁷⁴, then select the first of several overarching classifications: “Online experience” or “In-person experience.” I selected “In person” and was prompted to input my location. As I typed “Edinburgh,” various locations auto populated, and I selected “Edinburgh, UK” (see figure 13), which was “supported” as a location within the platform. I was then asked to select a “primary theme” for my experience and was shown a menu of 26 themes to choose from (see figure 14). Each of these themes had sub themes, a total of 398 available as of this writing (see figure 15 for the sub themes under the theme “Food”).

⁷⁴ I have actively used my Airbnb account as a Guest since 2016. This undoubtedly will play a role in whatever inputs I create in the platform and will impact what I experienced in the platform in this writing.

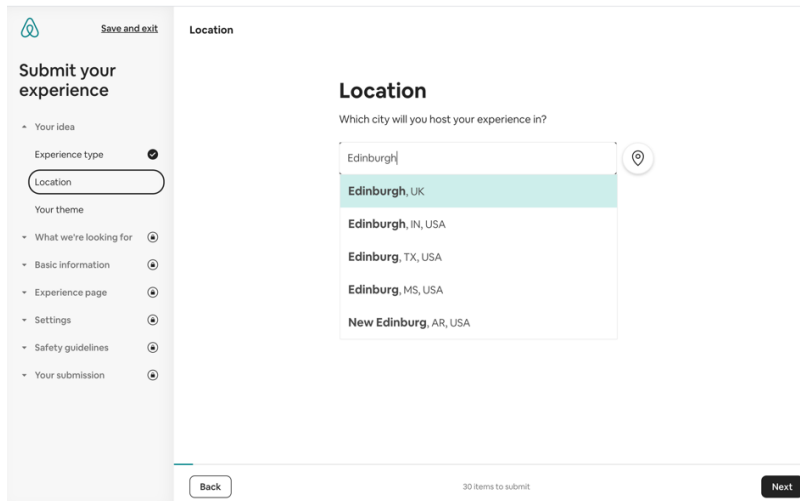


Figure 13 Create an Experience Screenshot: Location

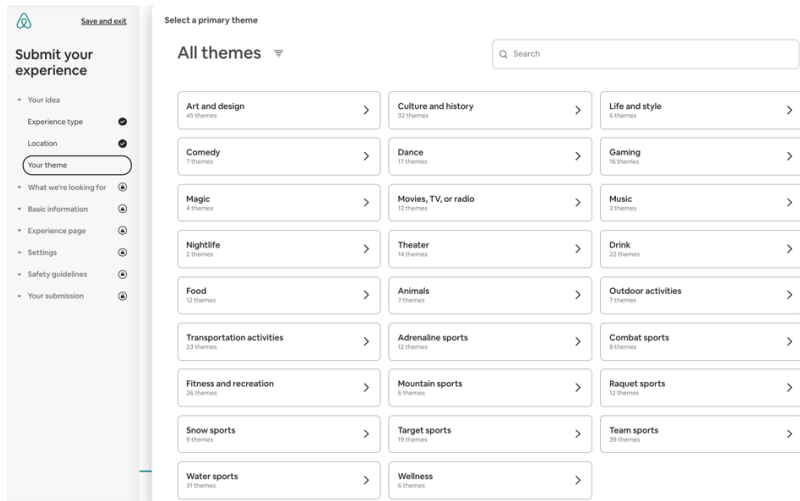


Figure 14 Create an Experience Screenshot: Your Theme

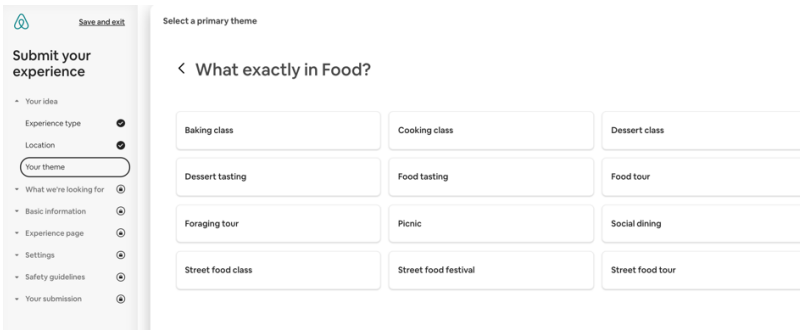


Figure 15 Create an Experience Screenshot: Sub theme

Note the imbalanced classifications of primary themes available for the Host to select; there are eight different types of “sports” (racquet sports, combat sports, team sports, target sports, mountain sports, adrenaline sports, water sports, and snow sports) but only one category for “food” and “art and design.” This brings up questions about how these categories were determined and shows how the user is governed by the existing locations and themes of the platform in creating her own Experience to host. The previous chapter explored this from the host perspective, and my own experience with creating an Experience gives richness to my understanding of the accounts of my participants. Recalling Kristin’s frustrations with the categories available for her Harry Potter walking tour⁷⁵ shows the impact of classifications in action, attempting to standardize and categorize rich, complex cultural content.

Creating a listing firsthand shows that the very existence of the Experience as a node in the knowledge graph is shaped by the preexisting structures of Airbnb’s classification system. Lampland & Star (2009) observed that classifications enforce standards that build on one another, both nested and unevenly dispersed throughout an infrastructure. In our interview, William shared that he developed classification options within Airbnb’s knowledge graph that were “informed directly by the supply we had.” In other words, the classifications available to Hosts come from what is already in the platform, nesting new ones within legacy ones, necessitating an uneven evolution of taxonomies. Kristin’s example may seem small and trivial, but when we consider every entity in Airbnb as subtly (mis)classified as her Experience, we can imagine what is lost in the standardization and classification of the platform’s content. The screenshots above bring a first person view to this platform process.

Like Kirstin, if a Host wanted to create an Experience that is not represented by the pre-determined themes in Airbnb, perhaps she would adjust it to fit within the classification system of the platform. Furthermore, as the host sets up her Experience, she is given suggestions for further self-classification that arise from what types of Experiences created by other hosts are successful within Airbnb (see Figure 16). Perhaps the host will consider these Experiences and tailor her own to be more like the ones “guests love,” shaping content to resemble existing

⁷⁵ Kirstin is an Experience Host I discussed in Chapter 5. She shared in our interview her anxiety around the (mis)classification of her Experience: “because it’s Harry Potter, film, and then history. Where do you put it?”

content that meets the conversion standards of the platform; this imposes the logic that what worked well in the past should be replicated, to generate more booking revenue. I was also prompted to add a “secondary theme” to my experience, which was simply a repeated menu of the first 26 themes listed above. This interplay between platform-dictated themes and user generated content warrant entities on Airbnb, like Experiences, to be considered co-produced by users, engineers, and platform affordances, and influenced by content already in the platform.

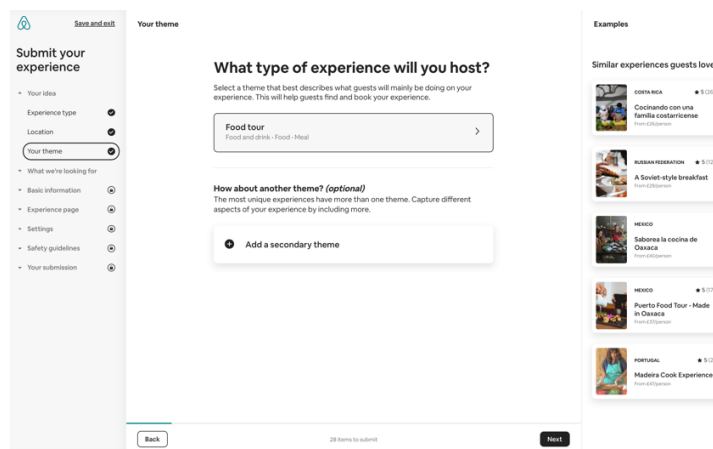


Figure 16: Create an experience screenshot: suggestion of what guests love

Once Hosts self-classify their listings, the entities are further classified by a variety of human and non-human actors at Airbnb. In our interview, Thomas shared that Airbnb works with independent contractors, hired by the marketing team, to do the heavy lifting of classifying every entity in the platform. He said, “we had everything, every experience, categorized by at least two contractors. And if they agreed with their classification, then we said, Okay, that’s good enough. And if they disagreed, we flag this and had a third contractor, go through all the disagreements and basically give a third opinion.” Power dynamics exist within this process; as Thomas’ team “manage[d] the workflow for the contractors” giving “them all the categories” for to use in their work. He shared his management team would go through “all the categorization that the [contractors did each week] and decide if we needed to refine the list of categories a little” based on the decisions that were made. William shared how Airbnb’s standardized process would help additional people classify entities:

Our operations team would manually, like tag new Experiences that came in. Sort of a curated tagging, they would match it to whatever they thought was best. So there was sort of an internal facing admin tool that would like Airbnb employees like assign, you know, different categories to a given entity.

Taking what Thomas and William described collectively, entities are classified by various groups of people at Airbnb. Wei and Liao shed light on this “admin tool” William mentioned, detailing the way Airbnb engineers categorize Experiences. “To facilitate this process, we built an admin tagging tool with a clean and simple UI,” they described (2019). Figure 17 shows some of the fields that the operations team manually fill out to further classify user generated Experiences, prompting further classifying levels such as “environment,” “art form,” and “POI” which means “place of interest.”

4. Apply Tags

Primary activity: Sports & Outdoors

Secondary activities: Select...

Action Kicker: wine tasting

Environment: Ocean

Cuisine: Select...

Art Form: Select...

POIs: Select a place... San Francisco Int'l Airport Station

Figure 17: "A tool to categorize experiences manually" (Wei and Liao, 2019)

In our interviews, both William and Thomas talked about the social negotiations that impact the number and type of classifications that appear in the knowledge graph. William said the team would sometimes add categories if the inputs necessitated new ones, saying “anyone on the team can be like, okay, well we have a new Experience. And it doesn’t quite fit in one of these categories, like right, [let’s] get a new one.” But he qualified this by also saying engineers

cap the number of categories (a numerical standard!) that would work practically for the end user. He said this created “a priority from the team to like, make sure we don’t bloat the taxonomy [...] the default is to try to reuse as much of the existing stuff as possible.” Thomas described how the marketing team would impact classification as well, requesting specific categories or quantities of entities to be tagged with certain attributes to create content for their initiatives. He gave an example of this: “the email marketing team [will say] okay, but can I get exactly four experiences that serve those tags that are available on your trip for this particular user with the knowledge graph, and as I go, yes, ok let me change things around.” He once again brought up “buy-in” and described the negotiations that took place between teams, sharing that “the goal is typically you know, you want the actual product that you had envisioned to change as little as possible while making everybody happy in the process.”

This gives an even deeper understanding of the way Experiences, and other entities in the platform, are a co-creation of the initial platform classifications, the host’s input, and the engineers’ thoughts on that entity. The classification by Airbnb engineers is also guided by the simple user interface built to help them with this task, which undoubtedly shapes their classifications as well. This shows a cycle of input guided by standards set by the platform, that are further shaped by engineer classification of that input, which is directed by even deeper standardization by the platform. Therefore, the output a user sees is a co-created view of what the local “experience” is like in any placemarket Airbnb has inventory in, a combination of the pre-determined categories set by Airbnb’s user interface both when the host creates an Experience and when engineers refine the classification of it. Wei and Lao affirm the social processes at play described by William and Thomas that comprise Airbnb’s classification standards, stating, “any edits to the taxonomy need to be discussed and approved by a cross-functional team consisting of content strategists, product managers, and engineers before being executed.” Airbnb engineers take these measures to further classify every entity in the platform; “every Experience, Home, or Restaurant needs to be tagged with the relevant nodes in the taxonomy.”

The final layer of classification involves what Wei and Lao describe as algorithmic classification, saying that both humans and algorithms work together to achieve classification

outcomes. They point out that “on the one hand, human-powered categorization is expensive and hard to scale; on the other hand, automated categorization efforts require extra work to ensure accuracy.” They share several steps engineers at Airbnb are taking to solve these problems, including “state-of-art machine learning, statistics, and optimization models and algorithms” that will perform quality checks for how hosts tag their listings. They also “hope to generate new categories that are not previously available in [their] human-defined taxonomy set.” They make it clear that Airbnb’s knowledge graph will only continue to solidify its role in the platform, and the company is moving at a rapid pace to add even more algorithmic intelligence to the way it classifies, sorts, and recommends places around the world:

We set out to use a knowledge graph in order to provide a **consistent interface to clean, current, and complete structured data** about our inventory and the world of travel at large. By serving **connected** and **high-quality** data, we believe there is a massive opportunity for the knowledge graph to improve the guest and host experiences at Airbnb. In 2019, we will continuously invest to use our knowledge graph to enrich our understanding of the world of travel (**categorization**) and deliver more travel content (**contextualization**) to each traveler at every step of their trip planning and decision process. (Wei and Liao, 2019)

This extends the classification processes of the platform as more significant than any one temporal configuration of use case; together, they set the precedent for continued growth and evolution of the platform. Thomas also shared that his work on the knowledge graph anticipated the near future use of machine learning tools; his team would ask, “how do we organize the knowledge graph to make it easy to use for machine learning afterwards?” This prompted nuanced approaches to his classification approach, for example needing to balance the quantity and granularity of categories. For example, he said:

It doesn't make sense to have, you know, a tag that is [...] goat yoga as its own form of outdoor activity, when we have 15,000 hiking experiences, but only three goat yoga experiences, right. Those two things should not be on the same page [... we want to ensure] the concept here is roughly constant for every tag that you add.

Therefore, the quantification standards required by machine learning impact the way entities are classified in the knowledge graph.

3.2 Classifying User Profiles

In addition to classifying Homes and Experiences listings, the knowledge graph also categorizes user profiles. In a recent report, Airbnb engineers Wu and Grbovic detail how user classification is a necessary foundation for the platform's recommendation systems (2020). They explain how they use "the categorical features from user profiles" to classify Airbnb users around the world and determine what inventory is relevant to recommend to them (5). One such classification is users' country of origin. There are users from 191 countries on Airbnb⁷⁶, and to make each its own category would dilute user data within each subgroup and hinder the deep machine learning necessary to power such an intricate recommender system. Therefore, the engineers developed a "global-local" model named LocalBoost that separates users from the "top" countries within Airbnb, such as the US and France, into their own categories by country and consolidates users from less represented countries in the platform into another category, called the "global" model. All user behavior "train[s] a global model using all data," and the users from "top user origin [countries have] a sub model that is trained using only local data" (p. 5).

This classifies users from "top" countries into their own specific groups, creating the foundation for recommendations to be made specific to their collective national behavior. For example, "the recommendation for a French guest will be determined jointly by the global model and the FR sub model" (p. 5). This categorizes the recommendations users get by which country they are from, but only if they are from the top countries of users within Airbnb. This has the potential to perpetuate Airbnb's assumptions about the cultural interests of users from certain countries and simultaneously not service users from non-represented countries with the same level of effort. I consider this an algorithmic spatial fix, as this categorization of users by location is in service of creating "predictable futures" that "enable the governance of mobilities

⁷⁶ Key 2023 Airbnb statistics found here: <https://www.searchlogistics.com/learn/statistics/airbnb-statistics/#::~:~:text=Wrapping%20It%20Up-.Airbnb%20Key%20Statistics%202023,that%20have%20Airbnb%20listings%20in>

through spatial and social sorting based on the anticipated meanings of places” (Özkul, 2021, p. 597).

User profile classifications also impacts how entities are classified. In our interview, Jack shared how personas drove most design work at Airbnb, and those personas were derived from user categories including “travel segmentation based on the occasion” and “tenure on the platform.” He gave the example of “here’s Carla, she’s a 42-year-old Latina woman who travels with her family” and discussed how designers would be encouraged to map out what categories Carla would be interested in booking to think through classification decisions. He said the classifications for “over 100 types of Experiences” were informed by the design team’s work with personas. This embeds assumptions about users into the creation of entities, illustrating how user types dictate the way listings and other content are presented within the knowledge graph.

Shedding light on Airbnb’s related processes of standardization and classification puts emphasis on the human and non-human social practices behind these foundation decisions in the knowledge graph. These standards and classifications shape the very building blocks of the platform’s architecture; carefully unpacking their co-creation reveals insights about the platform’s co-constructed ontology. It can help us consider the entities in the platform not as objective, clean, and ordered data, as the platform presents, but messy and subjective, rich and complex information about places, experiences, and people that are changed through the very process of being made to fit in the knowledge graph. Bowker and Star’s practice of “*infrastructural inversion*” inspired this practice of exploring “the practical politics of classifying and standardizing” (1999, p. 44). This painstakingly detailed empirical work is an attempt to show that “whatever appears as universal or indeed standard, is the result of negotiations, organizational processes, and conflict,” and ask “How do these negotiations take place? Who determines the final outcome in preparing a formal classification?” (Bowker and Star, 1999, p. 44). Beginning to ask these questions helps us see Airbnb’s Homes, Experiences, and other cultural content beyond face value; interrogating the way they are standardized and classified is the first step to considering their co-constructed ontology. With this careful consideration of

Airbnb's building blocks in mind, I will now explore how the knowledge graph constructs associations between them, further changing them via their relations to each other.

4. Association Making

At first the entity is just a dot... but then it 'fills in' with more and more elements that specify it more and more until the observer considers that he or she knows enough and begins to take the name of the entity *for* the entire list... Each of the attributes used in order to define the entity is itself *modified* by becoming the attribute of *this* entity. (Latour *et al.*, 2012, pp. 598-599)

Once Airbnb's knowledge graph standardizes its entities and classifies them into groups, it can then relationally structure them by building associations between them. These associations once again further work to alter the meaning of each entity, as relationships between them work as yet another classification (Latour *et al.*, 2012). Unpacking their relations and entanglements can help us find the "meaning achieved through relations" (Ananny & Crawford, 2018, 977) that "the messiness of the black box helps to hide" (Fields, Bissell and Macrorie, 2020, p. 463). Latour invites us to consider how "the whole is always smaller than its parts" by relying on "the practice of slowly learning about what an entity 'is' by adding more and more items to its profile" (Latour *et al.*, 2012, pp. 598-599). Within this context, "association is not what happens *after* individuals have been defined with few properties, but what characterize entities in the first place" (Latour *et al.*, 2012, p. 598). The more attributes associated with an individual, or entity, the more defined that entity becomes. As introduced in Chapter 3, I argue that this is the true of entities such as places, destinations, Homes, and Experiences within Airbnb; their classification in relation to others helps to defines them. Tracing these associations can help us continue to unpack the nature of places represented and framed by the platform. Furthermore, these associations serve as the foundation for personalization and recommendation that I will discuss in Chapter 7, so first looking at what relationships exist in the knowledge graph can give a foundational understanding for this process.

In his blog post called “Scaling Knowledge Access and Retrieval at Airbnb,” engineer Chang introduces the big picture structure and principles of relationships within Airbnb’s knowledge graph, depicted in a very high level below (Figure 18).

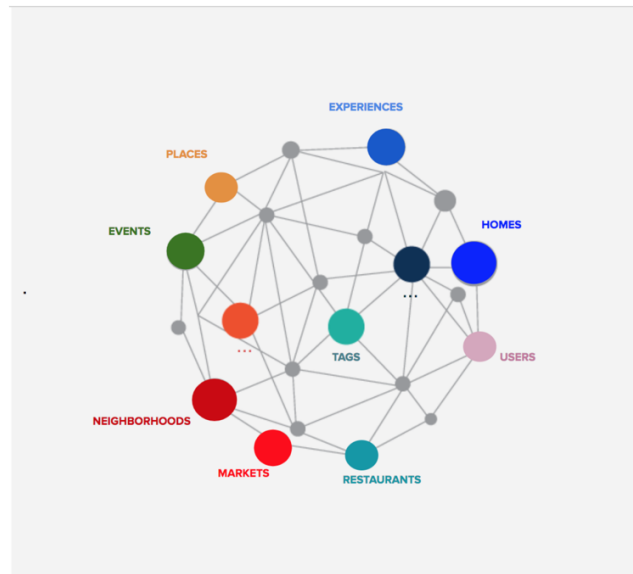


Figure 18 "A visualization of the Knowledge Graph" (Chang 2018)

Chang elaborates on the simple depiction above, explaining how he built the knowledge graph to structure relationships between real world entities in a way that can help answer travelers’ questions about places in a personalized way:

Discovering what you *want* and *need* to know about a destination is crucial to the overall trip experience, especially when traveling to a place you’ve never been to before. In order to surface relevant context to people, we need to have some way of **representing relationships between distinct but related entities** (think cities, activities, cuisines, etc.) on Airbnb to easily access important and relevant information about them. These types of information will become increasingly important as we move towards becoming an **end-to-end travel platform** as opposed to just a place for staying in homes. The knowledge graph is our solution to this need, giving us the technical scalability we need to power all of Airbnb’s verticals and the flexibility to define abstract relationships. (Chang, 2018)

Chang offers typical traveler questions like, “Where do I travel and what area do I stay in?” and “What should I do?” to guide his explanation and goes on to describe how the relationships in

the knowledge graph serve as the driving forces for recommendations. He reiterates its “relational structures” that are characteristic of all knowledge graphs and discusses how Airbnb structures these relations in the form of a graph. This “gives us power in maintaining data semantics.” He gives an example:

We want the same *Surfing* that an Experience is associated with to be the same *Surfing* that Hawaii is known for. This type of structure around the relationships between the entities on Airbnb’s platform gives us the scalability and flexibility needed to expand categorization to any number of things. By having the same object representing all of the things in our world, we remove the operational overhead for redefining the world whenever we introduce a new product to our platform. In this way, we can support our objectives to 1) encode an exponentially growing number of relationships between entities and 2) enable easy traversal along those connections. (Chang, 2018).

Chang points out that the “main constraint we want to maintain is that the knowledge graph is Mutually Exclusive and Collectively Exhaustive” (2018), known as the MECE principle⁷⁷. This principle affords massive scalability of Airbnb’s taxonomy, enabling it to grow with user generated input, but also confinement, ensuring that it grows in a way the platform defines. Chang gives a visualization of this principle in the knowledge graph, diagraming how *surfing* relates to the other entities in the platform (Figure 17). This snapshot shows a hierarchal nature, classifying things into parent and child categories with countless layers. In this example “sport” has multiple subcategories such as “water sport” and “team sport,” and “water sport” then has further activities classified within it, some that can also belong to “team sport,” but some that diverge from that, such as *surfing*, and so on.

Chang’s visualization of the knowledge graph in San Francisco gives a deeper look into how relationships surface meaning in the knowledge graph in a more granular way (Figure 19).

⁷⁷ The MECE principle comes from the business consulting world, developed by Barbara Minto at the firm McKinsey & Company in the late 1960s. In her consulting at that time, she struggled with the lack of consistent structure and classification in writing and problem solving, and applied scholarly works on structure and thought from Levi Strauss, Jean Piaget, Bourbaki mathematicians, Talcott Parsons, Mortimer Adler, and Jacob Bonowski to her MECE principle 'Barbara Minto: “MECE: I invented it, so I get to say how to pronounce it” (2018), *McKinsey Alumni Center*. Available at: <https://www.mckinsey.com/alumni/news-and-insights/global-news/alumni-news/barbara-minto-mece-i-invented-it-so-i-get-to-say-how-to-pronounce-it> 2020]. It is now widely leveraged across the management consulting field.

It depicts nodes that represent locations of various granularity, categorized accordingly: San Francisco is tagged as a “Market,” Mission District as a Neighborhood within the Market of San Francisco, and within the Neighborhood is Mission Dolores as a Place, Mission Apt as a Home, Ramen Making as an Experience, and La Taqueria as a Restaurant. Several of these categories follow a logic that appeals to reasonable common sense and popular orders of the world as we know them, reproducing the norms and practices and classifications of offline social order (van Dijck, Poell and de Waal, 2018).

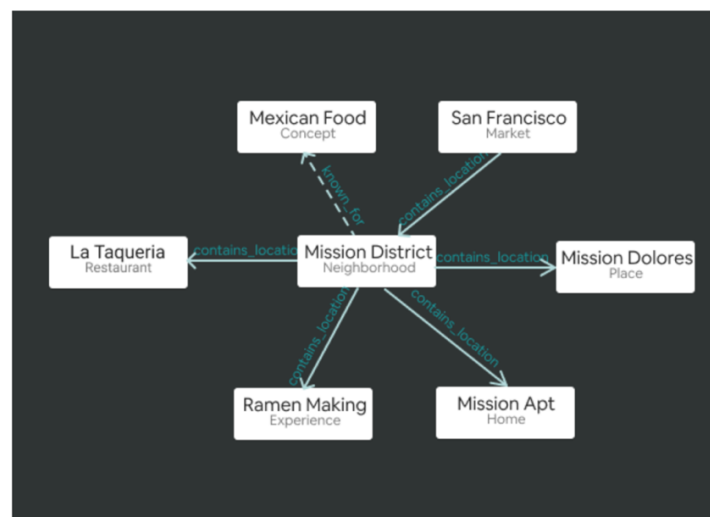


Figure 19: "Visualization of the hierarchy for location relationships" (Chang 2018)

Airbnb classifies “Mexican food” as a concept, putting it in relationships to the Mission District as something the Neighborhood is “known_for.” It is therefore reasonable to assume that Airbnb engineers create concept nodes such as “Mexican food” based off categories and themes hosts tag their experiences with. Perhaps if enough nodes are uploaded that mention the concept Mexican Food tagged within the Mission District, the knowledge graph determines the Neighborhood is known for that. This co-constructs both the definition of the Mission District, now as a destination that is known for Mexican food, as well as “Mexican food,” a cuisine now connected with this neighborhood in the platform, to return to Latour’s provocation that “each of the attributes used in order to define the entity is itself *modified* by becoming the attribute of *this* entity” (2012, p. 599). This directly involves the knowledge graph

in placemaking; Airbnb plays an active role in perpetuating what concepts neighborhoods are “known_for” based on the nodes in its knowledge graph. Airbnb’s placemaking relies on the co-constructed building blocks of standardized and classified entities. These associations are used as both a tool for the knowledge graph to use in recommendations and as an outcome themselves; the associations in the knowledge graph construct the digital reputations of places. Relationships between entities are structured in a way that create a representation of the world, constructed by Airbnb and its users, built to constantly reassemble as it grows. As William put it in our interview, the knowledge graph creates “the connective tissue between things,” “traversing knowledge through those associative connections.”

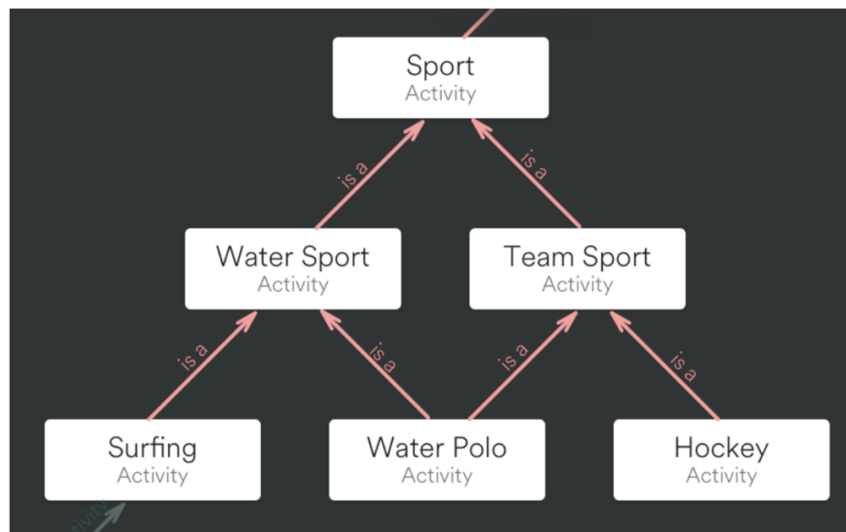


Figure 20: "Sample taxonomy of our graph" (Chang 2018)

The practical structure of this taxonomy is built by nodes and edges, much like a social network in SNA studies. Chang explains this further:

Nodes refer to any type of entity on the Airbnb platform (restaurants, neighborhoods, experiences, events, etc.). Edges refer to the types of relationships that exist between any of the entities in the graph. Under this model, there are different types of nodes for different types of entities, and different types of edges for different types of relationships (located in, tagged by, etc.). From there, we have a flexible API to query for neighbors connected by certain types of relationships, and can index our inventory items by the

unique identifiers of their corresponding representation in the knowledge graph.

This social structure enables the knowledge graph to impart different meanings to the associations between its entities. Chang points out that this structure empowers users to ask questions of Airbnb that leverage the knowledge built in these associations, such as “What is the local cuisine known for?”, “What activities are good in this destination?”, and “What are popular/trending places here?” (2018). Although these questions are not new considerations for travelers, the way they are answered through Airbnb’s knowledge graph is.

Chang goes on to discuss how associating “the concept of locations” to other entities in the knowledge graph can aid in the usefulness of the platform in planning a trip. The first reason allows for users to “easily traverse Airbnb inventory by location,” and the graph structure enables ever-expanding user generated content to be tagged and classified by where it is available to users. Thomas expanded on this in our interview, saying he architected the knowledge graph “to logically connect inventory [...] as we add more and more different types.” He said this was in service of laying the groundwork for the knowledge graph to surface the “right thing” to the right user. Chang also articulated this, saying the knowledge graph “infers attributes about locations for personalization,” putting the classification structure of the knowledge graph into action by leveraging assumptions about certain locations to aid in user recommendation. To illustrate this, Chang compares two cities: Tokyo and New York. He asserts that “different types of food/activities are emphasized” when users search for experiences in each place:

Maybe a section for the best sushi places in Tokyo appears near the top while New York features a section on Broadway experiences. This type of personalization can be achieved when we link experiences to tags and concepts (like “Theatre” to “New York” and “Sushi” to “Tokyo”).

At first glance, this approach seems to be an innovative way to deliver common sense to users in a massive world of unorganized information. Tokyo is, after all, famous for sushi and New York is world renown for theatre. However, these broad sweeping relationships between classifications perpetuate basic stereotypes about places and the people who visit them. While

this is nothing new for tourism marketing, the new context of “sharing” and “travel like a local” seem in conflict with Airbnb’s prerogative to “travel like a local.” In the quest to become an “end to end travel platform,” Airbnb is also associating basic stereotypes at a global scale and presenting them back to people who are looking for unique experiences. Thomas gave another example about how associations feed personalization. He said, “we know that you’re going on a surf trip, what we want to suggest is surf shops in the area. And maybe not the symphony.” He shared that surfing content was prioritized in the knowledge graph to be associated with certain homes and activities in Los Angeles for a period of time because of a marketing partnership between Airbnb and a surf competition. Associating surfing content to users, Homes, and locations is a mechanism for the platform to privilege paid content over other content.

A deeper example of this is found in Wu and Grbovic’s report that details how they extended the knowledge graph by associating keywords with locations to surface new local concepts (2020). They share how local concepts merit inclusion in the knowledge graph by a combination of frequency and unique associations with places, as adding “city-specific concepts” enabled them to “better characterize inventories” of Experiences with the following example:

A key travel concept in Beijing is Hutong, a type of streets or alley that are common in northern Chinese cities. Without further expanding the knowledge graph, the Hutong listings will have to be tagged with “City Tour.” It will be frustrating if we show a lot of “City Tour” listings when a user is particularly interested in “Hutongs.” Some more examples include “Harry Potter” in London and Edinburgh, and “Medici” in Florence.

They create local concepts by crawling “keywords in titles and descriptions” of Experience listings to look for emerging trends, i.e., “ranking top keywords that are most representative” in the listings, and mine the graph for words that seem “important” based on their frequency of use. They describe a variety of technical methods for doing this and discuss expanding keyword prevalence detection to longer key phrases (such as “Harry Potter”) and descriptive paragraphs. Without reporting each technical intricacy described by Wu and Grbovic, what matters to this writing is the overall cumulative effect they have: to use the knowledge graph to uncover local concepts specific to certain places by flagging them once they

appear in enough “inventories” tagged with the same location. It is the association of two entities, the keyword and the location, at a high enough frequency, that creates each local concept. This social relationship – as Latour defines social, the “momentary association which is characterized by the way it gathers together into new shapes” (2005, 65) – configures the cultural qualities of places that surface to users in the knowledge graph.

Wu and Grvobic go on to explain how this process is done through algorithmic configuration. They summarize the technological features they embedded into their knowledge graph expansion and how they enable global, automated classifications of local cultural concepts. Therefore, a local concept emerges in the knowledge graph if:

“(1) [It] Corresponds to enough inventories: the concept should cover a category of inventories instead of a single listing since it will be used to recommend listings under the concept;

(2) [It is] Location specific: the concepts we focus for expansion are highly specific to a certain location, such as “Hutong” in Beijing and “Harry Potter” in London;

(3) [It is] Known by guest users: though unavailable in the existing knowledge graph, the concepts should be known by the guest users, thus being recommendable;

(4) Listings with the keyword are bookable: it is also appealing that the listings under a new concept have already been well booked by guests, meaning that the new node will be promising in the recommender system.”

Local concepts emerge as the result of associations with a high frequency of entities, specific locations, other users, and is related to conversions in the form of bookings.

To discover how associations may be visible to the end user in Airbnb, I once again turned to the platform’s interface to explore the rich data of listings and trace the connections between them and other entities. As I explored Edinburgh in Airbnb as a potential guest, I found a few entry points into the city: Experiences, Homes, and, from Homes listings, information about “the location” and ultimately “Guidebooks.” These Guidebooks are comprised of local recommendations for what to do associated with each accommodation listing, personally

curated by each host and available to potential guests to browse before booking. Guidebooks classify “things to do” in categories that speak to the potential guest: “food scene,” for example, shows a grouping of places that the host deems a part of Edinburgh’s dining experience. However, they do not exist on their own within Airbnb; they only appear in association with a Host’s listing. Furthermore, the restaurants, locations, landmarks, etc. that make up guidebooks are constructed via associations with other hosts who recommend the same things in their own guidebooks. Guidebooks therefore associate specific offerings and activities to each other (manifesting in the Guidebook), categories (such as Food Scene), a location (Edinburgh), a Home listing (Barbara’s Home), and a Host (Barbara) as depicted below (Figure 21).

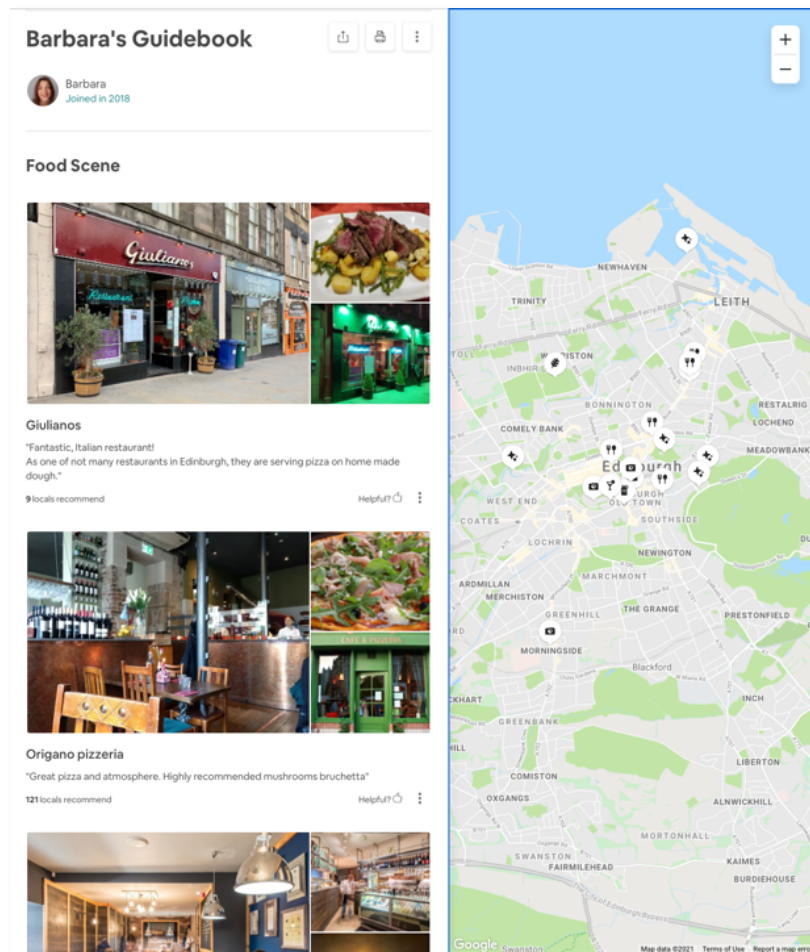


Figure 21 Guidebook screenshot taken March 2021

Guidebooks as a concept are of course not new; types of hosts from friends to hotels to tourism boards have positioned themselves as local guides as long as tourism has existed. I have stayed in many Airbnbs with home-made compilations of brochures, printed PDFs, and informal documents of recommendations for what to do nearby. Traditional bed and breakfasts have practiced this for years, sharing local knowledge of the best local offerings with travelers in a variety of formats. What is different about Airbnb's new digital Guidebooks is that they are the output of a wider spread collaborative process, literally constructed by associations of entities in the knowledge graph, and that output is used to power the artificial intelligence of Airbnb that feeds recommendations and is available publicly. They have a novel visibility, available to be found by people in the trip planning process (rather than when people have already arrived at a destination) and are associated with individual homes and hosts but co-constructed by hundreds of hosts throughout a wider location. Once a "place page" is created by a host, it exists within the knowledge graph, available for other hosts to add their "knowledge" to what already exists, building an ever-evolving definition of each place as it is associated with other entities. These places now reside within categories in the knowledge graph and their classifications are used to signpost what they are about to the algorithms ordering the platform's representation of place. It is the grouping, scaling, adding to, configuring associations, and integration with other technologies such as Google Maps and Foursquare that makes Airbnb guidebooks different and worthy of unpacking.

Guidebooks are collections of specific place pages that represent locations around Edinburgh, from restaurants to parks, famous landmarks to supermarkets (Figure 21). Each location has a page within Airbnb, a listing that is made up of aggregated "tips from locals," photos, and a map view powered by Google Maps. They order myriad places in a location as noteworthy for Airbnb guests to experience and are themselves comprised of associations between Hosts who have each recommended the same place. Guidebooks enable hosts to aggregate elements of the city as selling points associated with their own listing, creating demand their accommodation by showcasing the area's offerings enhanced with their cultural knowledge. Recalling an example from Chapter 5, Alison shared that she "tweaks" her Home

listing to incorporate new restaurants or things to do in her neighborhood. “When we got this new amazing sandwich shop at the bottom of the street, I had to add that,” she shared. This exemplifies how Hosts use associations between their listing and entities of their neighborhoods to leverage their local knowledge attract potential guests to their own listing.

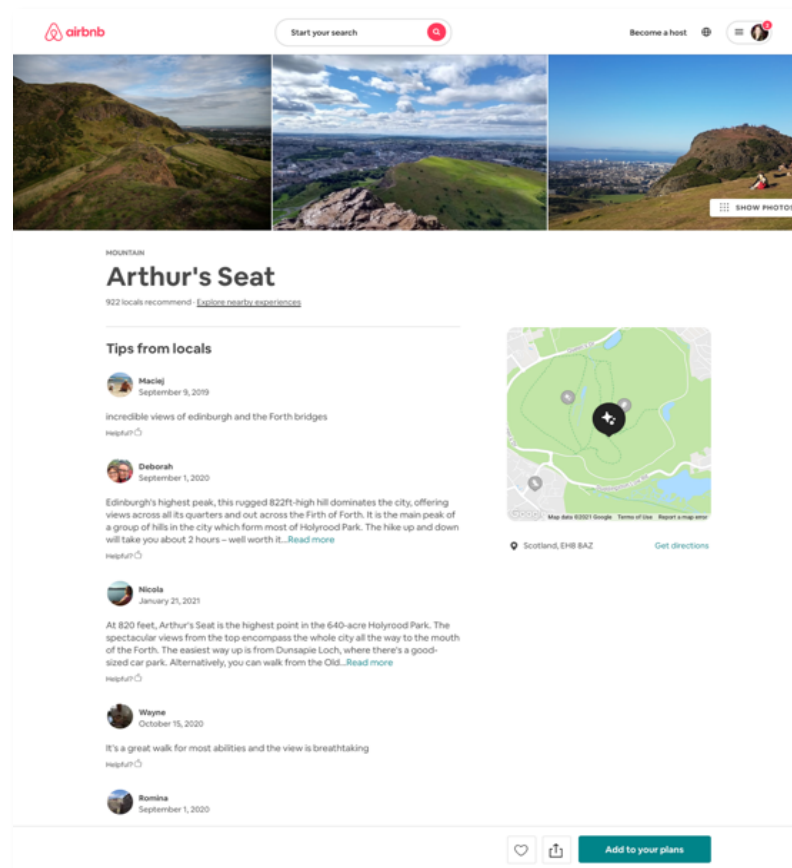


Figure 22 Arthur's Seat place page screenshot taken March 2021

Place pages like the one depicted above (Figure 22) are a manifestation of the individual “tips from locals” that appear in each host’s guidebook, associated together in the knowledge graph by their name, various classifications, and location. It is reasonable to suggest that these may feed Wu and Grbovic’s “local concepts” through frequency of keywords in relation to locations as well. The categorization of each place, such as “Mountain” in the above Arthur’s Seat page, gives an end-user clue to how these places are fed into the knowledge graph to be associated differently or with other entities now or in the future. This brings back Chang’s point

that associations between entities create knowledge that can answer user questions about the reputations of places and navigate cultural “must sees” in a destination. In our interview, William framed guidebooks as improving the concept of locations in the knowledge graph, quite literally “enriching places” via their associations with entities. If the knowledge graph associates New York with theater and Tokyo with Sushi, how might it leverage Edinburgh’s guidebooks to associate it with the most popular concepts that arise?

This chapter has thus far gone deep into the technical intricacies of Airbnb and considered its details in service of ANT’s necessary rigor. This practice has surfaced the knowledge graph’s processes of standardization and classification that feed into further processes of association building. Together, these processes make visible Airbnb’s social ontology; each entity in the platform is an assemblage of hosts’ presentation of their Homes and Experiences, shaped by the standardization of input forms and classified by engineers and algorithmic ordering, and further defined by their ever-evolving associations with each other as the platform expands and reconfigures. By their very nature, these processes create fleeting configurations of place that are constantly changing and reassembling. As they are such momentary snapshots, it may verge on futile to examine Airbnb’s specific outputs; the thick description this chapter generates is only a snapshot in time of Airbnb’s representation of Edinburgh. However, the true finding is in the practice itself; as Latour (2005; Latour *et al.*, 2012) invites, the process is as important to consider as the empirical findings of the momentary configuration of Airbnb.

5. Processes Unbounded: The case of Airbnb Plus

The previous section has examined each process (standardization, classification, and association making) from various angles: from how they appear in the user interface, to their technical configurations within the knowledge graph, to the experiences and social conditions in which they are facilitated. Each of these processes work together to shape the way Airbnb frames, represents, and recommends the content of places. But as previously mentioned, these processes are not neatly contained or linear; to understand what they do in situ, it’s important to consider the ways they work together. Therefore, I will now turn to a specific example of

what these processes do, bringing them to life in their entangled nature with the brief example of Airbnb Plus.

Airbnb Plus is a “classification that recognizes Listings with exceptional quality, comfort and style”⁷⁸. It was launched in 2018, and a press release from that time described Plus Homes as “unique” while meeting “a certain set of standards,” stating that each listing with the designation has met a “100 point checklist covering design, amenities, and hospitality”⁷⁹. In this way, Plus is both an aspirational *standard* for Hosts to reach, and serves as a *standardization* mechanism, creating a hierarchy of listings via *associating* all listings within this *classification* as “better” than other listings. What Plus does is introduce a value judgement to ranking Homes, setting a bar for Hosts to reach that brings them more money and a privilege position in the search. Framing Plus in this way enables the critical exploration of what standards do (Bowker and Star, 1999). Figures 23 and 24 below show the way Plus manifests in the user interface.

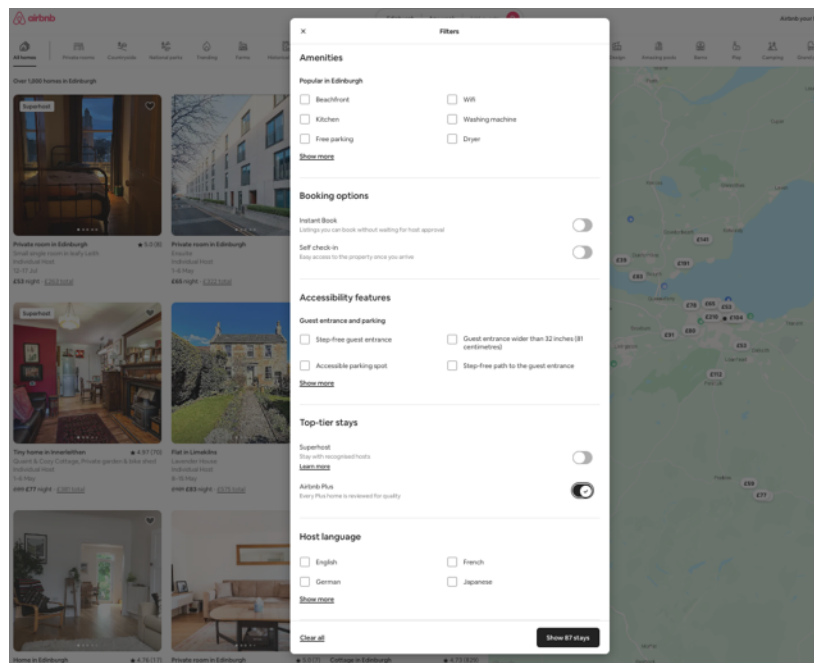


Figure 23: Airbnb Plus as a filter for Homes (2023)

⁷⁸ This definition is from Airbnb’s Plus Program Terms and Conditions page, found in the Airbnb Help Centre, accessed March 2023, available here: <https://www.airbnb.co.uk/help/article/2195>

⁷⁹ The Airbnb Plus press release from news.airbnb.com, accessed March 2023, available here: <https://news.airbnb.com/wp-content/uploads/sites/4/2018/02/Airbnb-Plus-Overview--ENGLISH.pdf>

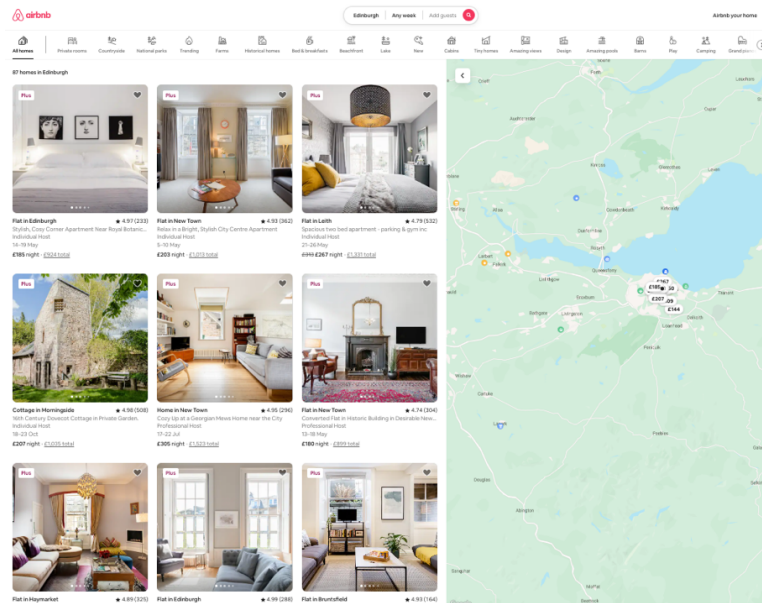


Figure 24: Airbnb Plus designation of Edinburgh Homes (2023)

After seeing the designation in my platform wanderings and reading about Plus in press coverage, I interviewed Ben⁸⁰ in 2021, who worked on the Plus “product” team at Airbnb, which was made up of about 80 people (40 in the United States, and 40 “offshore” as Ben described). The case of Ben’s work with Airbnb Plus is an insightful example of how the employee experience and corporate culture contribute to his labor practices, which in turn shape and inform standardization and classification decisions in the form of hierarchal structuring of entities in relationship to each other. Plus is a specifically detailed yet widely relevant case to my overall theoretical development of the interplay between users, technology, makers, and place. Throughout our discussion, Ben described the Plus team’s imperative to scale listings categorized as Plus, the collaborative approach they took to determine which properties should be included in the Plus product, and their ideas to bring Airbnb beyond its digital interface and into interventions in material homes, which I will now discuss.

Consistent with Airbnb’s continual hypergrowth imperative, Ben shared that the team worked to meet a goal to scale Plus to 100,000 listings. In his first year, the team worked to scale

⁸⁰ As with all participants, I have changed Ben’s name to protect his identity.

Plus from 2,000 listings to 25,000 listings. In what he described as “the heyday of Plus” the team was adding “around 1,000 listings a week,” he said. Initially, Ben was working on their “top of funnel,” which was taking the “millions of listings we have on Airbnb” and “doing a quick visual assessment to see if they had good interior design.” This initial practice required Ben to set a standard for what is “good” design and find existing listings that meet that standard to classify them as Plus. In this case, he and the team were working to meet two standards: the growth standard of Airbnb to scale Plus listings, as well as the design standards of what to categorize as Plus listings, and both have transformative qualities as I will discuss.

To do this, Ben and the Plus team first considered two categories of Homes that fit the Plus requirements, in his own words: “the objective side, was reliability. So like do you have the amenities you need, do you have a hair drier, etc,” and the “comfort, hospitality, interior design... it’s sort of the subjective, the host is sort of trying to demonstrate themselves as a person through their hosting and through their listing.” To try and standardize this “subjective” feeling of a home-like listing, his team focused on hotels as the anti-home: “we talked about home-like versus hotel-like we tried to bias towards home-like.” This standard of “hominess” as Ben described positioned hotels as the anti-standard in the platform, giving the Plus team a clear standard to classify within.

From there, Plus categorization practices utilized interior specific design standards identified by their team to classify listings as “good” or “bad” design. Ben recognized the vast array of design styles, and said his team tried to “let hosts make that decision for themselves around what they appreciate.” With this in mind, the team classified Homes based on the standard of design cohesiveness; “in order to have good design you generally want to be cohesive,” said Ben. He recognized the difficulties in trying to “be very agnostic” in their classification decisions, and these difficulties came through in tensions throughout our interview. Despite best efforts to not impose a preferred style of interior design on Plus classification, subjective tastes emerged as a governing force in this practice. For example, the Plus team considers “little tchotchke type things like throw pillows [to be] really good. Throw blankets are really good. [They add] color and texture and just additional sort of visual diversity to a space.” The Plus team also looked for greenery in their classification of Homes, “we just

kind of made that decision and Airbnb likes to embrace greenery, because greenery adds kind of that living organic component to the interior of the home. And we also kind of felt like subconsciously, a living plant suggests that the place is maintained really well.”

This connects “good design” with desirable traits of the Guest experience, connecting design choices like filling a home with greenery to reliability and maintenance. One example is that the Plus team was trained to “avoid” Mid-Century Modern design, “because a lot of people just default to [it] these days.” To retain the “personality” of Homes (again, upholding the anti-hotel standard), Ben and his team “didn’t want for things to start to feel like they were straight out of a catalog.” The team was trained “against like the ‘live, laugh love,’ ya know, Marilyn Monroe, the black and white picture of London with the red double decker bus, it’s like those types of things show up all the time.” The Plus team classifies Homes against these standards, showing the tension between wanting to remain “agnostic” in design judgement and the necessitation of standards to classify certain entities in the knowledge graph as “better” than others. In the effort to de-value sameness on the platform, their classification still designated a certain type of consistency.

Ben described how Plus classification practices were approached in markets around the world, changing based on their ideas of local design standards. Although the classification decisions accomplished by methods outlined by the Plus team in the US, they gave standards for choosing Plus homes based on regional or representative design standards of a place. He shared that “in Japan, for example, we’d have sort of regional standards and regional training around like what design is like in Japan, we would train on like, what is good Zen minimalism.” He related this design standard to cultural design preferences in the US, saying:

Minimalism in the United States would often be seen as something that you didn’t want to see, because it meant that they weren’t putting a lot of stuff in there. And yes minimalism could be good for a guest and that you get into that hotel kind of sterility, and you feel like it’s clean, it’s not good interior design.

But the Plus team was encouraged to shift their standards of classification outside of the US. “In Japan, all of the sudden, you make these little tweaks, and it’s just like you have some of those Japanese sliding doors. And you have, you know, a sitting area, and you have a very sparse

garden, but just the way that it comes together, even though there's so few items in there, they're nailing that zen minimalism approach." Scholars of standards point out that choosing one standard over another is a fundamental way to assert and enact dominance and order (Timmermans and Epstein, 2010). Here, the choice of what design standards to classify as "good" within Airbnb do this work.

Once these standards were set, Ben shared the layered process of how the team used them to classify listings, starting with humans and then delegating to machine learning. The Plus team went through layers of classification, detailing the complexities and labor required of the process:

[They started with] hotel like vs home like decisions, and then we were making decisions on a room by room basis, but that became sort of burdensome, and the assessment time took too long. Then we introduced something that was just like, is this good? Is this bad? Is it somewhere in the middle, just to do an initial filter so that then we could pass it to then more highly trained trusted assessors to make a follow up decision, that became a super useful paradigm for us. And then as an evolution of that we instituted an 8 pillars of design standard for that final assessment for listings that passed that initial screen. And those pillars were like architectural quality, cohesiveness, things like that, so that we could kind of anchor people on making individual decisions around what we thought the biggest pillars of interior design were.

Ben admitted the frictions of classification decisions, saying, "there are a million different little considerations" that the Plus team negotiates in classification decisions, and that they are always evolving. "It's difficult," he described, "and it's hard to find alignment with individuals because one person might think something's good and one person's bad, and how do you get those people aligned?" This illuminates the power hierarchies present in the work of standards, and eventually in a classification system, one person's category must win over the other (Bowker and Star 1999). Further complicating Plus' categorization processes was the use of machine learning. Ben shared the "machine learning model" they used "looked at all the objective signals" including "reviews, review language, keywords and stuff," and it would surface listings that were "good" for the team to consider. He admitted "we didn't even know which keywords it was like anchoring off of," calling the algorithm a "black box." Nevertheless,

machine learning helped this busy team “rank listings” and work toward their scaling goals. Ben did not discuss this critically in our interview, and I get the impression that the culture at Airbnb celebrated this technology. Furthermore, the sheer amount of mundane daily work the Plus team had to do did not incentivize questioning this. As Jack said in our interview, there was a culture of “niceness” at Airbnb, which did not encourage or foster challenges to the way things are done.

Eventually, Plus quality standards came in tension with Airbnb’s standards of scaling, and Ben shared how the Plus team addressed this in two ways: by changing the standards of Plus to meet the inventory on the platform, and by conducting offline interventions to shape Hosts’ Homes to meet the standards of Plus. To reach the goal of 100,000 Plus listings, the team focused on classifying existing listings in the platform. Ben described that this was at first easy and fruitful, as “we were starting with our highest-ranking listings.” But once they classified those listings, it became more difficult to scale the Plus category. He likened this process to “combing the desert, and we were finding all the diamonds in the rough” that they could justify as Plus listings. But eventually, “we were running out of good desert to sort of come through,” Ben said. This gave them the motivation to begin a practice he called “managed onboarding,” in which the Plus team would contact Hosts and offer tips, suggestions, photography, and interior design consulting to make physical listings Plus worthy. He said, “we no longer were finding diamonds, we were finding like really good compact coal that we would just like apply a little bit of pressure to and then we get a diamond out of it.” This “pressure” including consulting with Hosts whose listing “wasn’t as good as we needed it to be,” to tell them what physical changes to make in their home to meet the Plus standard. This included Airbnb designers buying furniture and décor for Hosts and getting paid back once those Hosts received the Plus designation. This directly implicates the Plus classification system in the material configuration of Homes, extending what this standard does online in the representation of place to governing offline design practices. This is next level relationship labor, not only helping hosts use the platform, but use the Plus feature of the platform, doing work to grow Plus listings to meet the previously stated goal of 100,000 listings.

In his words, Ben called Plus “an effort to provide some additional categorization that, hey, this listing is actually better than some of the others.” Ben saw the Plus product as fulfilling Airbnb’s mission to foster belonging. He articulated that Plus is a mechanism to “provide more options for travelers on Airbnb,” creating and enforcing a standard of Homes around the world that the more “discerning traveler” can trust to use Airbnb to “belong” anywhere far from home. Returning to the work of standards, they simultaneously set a high bar and create a conformity when things are standardized. Plus is working to set and meet homogenous expectations for travelers with tastes similar to the leadership of the Plus team, smoothing out the rougher edges of the world and enabling them to be consumable by privileged Guests. Ben’s mission-oriented approach to work seemed to give him confidence to make value-judgement decisions en masse; “I’m very good at making snap judgements on interior design,” he shared. Although this discussion relies on the experiences of one participant, Ben shared that these practices were consistent throughout the team, amplifying his personal experience across the work of 80 employees.

The case of Airbnb Plus exemplifies several things that these platform processes *do*. They structure a hierarchical relationship between Homes, enabling those with “good” design more visibility and endorsement. They enable a widespread governance of Home design standards, first requiring those standards to be defined and then leveraged in evaluating thousands of listings. Then, classification practices reward Homes who fit the team’s ideas of “good” design and inviting material interventions in homes when not. The imperative to scale Plus listings invited labor saving mechanisms, like machine learning, to do this classification work as well, without the team’s knowledge of how this work is done. This section’s “close empirical focus on outcomes” (Timmermans and Epstein, 2010, p. 84) that result from these processes illuminates the work they do to reinforce hegemonic values in Airbnb’s global knowledge system. These standards are governed by classification and begin on the platform but eventually quite literally reconfigure Homes around the world.

6. Conclusion: Stabilizing platform processes

As introduced in Chapter 1, Andrew Abbott offers a processual ontology to sociologists seeking to understand our social world. This invites us to assume that “change – not stability – is the natural state of social life” (Abbott, 2016, p. 24). Framing social life as processual creates a perspective that allows us to focus on stability as the object of interest in our ever-evolving world. Through Airbnb’s constant evolution I have explored thus far in this thesis (Chapter 2’s look at the company’s growth strategies over time and its evolving approaches to scaling productive users, Chapter 3’s point that the closer I look at Airbnb the more expansive it becomes, Chapter 4’s methodological challenges of studying something that is always reconfiguring, and Chapter 5’s tensions of how users are governed to conform and uphold changing platform priorities), this chapter aims to stabilize a few of Airbnb’s enduring platform processes. They matter more broadly because they are a case of the processes of other platforms as well: Google, Bing, and Facebook, to name a few. Therefore, understanding facets of these processes can help us understand the broader platform society (van Dijck, Poell and de Waal, 2018). I recognize the oxymoronic nature of the phrase “stabilizing processes,” but perhaps the tension can be useful in our understanding of “how Airbnb,” and more broadly, “how platforms” shape our social world. It is precisely in recognizing the platform’s processes of standardization, classification, and association making as stable and enduring that we can interrogate them, and therefore explore their consequences.

Timmermans and Epstein argue that the sociological significance of standards “comes out most clearly through scholarship that is specific, empirical, and located in concrete social settings” (p. 84). This chapter’s detailed description of platform processes is dense and laborious, but works to illustrate the significance of how Airbnb, through millions of micro interactions, governances, standardizations, classifications, and relationship making, together shape the knowledge generated about places around the world. This chapter is an attempt to demonstrate some insights that can come from closely tracing the technological systems of the platforms that have become part and parcel of our daily lives. But while I argue that it is

important to explore the platform architecture of Airbnb to understand the extent of its impact on urban social life, it is also important to qualify this by thinking “outside the black box” as well. Simply cracking open the black box “is not a substitute for analysis of ‘political, social, economic, and geographical conjunctures’” (Safransky, 2020, p. 7), which encouraged me to look beyond the platform and consider the social conditions in which it is produced.

I have found it just as helpful to consider “the messiness that the notion of the black box helps to hide” (Bucher, 2016) than to examine the inner workings of it literally. This is where considering Airbnb an sociotechnical system, rather than a black box, is again useful. My aim for how this chapter interrogated Airbnb’s knowledge graph is not to fully understand every technical detail of its contained system but to make visible the platform’s processes that are worthy of socially interrogating further. I hope to have at least illuminated the obscured messiness of the world’s content that is ever evolving in Airbnb’s knowledge graph. The “flashes of insight” (Mason, 2011) gained from exploring facets of Airbnb’s processes enhance the understanding offered from Chapter 5’s Host study. If hosts experience platform governance in ways ranging from the platform to relationship labor, that governance shapes their inputs into the platform. Those inputs are then set in motion by the processes facilitated by the knowledge graph articulated in this chapter and used to ultimately recommend and shape destinations and experiences. This is ultimately a form of ordering.

Chapter 7: Facets of Placemaking

1. Introduction: Socially Shaped and Encountered Place

What does it mean to *make place*? I have used the phrase throughout this thesis and will now explore it directly. Following the academic tradition of tracing etymologies, “make” comes from the Old English *macian* which means “to give being to, give form or character to, bring into existence; construct, do, be the author of, produce; prepare, arrange, cause; behave, fare, transform” (Harper). The roots of the word imply it is both concerned with creating something for the first time and shaping or changing something that already exists into a new form or arrangement (an *agencement*⁸¹, if I may). These meanings together are relevant in the context of Airbnb’s *making* of place; it both brings into being new digital places for users to encounter, and (re)arranges and transforms aspects of material places in its wake. “Place” has origins in 12th century Old French meaning “room, area, space” and the Latin *platea* which is a “courtyard, open space; broad way, avenue;” the word evolved over several centuries to imply more social considerations to mean “occupied by custom” and a “group of houses in a town” in the 15th and 16th centuries (Harper). Perhaps as language evolved, so did our meaning of place, shifting our understanding of it from a physical location to a site of social significance. Looking at the origins of both “make” and “place” introduces place-making as a dynamic, multifaceted, and social process.

This final substantive chapter explores facets of how Airbnb makes place. The first facet sheds light on how Airbnb’s digitization and ordering of place shapes its online representation of Edinburgh and various neighborhoods, using them to create the desire to travel. I then explore the tensions that arise between two opposing imperatives of Airbnb, what I called the Airbnb utility and Airbnb imaginary. Although they seem at odds, they work together in their tension to create the desire to use the platform, shaping place to meet the company’s needs. Next, I explore facets of Airbnb’s material placemaking: at the home level and on the streets of Edinburgh. Airbnb requires a reconfiguring of the physical home, enacted by the way hosts

⁸¹ A playful nod to the French translation of the English term *assemblage*, which I consider Airbnb, from an actor-network theory tradition Phillips, J. (2006) 'Agencement/Assemblage', *Theory, culture & society*, 23(2-3), pp. 108-109.

depersonalize their spaces, incorporate hotel-like objects of hospitality, draw boundaries between personal space and areas for guest consumption, and even redesigning the interior of their space to meet platform standards. A final exploration of how Airbnb shapes Edinburgh streets through the lens of keyboxes shows how the digital platform creates new aesthetic streetscapes, in the process impacting the top-down placemaking policies of city government. I begin this discussion with an overview of how scholarship defines placemaking to ground my exploration of the concept.

2. Defining Placemaking

This chapter's exploration of how Airbnb makes place leverages definitions of placemaking that come from sociology, tourism, and digital scholarship. There has been a shift in placemaking scholarship since the 1990s to consider it more a socially shaped process than a top-down spatial change (Strydom, Puren and Drewes, 2018). This "paradigm shift" positions the research topic of *placemaking* as a process rather than "finished" place as an end product, and scholars articulate a need for future research to explore the relationship between influencing factors and outcomes (Akbar and Edelenbos, 2021). Driving placemaking's processual turn is the influence of Lefebvre's influential theory of the social production of space (1991). His famously used concept of social space has given scholars a triadic understanding of how space is made: through an interaction of conceived space, perceived space, and lived space⁸². Lefebvre's social space is ontological, meaning it focuses on the nature and production of space as an object rather than epistemological knowing of space as an experience (Pierce and Martin, 2015). To him, these three processes make space socially produced.

Since Lefebvre's groundbreaking *The Production of Space* (1991), scholars have articulated *place* to be made via applying meaning to *space*. Physical spaces become *places*

⁸² Conceived space refers to how we use our knowledge to understand space, perceived space is how we experience space through our senses, and lived space considers both our knowledge and experience of space and combines it with how we attribute meaning to physical space Lefebvre, H. (1991) *The production of space / Henri Lefebvre ; translated by Donald Nicholson-Smith*. Oxford: Basil Blackwell.. There is an excellent paper that frames Airbnb's placemaking with this triad Farmaki, A., Christou, P. and Saveriades, A. (2020) 'A Lefebvrian analysis of Airbnb space', *Annals of Tourism Research*, 80, pp. 102806., and I do not attempt to duplicate their work by also using this theoretical framework. Therefore, my discussion of this triad is intentionally brief.

when stakeholders who inhabit, move through, and use space name and attach meaning and purpose to that space (Akbar and Edelenbos, 2021). Therefore, literature across fields conceptualizes placemaking broadly as the act of transforming a space into a place through various practices and processes of meaning making (Dupre, 2019). This inherently makes place flexible and malleable in the hands of different actors, as sense of place can vary by stakeholder (Akbar and Edelenbos, 2021); this calls to mind Hine's observation about the flexibly interoperability of the internet, different to each user (Hine, 2005). Chica's recent sociological review of placemaking recognizes these relationships between actors in producing place (2021). She therefore defines placemaking as "the explicit or tacit cooperation among people to create, maintain, and give meaning to places in space through bodily occupation given differential resources and constraints" (535). Considering placemaking a "social process" therefore invites an acknowledgement of the interplay between a variety of social actors and material places at several scales that has thus far been lacking in placemaking scholarship (Akbar and Edelenbos, 2021). Places can therefore be physically, socially, and economically constructed (Strydom, Puren and Drewes, 2018), some as a combination of factors, positioning it "where spatial and social characteristics intersect" (Dupre, 2019, p. 111). This chapter explores the meaning-making that happens in encounters with Airbnb's digital and material spaces as sites of placemaking.

While recent literature seems to be in general agreement about the processually constructed nature of placemaking, it lacks agreement about who has agency in the process (Dupre, 2019; Lew, 2017). Lew identifies two broad conceptualizations of placemaking across disciplines (2017). First is a bottom-up definition, primarily from a cultural geography perspective, that considers place making to be "how a culture group imprints its values, perceptions, memories, and traditions on a landscape and gives meaning to geographic space" (p. 450). The other is a more top-down approach from tourism studies that considers placemaking a professional endeavor to "influence people's behavior and shape their perception of a place" via design and planning (p. 450). Lew further extends the importance of tourism placemaking by connecting it to the concept of worldmaking, invoking immersive approaches such as storytelling, myth making, and image creation in touristic placemaking

(2017). These, as explored in throughout this thesis, are prominent tactics of Airbnb. The tension between placemaking as a culturally bottom-up process yet still top-down in a tourism context can be situated interestingly within the context of Airbnb; the platform leverages user generated content to represent place yet is still architected to control this representation. I will explore these tensions throughout the facets of this chapter. Placemaking is dispersed across a wide array of disciplines and journals, showing the concept's blurred boundaries, complexities, expanding nature, and interdisciplinary quality (2019). Dupre therefore argues that placemaking research should be done in a variety of contexts and disciplines, and its recent popularity only speaks to the need for further research, not a satiated understanding of the concept.

In that spirit I add perspectives from digital scholarship to the discussion of how Airbnb makes place. Haleboua and Polson have recently introduced “digital placemaking” as “the use of digital media to create a sense of place for oneself and/or others – to embrace digital affordances in order to cultivate or maintain and sense of attachment to place” (2021, p. 574). This straightforward definition invites a wide range of research that unpacks how place is reconfigured and renegotiated differently (or, at times, not so differently) through our use of digital technologies. It also emphasizes the importance of considering platform affordances in unpacking how placemaking processes may evolve with “the digital.” Research leveraging notions of digital placemaking is in its infancy, and this chapter aims to further our understanding of it with the case of Airbnb.

A growing body of research on digital platforms and their impact on place is particularly situated in the urban context. In the past several years “platform urbanism” has been employed to investigate how cities and platforms are intertwined and coproduced by each other (Törnberg, 2022), with some of this work has a focus on how urban place is produced. Of particular interest to platform urbanism is the way data generated by platform business models in cities remains proprietary for the companies collecting it (Barnes, 2018) therefore driving the profitable imperative to collect and generate it prolifically, which is part of a broader trend of platformization more generally (Poell, Nieborg and van Dijck, 2019). Scholars have recently argued that in the urban environment, these platform principles are becoming embedded in the way cities are planned, governed, and designed (Barnes, 2019). This brings the processual turn in

placemaking from a bottom-up consideration back to a top-down approach. Within the context of Airbnb, it has been argued that the platform not only pursues platform urbanism logics to dominate the short term rental market but also to shape “the very fabric of city life” in its image (van Doorn, 2020). Recent scholarship has connected elements of platform urbanism to “platform placemaking,” which leverages data and inputs generated by users to “shape spatial imaginaries in the interests of the platform” (Törnberg, 2022, p. 2). Airbnb specifically “curates a social infrastructure that enables users to participate discursively in the process of making ‘place,’ while nudging and directing them to reshape the city in its image” (Törnberg, 2022, p. 2). Meaning, in these contexts, can be both positive and negative as this chapter will explore.

Considered collectively, scholarship positions placemaking as a complex and expanding social process within a variety of disciplinary contexts, that can be explored from both bottom-up and top-down entry points. Literature generally considers placemaking to be materially and socially multifaceted and enacted when actors make interactions with space meaningful. Digital placemaking harnesses technological infrastructures to perpetuate corporate logics, often in urban environments. Within these contexts, this chapter will focus on the meaning made in actors’ interactions with Airbnb space to develop it into place. The following sections expand our understanding of the developing concept of platform placemaking by exploring the multifaceted ways Airbnb makes place in Edinburgh. I consider Airbnb to make place in both “bottom-up” and “top-down” ways, moving beyond the binary definitions from placemaking literature just reviewed. To understand this process, we must consider the nature of platforms explored in the previous chapters of this thesis: that they make users that, in turn, make content and data that are productive for the business imperatives of the platform. This is achieved by user governance, which shapes the inputs of the platform, which to be workable in the technical system are standardized, classified, and put into association with each other. From this understanding of the social co-construction of users and the platform and the corresponding platform processes, I will now consider facets of digital and material placemaking.

3. Airbnb's Ordering of Place

This section introduces two necessary facets of Airbnb's digital placemaking that uphold the platform's scaling and conversion goals: making place consumable and making place personalized. Together, they contribute to Airbnb's ordering of place. Chapter 2 outlines Airbnb's origin story and calls attention to its surprisingly non-digital central concept: convincing people to open up their very material homes to strangers and convincing those strangers to pay to stay in other people's homes. To make this idea viable and ultimately scale it, Airbnb's founders Chesky and Gebbia needed to embark on the massive (and ongoing) undertaking to build a digital technology to not only facilitate these transactions logistically, but to create the desire for people to travel in this way. Central to Chesky and Gebbia's success with their first guests in San Francisco was the way they made airbeds in their apartment interesting, attractive, and exclusive, positioning their local knowledge of the city as a perk for traveling in this way. Over the years, Airbnb's platform was built around mechanizing and monetizing this in various ways, ultimately needing to make place, in all its layered complexity, workable in a digital environment, yet still meaningful and inviting to users. Several scholars explore how Airbnb makes place consumable by commodifying residential place (Törnberg, 2022), economizing the local expertise of hosts (Roelofsen and Minca, 2018), and extracting value from unpaid neighbors of hosts who support their practices (Spangler, 2020).

3.1 Tourism as Ordering

The process of making place consumable is not new; it has simply evolved in our digital world. Adrian Franklin theorizes tourism as a placemaking force since its inception, inherent to its initial need to make places consumable to visitors (2004). To further understand how Airbnb makes place consumable, it is helpful to consider tourism's role in shaping place initially to be consumed, which Franklin does by examining its rise to popularity in 19th century Britain (2004). Widely known as "the father of modern tourism," Thomas Cook was a working-class writer and printer who lived in the Midlands in England. From the 1830s onward, his imagination was captured by the prospect of bringing access to the wonder of travel to more people with similar backgrounds (Franklin, 2004, 291). To do this, Cook began writing about local places – rural

English villages, cities such as Liverpool, and the country of Scotland, to name a few - as *destinations* worthy of visiting in the guidebooks he authored. This shift from understanding place as something to inhabit to a destination to consume is central to tourism as we know it today. But at that time, it was a new concept in Britain, as travel for leisure was not normalized or practiced beyond the upper classes. In addition to publishing guides to destinations, Cook took on large scale logistical management, railway chartering, and accommodation booking to create previously unheard-of access for working and middle classes to travel for leisure. Franklin points out that for Cook, “accessibility to the world, its natures, histories, peoples and cultures was an urgently needed resource for modern individuals and nations: tourism was a route to enlightenment” (2004, 292). The travel agency he went on to develop positioned tourism as accessible to all, aimed at the masses beyond the traveled elite. This not only enabled tourism, but of key importance, made popular the *dream* to experience it. Franklin created tourism as the solution for mundane experiences of working- and middle-class life, imbuing it with morality.

Franklin’s theorization of tourism considers it to be an active player in placemaking and societal ordering; he brings this to life by inverting wider assumptions commonly held about tourism (2004). Rather than accepting the assumption that tourism is the result of the desire to see already culturally defined places, he asserts that tourism is instead an “*ordering*” that cultivates that desire to travel in the first place by *creating* cultural definitions of place for outside consumption. In this case ordering is configuring, directing, and ultimately showcasing places with a particular point of view, framing them as ripe for exploring. As a result, “orderings are, in a loose sense, attempts at control or management,” (p. 285) in that they project certain qualities on a place from elsewhere. Franklin traces the ordering processes Thomas Cook developed to create a domestic leisure travel industry in Britain. Crucial to this is the way:

[Cook] decentralized high culture but at the same time made compelling, relevant and aesthetically pleasing the cultural, historic and natural *content* of the nation. Since this content could now be framed as rich, layered, varied, there-to-be-discovered and ‘untouched’, as opposed to its previous conception as nasty and rustic, [this] opened up a new world for inspection. (p 289).

Through his storytelling and marketing, Cook turned places into destinations, similar to how Airbnb's platform processes described in the previous chapter transform homes, neighborhoods, and cities into placemarkets on the platform.

3.2 Showcasing Personalized Place

Previous chapters have established how Airbnb's representation of place is digitally and socially constructed by Airbnb's user governance and platform processes. From this point of departure, this section will consider how that place presented and encountered by users with a look at Airbnb's personalization processes. If digital media are "made meaningful through the way people interpret and use them," (Wessels, 2013, p. 1354), and placemaking is concerned with meaning making, the site of platform user experience is one ripe to explore. Airbnb uses recommendation processes to frame places as desirable for specific users, suggesting personalized destinations and experiences to users. This process extends Thomas Cook's efforts to spark the desire to travel into a technical system that presents places to meet the hopes and dreams of each unique user. Or, at least, that is the aspiration named by Airbnb engineers. Chang (2008), Wei and Liao (2019), and Wu and Grovic (2020) give accounts of the personalization and recommendation processes they built into the knowledge graph that work to inspire, suggest, and surface relevant content to users. This begins with how the platform creates personalized recommendations of places to travel to.

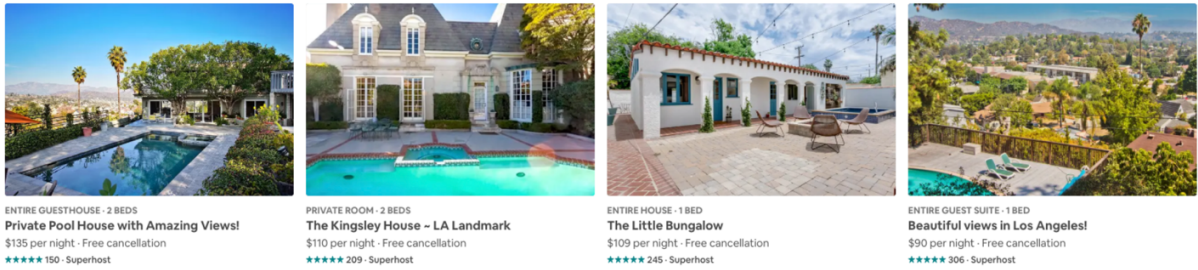
Chang outlines what Airbnb assumes are the questions that drive travelers' decision making when planning a trip, categorized into phases (2008). The first phase is concerned with deciding where to travel and where to stay within that destination. Chang suggests information that can be helpful in that decision such as, "Which destinations are popular/trending among people similar to me, and what destinations have activities that match my interests?" This puts travelers in relationship with each other as they make choices about where to go, leveraging search data generated by each to give suggestions to others. As Airbnb aggregates global data about which destinations are popular, it can then feed those data back to travelers that fit certain behavioral profiles.

Within this process, “trending” destinations have the potential to become a self-fulfilling prophecy; the more they trend, the more they are recommended to travelers. An important detail to this algorithmic recommendation is the phrase, “among people similar to me.” Airbnb’s knowledge graph is not merely showing large scale information about destinations that are trending among all travelers but breaks that information up by categories of people. Remember, Airbnb’s knowledge graph classifies destinations as well as *users* to build relationships between them; its process of recommendation is made possible and therefore inherently shaped by these classifications and associations. This personalized process matches destinations to people who fit the profile of other people who book trips in those destinations. Once it suggests a place to visit, Chang explains that the platform continues recommending in a more local way, suggesting “neighborhoods” to stay in that match the interests of each user (2018). This moves the implications of the knowledge graph into an urban context, sorting travelers by interests, classifying neighborhoods in cities by those interests, and matching the two through recommendations. This has the potential to perpetuate the reputations of neighborhoods to specific groups of people and hide neighborhoods to others; the platform’s recommendation process orders the city for each user.

Wei and Liao also connect the technical structure of the Knowledge Graph to the user experience features it enables: “inspiring users to select a destination,” “helping users choose a Home to book,” and “providing more contexts about a home” (2019). Each of these features leverages the knowledge graph to ensure the most *relevant* content is shown to users. Of course, what is the most relevant to each of Airbnb’s millions of around the world is highly subjective, and Wei and Liao offer no insight on how they deem a “travel idea” “the most relevant” to each user. What they do give minimal insight on is how they use the knowledge graph to showcase homes to users associated in the knowledge graph with “popular amenities, top landmarks, or interesting neighborhoods” (2019). Figure 25 depicts Wei and Lao’s example of how the knowledge graph leverages past user behavior data to determine that homes with pools will be relevant to show to current users as well.

Homes with a pool

33% of guests who visited Los Angeles last year searched for a home with a pool.



Show all (2000+) >

Figure 25: "Suggesting users to book Homes with a pool because "33% of guests who visited Los Angeles booked a home with a pool" (Wei and Liao, 2019)

They share how the knowledge graph is also used to provide even more context about Homes, leveraging associations between entities to create unique product detail pages that contextualizes them within their city. Figure 26 shows a Home in Los Angeles in relation to Airports, Beaches, Golf, and Points of Interest. This frames the Homes of LA through the lens of a travel agent, making associations between entities like transportation, beaches, golf courses, and points of interest around accommodation to inspire booking.

Los Angeles, CA

Airport

Bob Hope Airport	30 minutes driving
Van Nuys Airport	31 minutes driving
Los Angeles International Airport	34 minutes driving

Beaches

Santa Monica Beach	33 minutes driving
Venice Beach	34 minutes driving

Golf

Wilson & Harding Golf Courses	26 minutes driving
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Points of Interest

The Grove Drive	7 minutes driving
Rodeo Drive	16 minutes driving
Universal Studios Hollywood	18 minutes driving
Los Angeles Zoo	24 minutes driving
The Getty	26 minutes driving
Griffith Observatory	29 minutes driving
Venice Canals	36 minutes driving
Disneyland Park	56 minutes driving

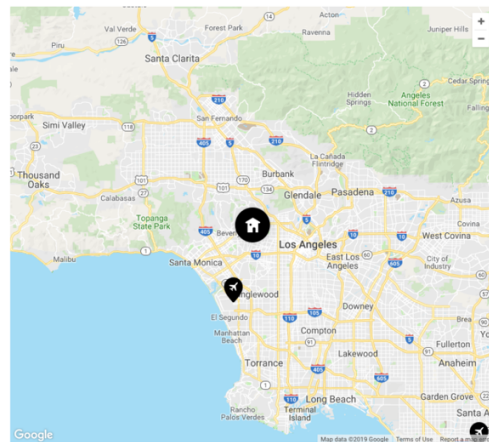


Figure 26: "Showing local contexts of a Home in Los Angeles" (Wei and Liao, 2019)

Wu and Grbovic discuss how their enhancements to the knowledge graph aid in making recommendations to both guests and hosts (2020). They focus specifically on the Experiences product, and explore how a recommender system can suggest the “best fit” for a guest who “visits the platform, given tens of thousands of available listings” (Wu and Grbovic, 2020, p. 1). As a newly emerging product for the platform, Experiences poses a unique challenge to Airbnb engineers: historic user and host data is not as abundant as in the accommodation product, which leverages past interaction behavior data in its recommendations. As a result, “instead of passively waiting for data to accumulate, [they] propose novel approaches to identify key features of a listing and estimate guest preference with limited data availability” (2020, p. 1). Indeed, in our interview, Thomas admitted “we don’t actually have that much user data” to realize the personalization engineers want to build. Therefore, these approaches to mimic personalization include building mechanisms in the knowledge graph that extend the knowledge production of it beyond user inputs and surfaces “travel concepts” in relation to places; this connects the way Airbnb recommends entities in its knowledge graph into its role in placemaking.

This also perpetuates the narrative of “bottom-up” placemaking, promising a personalized experience based on abundant user data; however, in reality this is a “top-down” process of marketing place to users with content decisions made by engineers. Not only is Airbnb perpetuating the cultural concepts it deems important to a location, but it is classifying users based on their demographics and behavior and showing them relevant content as well. Airbnb is ordering experiences, places, concepts, and cultural groups of people based on nationality and other categorization to make decisions about what the platform recommends and shows users, wrapped in messages and rhetoric about “belonging anywhere” and how open the world is. In reality, the platform directs users to belong where the platform thinks they will be the happiest, spend the most money, and return to use the platform again. This happens in the name of profit, and in the name of data collection, to perpetuate the market dominance of Airbnb.

As discussed in the previous chapter, Airbnb’s knowledge graph sorts, classifies, connects, and relates experiences and homes to geographic places and to each other in a form

of digital placemaking. These homes and experiences have not traditionally been seen as touristic, yet they are aggregated together to create new sites for consumption. They are arranged in a way to maximize conversions, making the digital place created on Airbnb a place one that enables visitors to shape their sense of place before a trip. These processes are strategies for making the meaning people find in places manageable and measurable within the platform. This is once again tourism as an ordering (Franklin, 2004) in action, structured and guided by standardization, classification, and association by engineers, product managers, designers, and algorithms. If the classification and standardization of entities in the knowledge graph are impacted by who the engineers are, what the values of Airbnb are, and the political processes of their relationship with each other, the placemaking Airbnb is involved in will be shaped by this as well. These algorithms not only sort but *recommend*, in an effort to create the desire or spark the interest of users, to go to a place.

This section has explored facets of Airbnb's digital placemaking, first how it makes place consumable, then how it shapes how users encounter place through personalized recommendation. As discussed, Airbnb makes place digital to represent offline Homes, Experiences, neighborhoods, and placemarkets to create the desire to travel by using the platform. The places that Airbnb makes are categorized, classified, and put in relation to other content. The purpose of this is to make place consumable to make more users and revenue for Airbnb. Franklin reminds us that you don't need to define place to live in it (2004); you only need to define it for outsiders to consider traveling to it or to compare it to other places. Maps of and guides to places around Britain were made by Thomas Cook to define the sense of place to spark the desire to visit those places (Franklin, 2004). Airbnb does not need to map every place visible in the platform; they were already mapped. But it did need to create new spaces of consumption as belonging to its own interface. Hosts weren't categorizing their homes like this until they began selling them, and this ordering of place as digitally consumable and personalized to users is a facet of how Airbnb makes place.

4. Airbnb Imaginary/Airbnb Utility

As established thus far, digital placemaking has to do with how users make meaning and attachment to place via digital technologies. But I also argue that there is something more basic happening with Airbnb's digital placemaking: the quite literal need to make place workable for user consumption in a digital environment. This is facilitated by the building of the Platform detailed in Chapter 6, which governs Hosts to make representations of place online via inputting Homes and Experiences and Neighborhoods into the platform. Guests necessitate a different framing of place as utilitarian and transactional in what they are looking for as they encounter place in Airbnb. Airbnb Producers then make place personalized by their recommendation processes, which serve as another layer of digital consumptive placemaking. These two facets show related but different processes of digital placemaking, present in Airbnb specifically but also applicable more broadly in our platform society. There is a tension between staging place as desirable and simply meeting travelers' logistical needs in a more affordable way; to explore this, I introduce the Airbnb Imaginary and the Airbnb Utility.

This section furthers the discussion of how Airbnb makes place consumable in two parts. By consumable, I mean transformed from a space inhabited by and supportive of the daily lives of residents to a destination that can be positioned and valued for the purpose of being marketed, sold to, and purchased by visitors. The first is how Airbnb transforms residential, non-touristic places into desirable destinations to be consumed by visitors (Stors and Baltes, 2018), following the marketing and storytelling practices that have always been employed by tourism to create the desire to travel first and foremost (Franklin, 2004), and then the desire to travel to a specific place over others. I call this the Airbnb Imaginary. The second is the way Airbnb distills elements of place down to their utilitarian baseline, making homes and neighborhoods a simple checkbox list of requirements for travels to sort through, like number of beds, price, and distance to the train station. I call this the Airbnb Utility. I will weave scholarship that has explored each in various ways into this discussion to thicken anecdotal evidence of my empirical data⁸³. I use

⁸³ This data includes the same interviews, netnographic time spent in the platform, and additional source materials drawn on in previous chapters. For the sake of brevity I will not repeat the methods this chapter draws on, but they can be found in previous chapters.

these examples to demonstrate the tension present in a broader sense of Airbnb: it uses mythology, storytelling, and an ethos of belonging to brand itself with grand narratives and position itself as a sharing economy disruptor; but in the end, it prioritizes meeting goals aligned with the traditional capitalistic logics of growth, scale, and revenue generation. However, both the Airbnb Imaginary and the Airbnb Utility work together make place consumable, both ultimately playing a role in how Airbnb makes digital place. The tension between the two is a meta tension that is present throughout Airbnb's biography. It is an example of the broader "belong anywhere"⁸⁴ ethos of the Airbnb Imaginary and the simple, Airbnb Utility needed for hosts to make money and guests to have an alternative way to travel.

4.1 Airbnb Imaginary

Several studies evidence qualities of the Airbnb Imaginary, showing how a variety of technologies and affordances, from social media, geo-locative media, and mobile media, can give way to new configurations of consumable place. For example, Norum and Polson's work on Airbnb Experiences (2021) explores the way users make meaning (a key component of placemaking, as just discussed) through digital interactions between Hosts and Guests during the Covid-19 pandemic travel ban. They conceptualize how themed "place-markets"⁸⁵ emerged from Airbnb's new Online Experiences, which enabled people in lock down to virtually take tours or other Airbnb Experiences around the world from their homes. In another study, Törnberg argues that "the cultural logic of Airbnb is quintessential of post-modern tourism" (Törnberg, 2022, pp. 3-4). In an analysis of Airbnb Homes listings in New York City, he finds Hosts staging and Guests seeking a certain "authentic" cosmopolitan-ness of neighborhoods and identities. His theorizing of this as "platform placemaking" illuminates ways Airbnb leverages user generated content such as reviews and descriptions to "shape imaginaries of urban place" in the interest of platforms (Törnberg, 2022, p. 20). These two examples show how Airbnb makes place consumable via what I call the Airbnb Imaginary; the former through creating new

⁸⁴ This is Airbnb's brand tagline, launched in 2013, and credited with not just shaping the brand but "unified and differentiated the business." Source accessed July 2023: <https://design.studio/work/air-bnb>

⁸⁵ Their use of this term is introduced in Chapter 3, and I extend the term "placemarket" beyond their context of Online Experiences and leverage it to consider the geo-technical boundaries Airbnb draws around destinations within the platform.

sites of online consumption with the narrative content of place, and the latter making meaning by matching cosmopolitan identities of Guests with “authentic” descriptions of place. Both follow in the legacy of Cook’s strategy of making the content of places desirable and travel a part of an aspirational identity, therefore making place consumable to tourists (Franklin, 2004).

My research finds further ways the Airbnb Imaginary leverages content and identity in making place consumable. Chapter 6’s meticulous exploration of platform processes went into detailed the socio-technical construction of place represented on the platform, considering both entities and users. To expand on an example from that discussion here, Airbnb’s Guidebooks are quite literally places digitally made by aggregating “tips” from Hosts for what Guests could do in their neighborhood. Each place generated by Guidebooks has a uniform format (see Figure 27 below), with photos across the top, a category (fast food restaurant, gay bar, park, mountain), the place’s name, the map of its location (sourced from Google Maps), and “tips from locals,” which make up the body of the written content associated with the place listing. It is noteworthy that traditional top-down voices associated with placemaking, such as local park authorities, business owners, or tourism boards are absent from these digital representations of place. Each listing is the production of (digital) social space in action (Lefebvre, 1991), placing restaurants, grocery stores, attractions, parks, and many other places within the city as socially constructed entities on Airbnb.

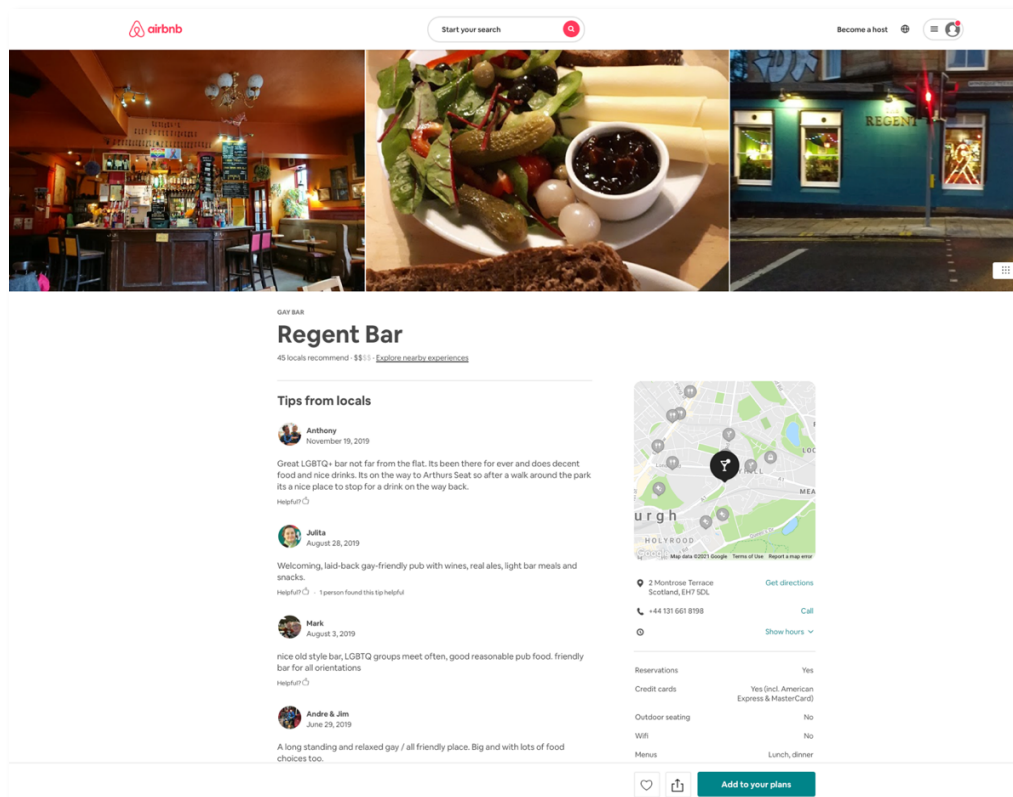


Figure 27: Regent Bar Place Page in Airbnb, Screenshot by McGowan in 2020

This is not exclusive to Airbnb; other online listing platforms such as TripAdvisor and Yelp have represented socially constructed places digitally via reviews for years. However, it marks Airbnb's determination to be an "end-to-end travel platform" (Gallagher, 2017). They position Airbnb as the local authority, everywhere, by coopting this practice within its own platform, excluding voices except for the most prolific Hosts. It provides user generated information about a neighborhood by only allowing certain hosts with platform authority to participate in the construction of guidebooks. It also goes a step further than other platforms like TripAdvisor as it shows local places to eat, shop, etc. and then connects nearby Homes and paid Experiences to them as well, listings that generates revenue for the platform itself, making consumable place a surplus value to Airbnb listings as well as these Places. The Airbnb Imaginary perpetuated by Guidebooks leverages the content of Place in creating the desire to book a specific listing, making Homes more consumable via their surroundings.

Stors and Bales explore Airbnb's role in creating new touristic places in Berlin, arguing that "the power to endow space with new meanings is nowadays more evenly distributed among actors" with the advent of more peer-to-peer travel platforms (2018, 23). On the one hand, as evidenced by their own research and the above exploration of placemaking on Airbnb, there is truth in this. Voices of Hosts are aggregated to represent places within the platform to enable user exploration of traditionally non-touristic places such as homes and residential neighborhoods at a scale not seen in tourism before. Entities exist on Airbnb that may not exist on other platforms or destination management organization resources, such as grocery stores, parks, and other less touristic places. However, Chapter 6's deeper look at the knowledge graph powering this placemaking provokes questions about the true democratizing power of the platform. For example, only Superhosts and Plus certified Hosts can create digital guidebooks; these are the hosts who have leveraged the platform prolifically, meeting the standards of Guests, the Plus team, and generating a certain tier of revenue for the company. They optimize their listings, bend over backwards for good reviews (as evidenced in Chapter 5's User Governance discussion) and perform affective digital labor regularly to enhance their listings and manage reviews.

Therefore, Edinburgh's representation on Airbnb is upheld by users who have successfully played the Airbnb "game;" its content of place is further consumable because it's created through the lens of those commodifying it. In this way, the platform continues to perpetuate itself, rewarding "the right" use, the productive input of local knowledge, and certain design standards with higher visibility that therefore generate more revenue. The city's content is presented and co-opted (Stark and Pais, 2020) by a certain tier of users who are verified by the platform as culturally competent, trustworthy, and knowledgeable, to make their own homes more consumable via association. Yes, many of these people are new tourism actors as Stors and Bales find (2018), but this is a less democratized process that the sharing economy ethos (and Airbnb Imaginary) would have us believe. The Airbnb Imaginary of bottom-up data and user generated content makes digital place "authentic" as locals see it, inviting users to "belong anywhere" when they use Airbnb. Over the years, Airbnb's marketing has positioned this in opposition to hotels, implying that the "real" meaning of place is missed in

traditional forms of touristic travel. However, this can be considered entwined with the Airbnb Utility of presenting homes and locations as meeting the needs of travelers, from location proximity to amenities like number of beds. This is the other side of the romantic notion of Airbnb that has been present since its origin story: the founders shifted their home into a moneymaking asset, turning it from a dwelling to a space of consumption, and needed to build a digital platform to facilitate this on a large scale.

4.2 Airbnb Utility

For all this narrative work, configuration, and presentation of place to make it a destination worthy of consuming, a tension arose in my research in the face of the Airbnb Imaginary's marketing of place: the Airbnb Utility. If the Airbnb Imaginary leverages an ethos of belonging, presenting sets of cultural symbols of place, leveraging cosmopolitanism and home "sharing" as ideals, the Airbnb Utility is the opposing transactional, needs-based offering of the platform to users. For example, Hosts may view the Airbnb Utility as a simple imperative to make money, and for Guests, to save money. Evidence of this is present in scholarship on the motivations of Guests to use Airbnb, in Homes descriptions present in the platform, and in my discussions with Airbnb producers, Hosts, and Guests alike. This section will give several examples of the Airbnb Utility, presenting it in tension with the Imaginary, but arguing that both, together, contribute to how Airbnb makes place consumable.

Considering the Airbnb producer perspective on Guidebooks from an economic and technical perspective exemplifies the Imaginary/Utility juxtaposition. In our conversations, several knowledge graph engineers mentioned Guidebooks as a feature that Airbnb producers had high hopes for, and they are celebrated in blog posts, reports, and press coverage. Thomas said they are "one of those products that I think everybody was really in love with, because when it was done well it was a really nice local touch that made Airbnb very special and different from like, a hotel." However, in practice, Thomas acknowledged their limitations. He said, "we can't force hosts to write Guidebooks," and he considered the quality of them to be inconsistent, "especially as more listings were commercial." Because "it was very hard to create a consistent experience around the product," Thomas said his team did not always "surface"

Guidebooks to end users; while the creative idea of Guidebooks showed promise, their actual use case waned in practice.

As discussed throughout this thesis, Airbnb engineers are constantly changing and reconfiguring the user interface to meet user needs, shape user behavior, and feature products that perform best in converting bookings. Thomas shared that in his time working on the knowledge graph, the interface evolved from being very “place centric,” featuring neighborhoods and Guidebooks, to being more focused on helping meet users’ specific goals. Thomas said the more recent expectation of Airbnb users is that they “actually know what they want and go to Airbnb with a specific goal in mind, rather than to just explore.” In the end, he called Guidebooks “just an annotated Google map.” William described Guidebooks as more important in building the back end of the knowledge graph than the end user experience. He brought up Guidebooks as a data source to “enrich place data” on Airbnb. From the back end, this feature has a utilitarian role that quite literally helps engineers fill in information about placemarkets in the platform. While Guidebooks support the Airbnb Imaginary, their actual use value is in their back-end Airbnb Utility of feeding the knowledge graph.

Supporting Thomas’ point that users go to Airbnb with “a specific goal in mind,” research finds Airbnb Utility a main driving force in choosing to use the platform. As discussed in Chapter 1, studies on user motivation find “low cost,” followed by “location convenience” and “household amenities” (Guttentag *et al.*, 2018; Nathan *et al.*, 2020). These studies suggest that cost and convenience motivate people to use Airbnb, quite at odds with the Airbnb Imaginary promoted by the brand. I found these sentiments in my conversations with Guests as well; most were simply interested in the logistical and utilitarian convenience of where they stay. Airbnb Utility was also the driving factor for choosing accommodation in a focus group I conducted with six Airbnb guests in August 2022. Attributes of Homes like number of beds, being dog friendly, privacy, and comfort were present throughout our conversation. One participant shared that she had university exams the week she was travelling, “which is why we had to have the actual Airbnb because I needed to have a private room with a door.” I met Deborah, an American woman living in Germany and traveling to Edinburgh for the first time with her children and husband, on an Airbnb Experience tour. We spoke about how much she loved

Edinburgh, and how she was enamored by the history of the city. She shared that the Airbnb she was staying in was “perfect” for her family, but it was clear she considered the accommodation in a utilitarian way disconnected from her love of the city. “For me the reason that we do Airbnb is that we are a family of five and hotel rooms are really challenging,” Deborah said. She said an Airbnb, specifically an entire Home for their family to have, creates a feeling of vacation that a hotel doesn’t give. The home-away-from-home configuration creates space for their kids to keep bedtimes and still enables her and her husband to “lay in bed and debrief.” “Based on location and price, we just find whatever fits best for a family of five,” she shared.

Beyond the Home, Deborah also said location is important when choosing an Airbnb. “I usually do a little research with neighborhoods you know, coolest to stay in when you are in insert name of city, like Paris, I kind of search by those.” So, she looks to understand the place she might stay in before booking. However, she uses a variety of platforms for this research, citing “Google” to find “somebody who’s done the same thing I’m looking to do, and kind of go by what their advice is,” said Deborah. Although she is interested in exploring the qualities of place, she still admits this can have a utilitarian purpose for her trip: “Sometimes it’s not necessarily looking for the right neighborhood. It’s maybe looking at what we want to do in that city and finding a place that’s going to make that the easiest to get to so whether it’s near a train station or locale.”

However, the search for something “unique” and “different” also surfaced in my focus group. Guests discussed how scenic views and “out of the ordinary” structures like “pods” were also what they looked for in Airbnb accommodation. Several mentioned looking for “Superhosts” as well when they book, citing quick response standards and professionalism as reasons to book. This exemplifies the tension between a utilitarian reduction of a home to its attributes but framing those attributes as unique and novel. This way of making place consumable shows up in the user interface in various ways as well. In May 2022, Airbnb announced a new user interface configuration on the home page, showing Homes by category (see Figure 28) rather than historically by location (see Figures 29 and 30).

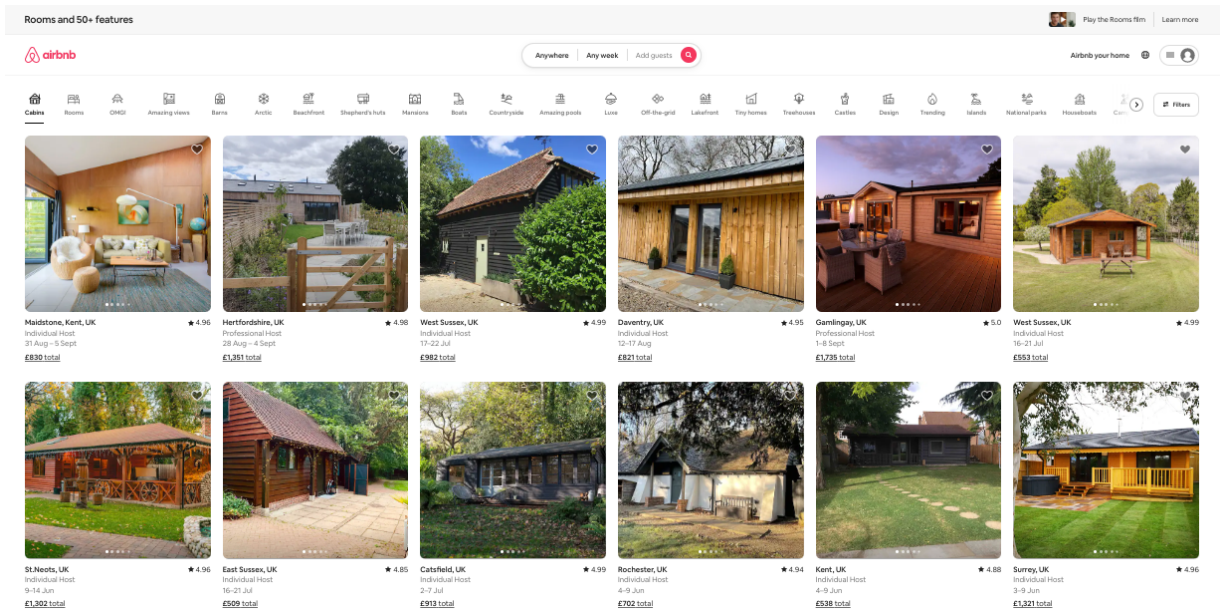


Figure 28: Airbnb Homes by Category, 2022

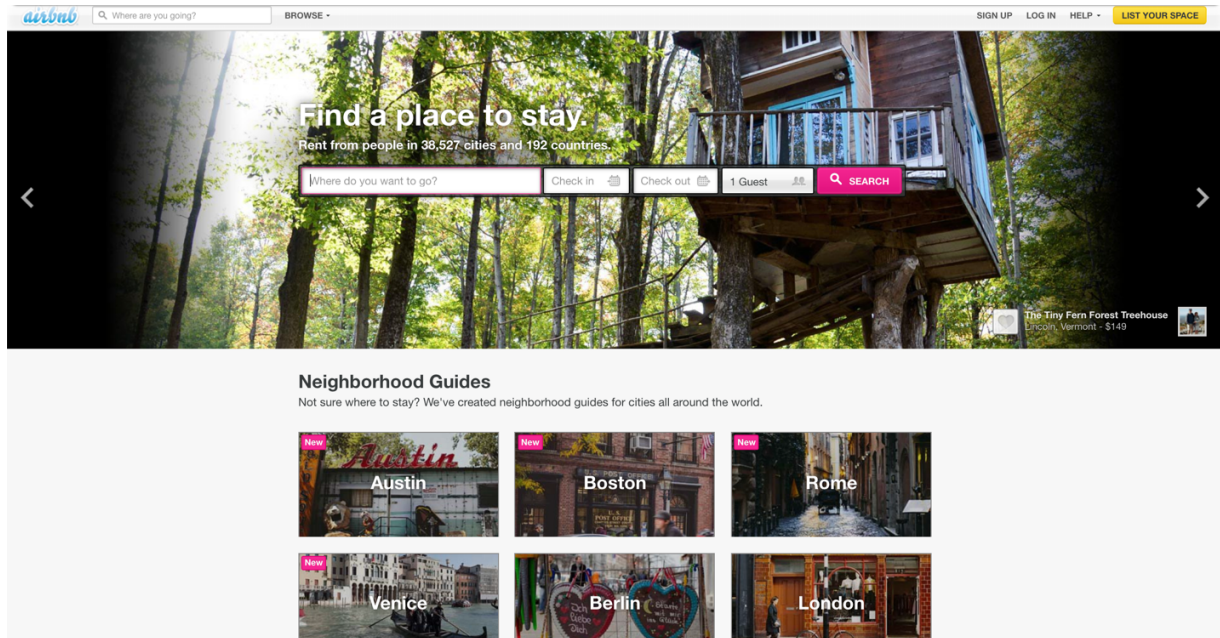


Figure 29: Airbnb Homepage from 27 March 2013, sourced from Internet Archive Wayback Machine

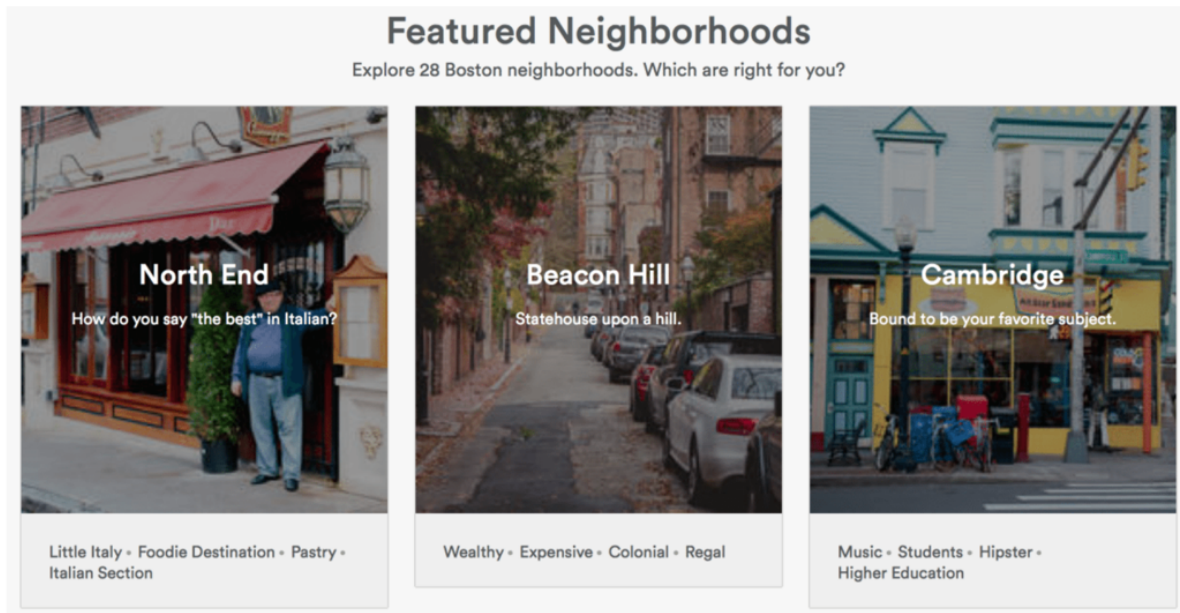


Figure 30: Screenshot of Boston Neighborhoods from Airbnb Homepage in 2014 (Johnston 2014)

This design change centers novel attributes of homes while decentering neighborhoods and even locations in general.

Another way to look at how Homes are presented within the platform is to consider their descriptions. Using a March 2023 Inside Airbnb database of all Edinburgh Airbnb listings (7,248 listings total)⁸⁶, I created a word cloud to visualize the most used words in their descriptions (see figure 31). The most prominent words are quite utilitarian: walk, minute, restaurant, bar, shop, centre, flat, new, old, town. This prioritizes the consumptive “product” of Homes at the site of user encounter. Of course, this is the original purpose of Airbnb: to be a platform that supports the short-term renting of properties. I point out this platform design change to illustrate the ways in which the Airbnb Imaginary and Airbnb Utility are both present in the platform’s digital placemaking.

⁸⁶ Accessible at <http://insideairbnb.com/edinburgh>,

presenting different versions of place based on assumptions and classifications of users. Overall, Airbnb makes a digital place for users that is worthy of consuming, presenting what it deems will create the desire to travel to the physical place, in a new form of tourism as ordering. They both work together in making place consumable on the platform.

5. Material Placemaking

So far, this chapter has explored facets of Airbnb's digital placemaking, positioning it as an orderer of place that leverages the Airbnb Imaginary and Utility to make it consumable. This section will explore how these processes shape material place as well. There is a plethora of scholarship that connects Airbnb's prominence to rising housing prices in cities around the world (Lee, 2016; Garcia-López *et al.*, 2020; Koster, van Ommeren and Volkhausen, 2021; Sridhar, 2022; Todd, Musah and Cheshire, 2022), some framing Airbnb's impact on urban areas as a new form of gentrification that displaces residents (Wachsmuth and Weisler, 2018; Cocola-Gant and Gago, 2021; Spangler, 2020). There is also a convincing emerging literature on how Airbnb creates new "non-residential zones" in city centers, driving urban change in the form of new "tourism bubbles" that price out or make redundant services and resources for residents (Carvalho *et al.*, 2019; Ioannides, Röslmaier and van der Zee, 2019). Whilst these are important areas to continue researching, this section will focus on two less explored facets of how Airbnb makes place with material interventions: in the home and on the streets. My aim is to add specific examples to the conversation, exploring Airbnb's power in shaping place through the entry point of material configuration of the home and material artefacts in the street.

5.1 Homemaking

Homes are the micro, private units of place, spaces made places via personal connection, feelings, memories, domestic practices, nostalgia, comfort; they are arguably the building blocks of meaning-making in cities. A broad swatch of literature shows home, like place, is multifaceted and malleable concept. It is the container that holds social and emotional experience together with physical and symbolic place, and can be both bounded and open, singular and plural, associated with wellbeing and struggle, "can constitute belonging and/or

create a sense of marginalization and estrangement” (Mallett, 2004, p. 84). However, a very limited number of studies explore the relationship between Airbnb and materiality of home. Borm ethnographically explores the material “metamorphoses” of Airbnb homes as hosts temporarily depersonalize and provide material amenities for guests (2017). In an autoethnography of “Airbnb-ed” homes in Sofia, Bulgaria, Roelofsen finds Hosts draw physical boundaries between their “backstage” home and the “frontstage” spaces for guests, diving material parts of the home into places of consumption (2022a). From a guest perspective, Steinmetz gives an autoethnographic account of living in someone else’s home, describing the material changes she made to feel “at home” in someone else’s stuff (2022).

Airbnb changes homes in a variety of ways to be consumable (Borm, 2017). In doing so, it invites us to question what is different about home when you offer it to others for consumption rather than simply inhabiting it. This section will explore the ways Airbnb impacts Homes via commodification practices in a material context. These practices stem from the online framing and representation of home (as explored in Chapters 5 and 6) and include configuring the offline material interventions that support successful Airbnb use when Homes are listed. This facet shows how Airbnb requires hosts to offer new material adaptations and places in the home, exploring how the digital manifests offline in both lived spaces and embodied emotional responses. It weaves a brief narrative from my conversations with Airbnb Hosts and Airbnb producers to consider the interplay of both the user and the platform’s role in shaping material homes.

First, Airbnb hosts perform material “commodifying or depersonalizing rituals” to change and provision their homes for consumption (Borm, 2017, p. 45). Without exception, the Hosts I spoke with make changes and provision their homes to prepare them for consumption. For example, Josie engages in practices of de-personalizing spaces before renting out her home. Recalling her story from Chapter 5, she lists her entire flat on Airbnb during the month of August, vacating it entirely. Each year, she deep cleans, repairs, and depersonalizes her home to prepare for Guests. This includes removing all personal belongings from her drawers, closets, and other storage. In addition to cleaning and depersonalizing, this also includes purchasing additional comfort items such as bedding, towels, and kettles, and even a new mattress. Lauren

an Arthur bought bigger furniture items like a desk to advertise a workspace in their spare bedroom, and even rearranged their spare bedroom after receiving negative feedback about the layout in a review. These practices also include creating dedicated guest spaces in Homes. Alison sections off her second floor for Guests to have their own space and parcels her home into areas for Guests only and family only (she does not permit guests in her kitchen, for example). To meet the Airbnb Utility, these Hosts feel the need to strip material meaning from their spaces to prepare them for consumption. If space is turned into place when meaning is attached to it, the creation of consumable areas of the home for Airbnb Guests arguably does the opposite. As explored in Chapter 5, these homemaking practices are the result of governance by the platform, made to happen via a combination of technical affordances (like reviews) and relationship labor practices (Shestakofsky and Kelkar, 2020).

These material changes come with an embodied sense of emotional burden for several of the Hosts I spoke with. They expressed a feeling of anxiety as they engage in the material practice of preparing their Homes for Guests; the meaning of home space changes when they host on Airbnb. When they let out their space on Airbnb, they need to prepare their homes to be up to the standard of the platform. “I’m just like, maybe a bit nervous in making sure that everything is ok,” Laura shared. She talked about adjusting her behavior when she is home and Guests are home, not wanting to crowd them or impose on the space they have paid for. Again, this reiterates the emotional designation of consumptive space in her home as not fully hers when guests are there. Her partner, Angus, did not share these anxieties. “I’m not going to just sit in my room and wait for them to finish making their food before I go in,” he said, as Lauren shook her head and disagreed that she would wait.

In each conversation I had with people who Host in a partnership, the woman host articulated gender imbalances⁸⁷ in the emotional burden of the commodified home. As discussed in the example above, Lauren (a woman) felt more emotionally responsible to vacate shared physical home space than Angus (a man) did. In another example, Alison described the feeling of knowing guests will be coming as “a little grey cloud,” imposing on her family time and

⁸⁷ This insight merits further discussion about gender imbalances and emotional labor that is beyond the scope of this chapter. However, I mention it here to add breadth to the discussion and suggest a pathway for future research.

bringing her stress well before they arrive. She expressed that her male partner does not share these anxieties in the same way, and feels she shoulders most of the emotional burden of hosting. These examples show how carving out a material space of consumption in the home requires emotional labor of disentangling meaning of place from space.

Returning to the case of Airbnb Plus shows another facet of how Airbnb shapes material homes. Chapter 6 discussed Ben's work on the Plus team and the material design standards he upheld for the Plus category on the platform. This began as criteria for designating Homes as "Plus," classifying listings already in the platform with the designation. However, Ben and his team eventually ran out of new inventory to classify, which created an obstacle for meeting their scaling goals for the Plus product. As discussed, this inspired the team to practice what Ben called "managed onboarding," meaning rather than classifying digital Homes listings as Plus, a team of Airbnb interior designers would work with Hosts to make their *material* homes fit the standards of Plus. In our interview, Ben described that this process began with an Airbnb interior designer visiting a Host's Home for a design consultation, and then create an interior design plan for the space. The designer would then present the Host with the plan for consideration. Ben shared how this process worked:

We were trying to convince the host that like hey, if you spend \$8,000 You'll get on to Plus and then in generally we see like a 25% revenue lift for listings that go on to Plus so you'll get paid back based on last year's earnings you'll get paid back on like a you know, nine month timeline or something like that [...] If the host said yes, we then had an interior design associate that would work on the procurement and installation of those items. And then we actually contracted with third parties in those local markets to do like wallpaper and electrical work building furniture all that kind of stuff.

This moves Airbnb's material interventions beyond the requirement of new linens, furniture, and depersonalization of home experiences by the Hosts I spoke with. It positions the platform as a mediator (Latour, 2005) quite literally (re)shaping the design of Homes across different places to meet the standards set by Airbnb's growth imperatives, making place in the form of what converts well on the platform. Directly connecting these material changes in the home to a revenue increase in the form of bookings embeds the platform's business goals into

domestic spaces of Hosts. In addition to Airbnb's managed design services, there is a wealth of additional support for Hosts looking to design their homes to be more profitable on Airbnb. A Google search for "Airbnb interior design" shows a variety of interior design firms, educational tips, and guides for how to design your Home to be successful on Airbnb. Airbnb has an entire design blog dedicated to giving Hosts design resources needed to make their Homes "stand out" on Airbnb.

In our interview, Ben shared several of Airbnb's ideas for the future of Plus that did not come to fruition. Examples like Airbnb integrating with the economy platform Taskrabbit, for exclusive rates for hosts on electrical work and "white labeling" items from major furniture manufacturers like West Elm to give Hosts access to wholesale furniture prices show his venture labor mindset (Neff, 2012) for where Airbnb should go. Although these ideas have not been implemented as of the time of this writing, the point here is this venture labor (Neff, 2012) speaks to platform logics of growth and scale. Leaders on the Plus team advocated for Airbnb to intervene further in physical place for the purpose of generating revenue for the company, leveraging platform processes of user governance and imposing standards and classifications on material homes. This exemplifies Airbnb's imperative to make homes that materially support the successful use of the platform.

This section explores Airbnb's material interventions in the home. Depersonalization, providing hotel-like comforts and amenities, designating dedicated guest spaces, and managed interior design interventions are a few ways Airbnb (re)shapes physical homes. These not only reconfigure physical spaces but bring new meaning to hosts interactions with their homes as place. The emotional burden of transforming physical home space can put strain on the feeling of being at home as hosts "prepare the scene" (Bruni and Esposito, 2019a). From this micro scale of homemaking, the final facet of Airbnb's placemaking will explore one way the platform infiltrates the urban streets of Edinburgh: with the proliferation of keyboxes.

5.2 Streetshaping

Living in Edinburgh has made a host of me. As friends and acquaintances travel here, they inevitably ask me for recommendations for where to eat, what to see, and of course, where to stay. Most of “my” visitors prefer to stay in *authentic* neighborhoods, tucked away from the obviously touristic places, seeking a feeling of home in a new place. Many of them book Airbnbs instead of hotels, citing elements of the Airbnb Imaginary of “belonging” alongside the Utility of home-like space and comforts I’ve discussed. As I welcome these visitors to Edinburgh, I get glimpses into to their check-in experiences, often facilitated by keyboxes. I once accompanied friends as they arrived at their Airbnb, and together we followed emailed instructions to find and open it. They read like a treasure map: face the street, turn left from the landing, follow the cobblestone path between the tenements, find the railing and select the third of five key boxes. Turn the numbers to align the code, press down the switch, unlatch the door, and reveal the key. More recently I was with another friend as she checked into an Airbnb in my Hillside neighborhood, a process once again facilitated by a key box. The building’s doorway had four key boxes bound to its frame. As we determined which one held her flat’s key, we noticed each box brandished a sticker that read “unfair,” with the “a” depicted as the Airbnb logo (see Figure 8). As we fumbled with the unfamiliar lock system of the inside door, she asked a neighbor for help. The neighbor smiled and obliged, and after we both felt a twinge of guilt for the imposition.

This facet of Airbnb’s placemaking explores material manifestations of the platform at a city street level through the lens of keyboxes. These objects are a ubiquitous sight around certain Edinburgh neighborhoods, making visible the abundance of short-term rental properties in the city. When I began my doctoral research in September 2019, Airbnb and its relationship to “overtourism” held a visible place in Edinburgh local news coverage. This lively discussion often included the mention of, and the increasing disdain for, keyboxes as a symbol of the Airbnbification of Edinburgh. They guard the keys to many of the city’s Airbnb listings and keep them secure with combination codes, demarcating which homes are not available to residents. They can be found tucked into doorways, clinging to ledges, mounted on walls, and padlocked on railings, cycle racks and garden gates. Once I started paying attention, I found them to be

abundant in Edinburgh's urban environment and equally present in its social controversies. In 2019, the chatter surrounding them flowed through different communities and took on varying levels of authority, ranging from casual acknowledgement of their pervasiveness to complaints via digital shaming to consideration in government policy. At the time of this writing, key boxes continue to populate Edinburgh city streets, material signifiers of Edinburgh's over 7,200⁸⁸ Airbnb listings. In addition to visually shaping the character of streets, they are also a material catalyst to shape placemaking policy in Edinburgh. This final section will explore how Airbnb keyboxes materially impact Edinburgh's city streets, making them into public places of controversy and sparking top-down planning discussions.

My interest in Airbnb key boxes began with my individual encounters with them and has been deepened by the wider controversies they create. Their physical presence has attracted growing attention from various Edinburgh communities, from Reddit users to residents to journalists to members of Scottish Parliament. Tracing the public discourse surrounding key boxes reveals the power they have as not only a symbol, but as a catalyst for urban planning and Airbnb regulation. The controversial profile of key boxes was raised in October of 2018, when a local Reddit user posted a photo of 1 Upper Bow in Old Town, Edinburgh with 11 of the objects fixed to the doorway⁸⁹ (cynical_response, 2018). This post gained such traction on Reddit that it garnered media attention. The *Daily Mail* declared this image could be "the 'final straw' for Airbnb in Edinburgh"⁹⁰. Journalist Nicole Pierre used Google street view to investigate the history of key boxes at this particular property; she found that there were none in 2015, three in 2016, and seven in 2017, showing their exponential growth at this property in recent years. *Edinburgh Live* called the viral photo a visual summary of the "holiday let 'crisis'" in Edinburgh, discussing how Airbnb owners rely on key boxes to "minimize the amount of contact they need to have with people booking their apartments." The article remarked that the growing presence of key boxes has "fueled accusations" that "absentee landlords" own a large number of holiday

⁸⁸ Number of Airbnb listings in Edinburgh from a March 17, 2023 count published by Inside Airbnb, accessible here: <http://insideairbnb.com/edinburgh>

⁸⁹ cynical_response (cynical_response). 2018. "Actual Final Boss of Edinburgh AirBnB." Reddit, 21 October 2018.

⁹⁰ Pierre, Nicole. 2018. "'Stop this madness now!' Airbnb is accused of taking over tourist-friendly Edinburgh where one property is pictured with 11 key safes on its front door for short-term renters to use." *Daily Mail*, 26 October 2018, 2018. <https://www.dailymail.co.uk/news/article-6307855/Airbnb-accused-taking-Edinburgh-flat-pictured-11-key-safes.html>.

letted flats in the city center⁹¹ (Mitchell, 2018). The presence of keyboxes shaped the meaning of Airbnb into one of crisis, making streets the site of encountering this controversy.

In January of 2019, the Scottish Government took several measures in response to this growing public debate over Airbnb key boxes. The council “issued an enforcement notice” to remove all the key boxes present in Figure 1 at 1 Upper Bow⁹². Furthermore, Member of Scottish Parliament (MSP) Andy Wightman published a Briefing Paper about “Key Safe Deposit Boxes” for short-term lets in Edinburgh⁹³ (MSP, 2019). In the foreword, Wightman acknowledged that lockboxes “are now almost a ubiquitous sight” around the city and stated the purpose of the paper “is to explore a range of questions that have been asked about key safe deposit boxes and what rights residents have when challenging the installation of these by short-term let operators.” To consider the complexities of their legality, Wightman explored legal themes like ownership of walls, sectioning of property, and tenement management voting rights for owners. Naturally he pointed out complexities with the law but concluded with a succinct list of questions to help citizens wishing to legally challenge key boxes. This physical manifestation of Airbnb’s digital listings quite literally shaped the consideration of street-level agency residents have to alter their properties.

Wightman’s brief evolved the discussion of key boxes in Edinburgh from one of public annoyance to one of legal consideration. A January article on *Edinburgh Live* positioned Wightman’s work as a warning to Edinburgh property owners, acknowledging that “the politician has been at the forefront of the short-term letting industry” and is working to regulate it⁹⁴(Galloway, 2019). The article quotes Wightman saying that Airbnb key boxes in Edinburgh are “spreading like wildfire” and “the rise of short-term letting has exacerbated the visibility of these boxes” in the city. The article concludes by reiterating Wightman’s purpose of his Briefing Paper: to “urge residents to check whether [key boxes] are legal.” A follow-up *London Times*

⁹¹ Mitchell, Hilary. 2018. "Edinburgh Airbnb overload: This viral photo sums up the extent of the Scottish capital's holiday let "crisis" " *Edinburgh Live*, 14 November 2018, 2018. <https://www.edinburghlive.co.uk/news/edinburgh-news/edinburgh-airbnb-overload-viral-photo-15416244>.

⁹² Swanson, Ian. 2019. "Old Town tenement landlord ordered to remove short-term let key boxes." *Edinburgh Evening News*, 12 April 2019, 2019. <https://www.edinburghnews.scotsman.com/lifestyle/homes-and-gardens/old-town-tenement-landlord-ordered-remove-short-term-let-key-boxes-548259>.

⁹³ MSP, Ciaran McDonald and Andy Wightman. 2019. Short-Term Lets - Key Safe Deposit Boxes Briefing Paper No. 5. edited by The Scottish Parliament. [greens.scot](https://www.greens.scot).

⁹⁴ Galloway, Claire. 2019. "Edinburgh residents should check 'legality' of key boxes, urges MSP." *Edinburgh Live*, 29 January 2019, 2019. <https://www.edinburghlive.co.uk/news/edinburgh-news/edinburgh-residents-should-check-legality-15746965>.

article reiterated the warning that “short-stay key boxes ‘could be illegal’” and brought the influence of SNP leader of Edinburgh city council, Adam McVey, to the conversation⁹⁵ (Wade, 2019). This piece joined together both MSPs’ voices to urge concerned residents to think of leveraging key box legality in their fight back against the Airbnb listings in their neighborhoods. In it, Wightman warned that “if you attach a box to a wall that you do not have ownership of then this can be interpreted as intrusion into someone else’s property.” This comment utilizes key boxes as a material manifestation of the social controversies surrounding Airbnb in the Edinburgh community, centering the way they shape streets as a tangible focus of the fight against this phenomenon.

A few weeks after the release of the Briefing Paper and corresponding media coverage, an *Edinburgh Evening News* article was published with the headline, “Edinburgh Airbnb hosts using key-storing padlocks in city parks to avoid legal issues”⁹⁶(News, 2019). The article reported a newly developed practice of evading the legal issues of permanently wall mounted key boxes by using less permanent padlock key boxes on “public railings in parks and greenspaces.” This surge of visible padlocks in lieu of wall-mounted key boxes was positioned by the article as a direct response to the recent legal warnings. Claire Miller, the City Centre’s Green councilor, called this practice “unwelcome” and warned that “owners should ensure they are removed before the council does it for them.” The article once again quotes Wightman, reinforcing his stance that key boxes are a visual reminder of the growth of short-term lets in Edinburgh. He furthers his stance that key boxes are a material expression of Airbnb host behavior in Edinburgh by stating, “it may be a reflection of the fact that people can do it in a very temporary way so that at very short notice they can be attaching keys and padlocks to railings for ad hoc letting.” In this example, both the movements of key boxes and the corresponding media coverage make visible the circulation of practice for Airbnb hosts and the law in Edinburgh on

⁹⁵ Wade, Mike. 2019. "Short-stay key boxes 'could be illegal'." *The Times (London, England)*, 2019/01/30/, 2019, 15. Accessed 2019/10/25/. https://link.gale.com/apps/doc/A571697218/AONE?u=ed_itw&sid=AONE&xid=90c5f710.

⁹⁶ News, Edinburgh Evening. 2019. "Edinburgh Airbnb hosts using key-storing padlocks in city parks to avoid legal issues." Accessed 30 September 2019. <https://www.edinburghnews.scotsman.com/news/edinburgh-airbnb-hosts-using-key-storing-padlocks-in-city-parks-to-avoid-legal-issues-1-4871603>.

city streets. This visibly implicates hosting practices of compliance and evasion in the characteristics of Edinburgh's public spaces.

I saw evidence of this practice firsthand in my 2019 hunt for key boxes in Old Town. I returned to 1 Upper Bow, the site originally identified for its many key boxes. While I found no key boxes attached to the doorway, I realized they had simply been moved across the lane, padlocked in a new form to the street railing. They seemed to exist with renewed audacity, linked in a row beneath the conspicuous street sign announcing their location: Upper Bow (see Figure 32).



Figure 32: Keyboxes at 1 Upper Bow, photo by McGowan, 2019

At that time, the legality of key box placements seems to be a slightly smaller and more manageable issue to tackle than the larger question of the overall legality of short-term holiday lets in Edinburgh. It also, however, seems to be a scapegoat for the emotional discussion about the morality of Airbnb's perceived role in hollowing out neighborhoods. In the same 2019 *London Times* article, McVey takes a leap from Wightman's discussion of the legality of key box

placements in Edinburgh to declare them immoral symbols of the nature of Airbnb in Edinburgh:

Adam McVey, the SNP leader of Edinburgh city council, backed Mr. Wightman's intervention and said the key deposit boxes were a sign of badly run short-term lets. "It shows that someone is clearly saying to a guest, 'Just show up, here's the key, you'll get access to the property and you'll find the rules on the walls somewhere'; rather than someone looking them in the eye and saying, 'Here's the rule of the game'.

While wrapped up in the legal discussion, McVey's association of key boxes and "badly run short-term lets" is telling. Here, key boxes are not only a tangible way to grapple with the legal questions surrounding Airbnb, but the ethical ones as well. McVey connects key boxes to absentee hosts to "badly run" Airbnb listings, and the ubiquity of visible key boxes throughout Edinburgh clearly demonstrates how pervasive these "badly run" listings are in the city. As a perceived badge for listings with absentee hosts, key boxes continue to be a catalyst for social contempt, activism, and sharing economy policy discussions in Edinburgh. Their material nature affords a unique, visible and (relatively) stationary component of an otherwise elusive and seemingly intangible phenomenon.

This provides an opportunity for physical forms of activism, from vandalism to defacement. In 2019, Reddit user fuckairbnb asked in an Edinburgh subreddit, "Does anybody know what would happen if someone happened to take a hammer to the growing number of AIRBNB key boxes outside one's stairwell?"⁹⁷(fuckairbnb, 2019) The corresponding comments were a mix of criticism and amused support, the latter offering suggestions from supergluing the combination numbers to smashing the boxes to checking the legality of those key boxes within the lease. An example of defacement in practice is the "unfair" stickers I found on a row of key boxes in my own neighborhood. These stickers boldly protest against Airbnb not just to flat owners and neighbors, but to each guest who checks in; they attempt to shame all who use the marked key boxes for Airbnb purposes. Key boxes were also the visual unifier in a January

⁹⁷ fuckairbnb. 2019. "Does anybody know what would happen if someone happened to take a hammer to the growing number of AIRBNB key boxes outside one's stairwell? ." https://www.reddit.com/r/Edinburgh/comments/942y99/legality_of_destroying_airbnb_key_boxes/.

2020 presentation made during a Citizen meeting on Airbnb⁹⁸ (Edinburgh, 2020). The title slide mimicked a postcard with the text, "Greetings from Edinburgh" scrolled across the bottom. The collage of Edinburgh scenes all featured Airbnb key boxes, densely clustered in various doorways and drainpipes and railings throughout the city; pictures that looked quite familiar to me after my expedition to find key boxes in the city.

Each of these examples show how the materiality of these objects enable physical responses or visually rally community gatherings. This invites a consideration for what material objects do in social places. Connor remarks that "in order to be able to *feel* things we have to be able to feel *things*"⁹⁹(2012). He explores the line between subjects and objects and that line's role in our tendency to focus on things as symbols for subjects:

Objects can be killed with impunity, and repeatedly. But this is because they cannot in fact ever be killed, for they are not subjects. Objects are available to be killed in fantasy, because they are entirely unavailable to be killed in fact. And perhaps objects may inspire the lethal rage they can or do because they of their immortality, their equanimity. (Connor, 2012)

Reddit user fuckairbnb poses a public question about the consequences of "killing" Airbnb key boxes, and "unfair" stickers adorn them with visible shame. Yet these objects prevail, unphased, never abandoning post. Indeed, they may be moved from their mount on doorways to be looped around nearby railings, as in the case of 1 Upper Bow, but they are still present collectively, their meaning and purpose not thwarted. Perhaps this perseverance will invite another, evolved wave of scrutiny and resistance; time will tell.

Key boxes turn the obscured digital activity of Airbnb into a concrete, visible, tangible imposition onto Edinburgh's streets. Connor's recognition of the magic of "ordinary things" employs the conviction that they are "invested with powers, associations and significances, that they are not just docile things, but signs, showings, epiphanies... allegories on human life."¹⁰⁰ I

⁹⁸ Edinburgh, PLACE. 2020. "Citizen Presentation." Accessed January 25 2020. <https://reimaginingthecity.scot/place-on-airbnb/>.

⁹⁹ First stated in: Connor, Steven. 2012. "Taking Pity on Things." *Festival of Ideas Talk. Cambridge University, Cambridge* 26. And then repeated in: Connor, Steven. 2012. "Feeling Things." *Objects of Emotion. Wellcome Collection, London, June* 16.

¹⁰⁰ From page 2 Connor, Steven. 2011. *Paraphernalia: The curious lives of magical things*. Profile Books.

have found this magic evidenced in key boxes in Edinburgh by the way they inspire intrigue, make visible the private dealings of hosts and guests, and make tangible the legal and moral controversies surrounding Airbnb. Returning to this chapter's introduction, the origin of "make" is the Old English *macian*, invoking the thought of a magician's power to transform. As explored in this section, key boxes play a leading role in making visible how Airbnb is changing the city. This exploration found they are more than their material nature, once again mediators of place. Perhaps an ontological approach is to ask, when Airbnb key boxes are found, "what else is found there also?"¹⁰¹ (Latour, 2013). This facet of Airbnb's material placemaking has explored the physical impact the digital platform has on city streets. As agreed on by placemaking scholars, space becomes place via a socially constructed process of meaning making. In the case of keyboxes, Airbnb makes city streets sites of visibility for the pervasiveness of the platform, sites of access to listings, and sites of controversy and resistance.

6. Conclusion: Placemaking in Neighborhoods, Homes, and Streets

This chapter considers Airbnb's relationship to Edinburgh as a case for exploring several facets of how Airbnb makes place. This happens in three levels: within the neighborhood, the home, and the street. First, its digital placemaking processes of ordering make the content of the city and its neighborhoods desirable, consumable, and presented in a personalized way to users. Then the tension between the Airbnb Imaginary and the Airbnb Utility creates a branded cultural imperative to use the platform although ultimately reducing place to how it can meet the needs of travelers. It connects listings to the attributes of neighborhoods and places, commodifying both with these associations. It materially shapes home by necessitating physical interventions that have embodied emotional repercussions. The abundance of Airbnb listings materialize via keyboxes, shaping city streets and ultimately urban life with their resulting policy

¹⁰¹ A reference brought to my attention in Bruno Latour's exploration of ontology in his Tanner lecture Latour, B. (2013) 'How Better to Register the Agency of Things: Part 1, Semiotics; Part 2: Ontology', *Yale University Tanner Lectures*, 14, pp. 79-117. In this lecture Latour encourages the audience to "render ourselves able to come to grips with what is experienced in the world." He references Whitehead's, as Latour puts it, "interrogation of how to avoid the distinction between two experiences of how 'red' is being given: 'The real question is, 'When red is found in nature, what else is found there also?'" Which is from Isabelle Strenger's *Thinking with Whitehead: A Free and Wild Creation of Concepts* (translated by Michael Chase). Cambridge, Mass: Harvard University Press, 2011.

discussions and activism. Although intertwined, these facets are still admittedly disparate in that they only consider a few angles of how Airbnb makes place. However, my hope is that this discussion adds sociological detail about the platform's digital properties, user experience, and material traces to the growing scholarship on platform urbanism. Bollmer's *Theorizing Digital Cultures* cautions against separating our understanding of the offline and the online, encouraging instead a theoretical lean into the distinctions of each to understand their entanglements (2018). My aim in looking at facets of digital and facets of material placemaking was not to consider them as distinct entities, but to consider what "flashes of insight" (Mason, 2011) each can offer in our holistic understanding of how Airbnb makes place.

Ultimately, each evidence an insight that subtly but importantly adds to the critical conversation about the sharing economy imaginary: platforms' peer-to-peer nature is much less democratized than scholarship takes for granted. This chapter sheds light on specific empirical ways the socio-technical system of Airbnb is less a peer-to-peer force and more an infrastructure that governs social processes. Considering placemaking a social process, the examples I discuss undermine the bottom-up nature of how Airbnb makes place and asks: is it really a democratizing, decentralized force? The Airbnb Imaginary drives the *destinization* of places, promoting the cultural imperative to "travel like a local," and the Airbnb Utility makes the domestic and community content of places consumable to meet travelers' needs above all. Hosts create new material spaces of consumption in their homes and keyboxes extend the material reach of Airbnb onto city streets. Is this ultimately a shift in top-down placemaking from planners and destination management organizations, and to the powers at be at platforms like Airbnb (and their subsequent investment capital)? These examples argue that platforming, at the epistemological, material, and social level, is not a democratized process.

Chapter 8: Conclusion

A processual ontology begins from the problem of explaining social change, which it resolves itself by assuming that change – not stability – is the natural state of social life. Such a move makes explaining stability the central question of social theory. (Abbott, 2016, p. 24)

1. Dynamic Stabilization

Recently some loved ones and I decided to book a week in Sicily to rest and celebrate after I submit this thesis. I found it fitting to use Airbnb to look for houses that would accommodate our group of 8, and I searched for one that met a few criteria: walking distance to the beach, enough bedrooms and bathrooms for us to be comfortable, and an inviting outdoor space in which to cook and share meals. The Airbnb Utility drove my planning, and the booking process was familiar and expected after spending the past four years with Airbnb as my research object. I read reviews, asked the host a few friendly questions, and looked at “things to do” near the listing; I felt Airbnb literate throughout the process. But several hours after booking our “Large villa with Garden 800 meters from the beach,” I received this email:

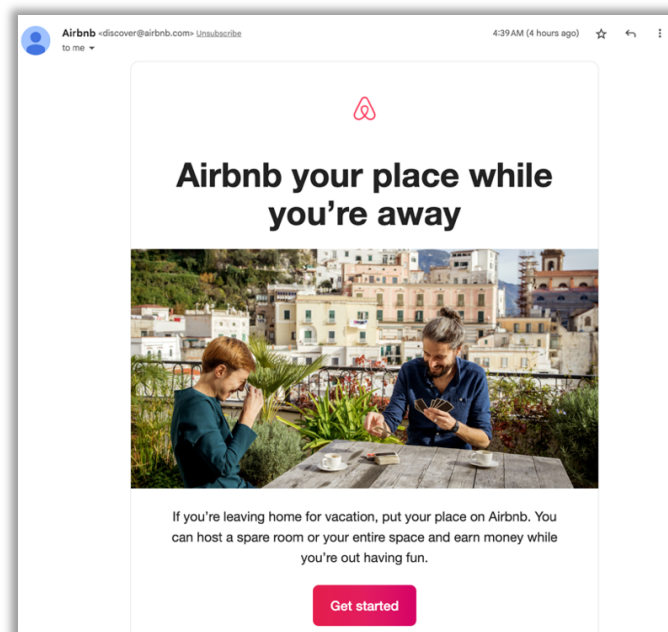


Figure 33: Email sent to McGowan in July 2023 after booking a trip on Airbnb

This was a new feature, at least in my experience; I have never received an email like this from Airbnb after booking a trip. It serves as a final example in this work of how the platform's constant evolution endures, reinforcing my imperative to look at what processes remain stable through change. On deeper analysis this "new" feature is simply powered by the same facets I have just explored in depth: user governance, platform processes, and placemaking. I argue these processes have endured throughout Airbnb's existence. The email I received indicates yet another mechanism for the platform to make users, attempting to convert me from a Guest to a Host, centering my upcoming trip as the catalyst. As I scrolled through it, I was prompted to take a series of actions to become a Host, such as pricing out my Home and connecting with nearby Superhosts to help me get started. The very invitation to "Airbnb it" is a governance mechanism to make me a doubly productive user for the platform. I was presented with unpaid relationship labor from Superhosts and paid from Airbnb's "community support agents" (Figure 35) to help make this happen. Using revenue data patterns from hosts "similar" to me¹⁰² in Edinburgh, I was shown I could make a potential £1,189 a week by letting out a two-bedroom flat (Figure 34). These figures comprise Edinburgh's placemarket, powered by the location and pricing data of the knowledge graph, digitally valuing place, commodifying homes for short term consumption. A day after my booking, I received another email inviting me to "Explore Sicily with Airbnb Experiences" and a curated selection of Experiences "picked for me" (Figure 36). These associations between the Home I booked and the recommended Experiences introduce a sense of digital place to me well before arriving.

¹⁰² I clicked "learn how we estimate your earnings" and got a pop-up saying "we review the past 12 months of booking data from similar Airbnb listings. We choose these listings based on the information you share about your place."

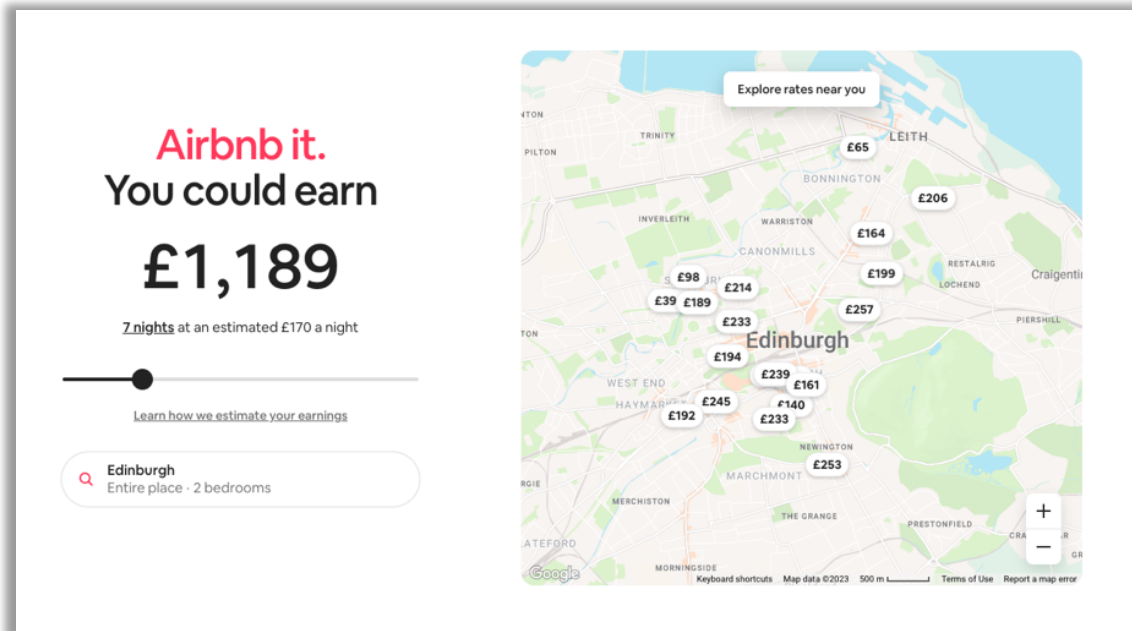


Figure 34: Airbnb's tool to estimate how much McGowan could make hosting, screenshot July 2023

Airbnb it easily with Airbnb Setup

One-to-one guidance from a Superhost

We'll match you with a Superhost in your area, who'll guide you from your first question to your first guest – by phone, video call or chat.

An experienced guest for your first booking

For your first booking, you can choose to welcome an experienced guest who has at least three stays and a good track record on Airbnb.

Specialised support from Airbnb

New Hosts get one-tap access to specially trained Community Support agents who can help with everything from account issues to billing support.

Figure 35: Airbnb's relationship labor guidance in becoming a host, screenshot by McGowan, July 2023

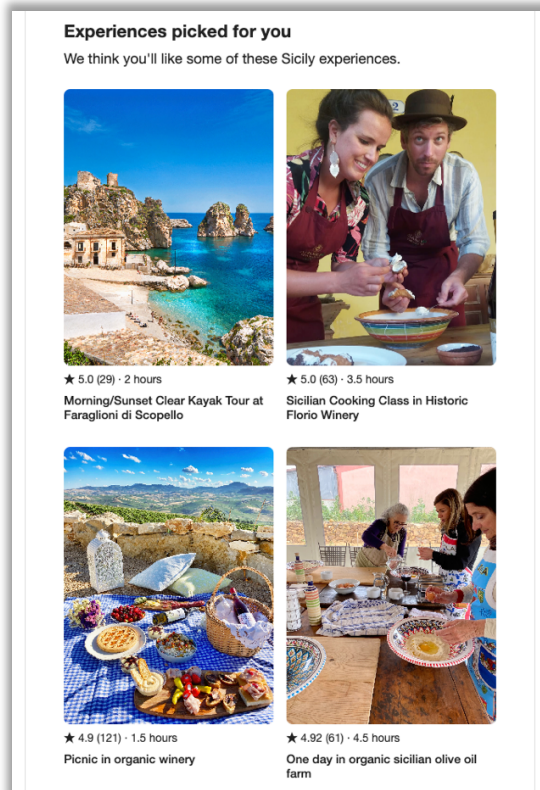


Figure 36: Email sent to McGowan with personalized recommendations for what to do in Sicily, July 2023

I include this final empirical anecdote to illustrate how, by exploring change, this work has enabled me to identify enduring patterns of stability in the platform. Returning to Chapter 1's engagement with a processual sociology, if we agree that social life is always in flux, then the project of social theory is to explain what remains stable and why it endures (Abbott, 2016). An important part of deepening our engagement with change and process is considering the specific qualities of the change, and conversely stability, we encounter. Harmut Rosa argues that modern society is sustained by *dynamic stabilization*, which "systematically requires growth, innovation and acceleration" to maintain itself in economic, social, and cultural contexts (2017, p. 439); this is a quality of Airbnb's change that I have found throughout my work. It is not just any change in the sense of transformation, but change characterized by pushing forward, made to happen in pursuit of progress, growth, optimization, and accumulation. Rosa likens his dynamic stabilization to riding a bicycle: "the faster the bike wheels, the more robust it is in its

course” (2017, p. 441). Society and its actors are therefore stabilized, or made stronger and more durable, by escalation; to stop accelerating is not to stand still but to topple over.

In acknowledging and exploring Airbnb’s multifaceted and ever-changing nature, this thesis turns toward and finds insight in the complexity and change that sustains it. Airbnb is not only an accommodation marketplace, but a neighborhood guide, a facilitator of Experiences, a technological, economic, and social infrastructure, a governance tool, a social orderer, a social network, a travel guide, a money maker, a marketplace, a knowledge producer, and a placemaker. My work explored Airbnb as a multifaceted, sociotechnical system which I consider to be part of underlying social, political, cultural, technological, and material infrastructures that produce, support, and power urban life. In naming its many components, I was then able to articulate *how* Airbnb governs users, digitizes place, and sparks controversies that lead to new approaches to urban planning and policy. Methodologically, I examined Airbnb’s fast-paced changes over time by experiencing the interface at temporal intervals, talking to users and producers at various stages of research, and considering changing social and cultural contexts, ultimately creating a multifaceted (Mason, 2011) biography of artefacts and practices (Hyysalo, Pollock and Williams, 2019). Practically, I have demonstrated how to articulate the patterns we see endure through these changes and interrogate them against larger social and economic forces like financial investment, cultural trends, and patterns of consumption by first describing *what* is going on, then asking *why*. Sociologically, I have explored the experiences, practices, and identities of hosts and producers who get to make Airbnb and therefore craft its corresponding epistemological processes; I’ve also considered the guests, residents, and non-users whose lives are changed because of the platform as well.

I argue that for Airbnb to exist, it must continually sustain certain processes, and is therefore stabilized by its dynamism. It will always strive to make users and govern them to use the platform in a productive way; this is the driving “why” behind what it does. It will utilize standards, categories, and associations to make workable the entities that feed and power its knowledge graph, and that will surface myriad configurations of cultural content. Inherent to Airbnb’s survival will be the way that content makes digital place appealing to create the desire to travel, recommending an ever-expanding offering of places, Homes, and Experiences. As long

as residential spaces are commodified into places of touristic consumption, certain material (re)configurations of homes and streets will inevitably follow to support those shifts. These elements of Airbnb's multifaceted infrastructure will continue to ensure the platform grows and therefore survives. These processes will endure, contributing to how Airbnb digitally and materially shapes cities. The recent emails I received from Airbnb serve as an almost cheeky reminder of these changes, encouraging a sustained processual engagement with the platform even as I conclude this work. Dynamic stabilization is the state of being for platforms, not only Airbnb but others as well; they are fueled by change in the form of growth, optimization, and innovation. I argue this is a vital quality to name and consider as we continue to explore how they impact social life.

2. Processual Findings and Contributions

I began this thesis with the broad research aim to explore how Airbnb shapes cities. Underlying this question is the assumption that it does indeed impact the urban environment, and my research has found this to be more a complex, entangled, mutually shaping process than a one-way influence. Therefore, the "processual questions" I opened with in the introduction oriented my work toward these lively encounters between people, place, and technology. I conclude here by summarizing my "processual findings" in two themes: methodological and substantial.

Methodologically, I asked how we as researchers can examine the fast-paced changes that define platforms like Airbnb, in a way that still yields enduring insights about them over time. My research design contributes a strategic way to structure a complex mix of empirical studies into a holistic understanding of Airbnb. I found that by structuring a biographies of artefacts and practices framework (BOAP) (Pollock and Williams, 2009) with facet methodology (Mason, 2011), I was able to operationalize BOAP's rigorous, multidimensional requirements within the confines of this research. Facet methodology gave me the creative license to seek out "flashes of insight" about Airbnb, rather than pursuing a wide, all-encompassing account. This offered various ongoing invitations to explore Airbnb from different methodological facets, affording my investigations both the detail and breadth required of a BOAP framework. I

contribute an example of how methodological facets can evolve in analysis into substantial facets, operationalizing and advancing the potential of this research design. I argue that the combination of facet methodology to a BOAP approach gives researchers a research design framework for investigating the dynamism and complexity of platforms, encouraging a focus on historical development, technological artifacts, and social practices. My approach advances the rigidity of the gemstone metaphor with a temporal, processual flow. It also articulates a challenge for how this and future work can hold and stabilize the dynamic ways platforms are always becoming, which I expand upon shortly.

Substantially, I asked what processes remain stable in this dynamism, and ultimately how they influence the urban environment. I have thus far organized these findings in thematic facets of user governance, platform processes, and placemaking. However, it is useful to conclude by considering them here in micro, meso, and macro levels to offer a framework to better understand platform systems as objects of study. Chapter 3 structured Airbnb's "sociotechnical ensemble" (Bijker, 1995) within these scales, building up an understanding of Airbnb's components and context before exploring them. I now extend that framework to my overall findings to consider various levels of what platforms *do* and where and how they do it. The micro is the site of interaction where user governance is enacted and experienced, where platform entities are classified to meet standards and associated with each other to shape their meaning, and where homes (the micro units of place) are made to be consumable. The meso level of analysis gives insight into the structure that is created by relationships (Crossley, 2021) between actors, entities, and the platform in its production, wider patterns of use, and within and between placemarkets and cities. Considering the macro social and temporal contexts of Airbnb allows an opportunity to "scrutinize the development processes and history" that shaped it (Pollock and Williams, 2009, p. 169). The micro, meso, and macro work together to contribute an empirically grounded *platform literacy* for future researchers, policy makers, and the public to better understand what platforms do in our social world. I find that dynamic processes at each level work to stabilize Airbnb in its constant change.

2.1 Micro Findings

The site of micro interactions between Airbnb's users, the interface, the tech platform, and its producers has offered rich empirical details to our understanding of user governance, platform processes, and placemaking. Findings at this level can help us understand the details of what Airbnb does: govern users, epistemologically shape and order data, and configure homes. Methodologically, the attention I have paid to this micro level of analysis contributes a thorough, multifaceted example of how to conduct substantive platform research with a variety of empirical approaches at the site of platform use. Understanding how Airbnb enacts each of these processes at this foundational level builds an understanding of the platform's impact at larger scales. Each chapter has explored specific, temporal manifestations of these processes (for example, momentary categories to choose from, or particular practices done by users at a certain time). However, I ultimately consider these to be momentary configurations of broader, enduring stabilizing processes, which I will now reiterate.

Airbnb governs users with both its non-human technology and its human relationship labor (Shestakofsky and Kelkar, 2020). Its technical platform governance shapes platform use in a variety of ways through the interface's design and affordances. For example, forms ensure users input content like descriptions and photographs of their Homes and Experiences that meet its standards. A part of this is requiring users to classify their Homes and Experiences into existing categories, shaping them to fit into what already exists in the platform. Algorithmic governance directly controls users in ways like censoring messages between Hosts and Guests and determining how much Hosts can change for their listing. Reviews significantly govern hosting practices, from overtly requiring hosts meet standards of cleanliness to covertly incentivizing hosts to perform additional emotional labor. Airbnb's human relationship labor is done both by paid employees and delegated to unpaid users. Paid Airbnb employees work to enable Host success, with initiatives like the Photography Project that shape the representation of individual homes and holding webinars to help Hosts navigate changing local short-term-let regulation. Airbnb also delegates relationship labor to unpaid users, both formally by asking them to help onboard and coach new Homes and Experience hosts to the platform, and

informally by social practices among friends helping each other Airbnb. These technical and social forms of micro user governance build strong networks of user loyalty that entrench productive practices both within the platform and offline as well; users become a part of the technical, social, and economic system of Airbnb as they produce it.

Micro interactions between users, producers, and the interface are where Airbnb's standards are upheld and classification and categorization processes are enacted. These shape the smallest building blocks of the platform, which are entities and associations, to be workable in its larger system. I find that interrogating the details of Airbnb's standards, made visible and enforced by its classification processes, helps us develop a deeper understanding of the nature of content we see and encounter in the platform. Each entity is guided into being by the producers who build the input form fields of the platform, making choices that ask for certain information and details over others. Then, Hosts represent their homes through the titles, descriptions, photographs, and classification tags that further shape the quality of each listing, informed by what has been historically successful in the platform, perpetuating and entrenching use patterns and classifications. Entities are then further categorized by teams of Airbnb producers working with algorithms to not only aid their categorization labor, but to feed future iterations of machine learning to optimize and extend its role in the system; the current manifestation of entities is therefore informed by the potential use of machine learning in the system. The associations producers build between entities further classify and categorize them, changing their meaning via relationships, and building a relational structure that perpetuates the world views of producers. Considering these micro platform processes helps us look beyond what we see in the user interface and understand it as a manifestation of politics, world views, and decisions to entice more bookings, shedding light on how and why Airbnb is in its current state. This helps us see patterns of dynamic processes that stabilize, or keep perpetuating, the platform's growth.

Hosting on Airbnb necessitates different configurations of home, materially and digitally shaping domestic place at a micro level around the world. Welcoming guests requires hosts to depersonalize their living spaces and perform physical adaptations like rearranging furniture, cleaning to a professional standard, and purchasing additional comfort supplies. These practices

are a source of anxiety for some Hosts, changing the meaning of home from one of a private space to one of visible consumption at the time of encountering their Airbnb guests. With its recommendation processes, places are also personally framed on the platform to intrigue specific users, showing what is desirable in destinations which shapes how place is encountered online before travel. This is the baseline level of how Airbnb makes place consumable, positioning it as authentic and ripe to be explored by tourists, which I call the Airbnb Imaginary. In contrast, the Airbnb Utility presents place as checkboxes to meet the needs of individual tourists as well, distilling Homes and neighborhoods to how they meet guests' travel requirements. I find that Airbnb uses both the Imaginary and the Utility to make place consumable, the tension between the two enduring as a new form of tourism as ordering (Franklin, 2004) via the micro interactions of personalized recommendations to each user.

2.2 Meso Findings

Meso findings give insight to the “why” behind the micro as well as their collective implications across the platform, groups within the company, and in placemarkets around the world. This adds depth to our understanding of Airbnb as a broader sociotechnical system, both in scale and timeframe. The rich examples of user governance I just reiterated have evolved throughout the history of Airbnb, and collectively form a stabilized “lineage” (Abbott, 2016) of how Airbnb embeds and sustains power over users to continue making and sustaining productive users. When considered collectively, the micro facets of how users are governed by the platform further our meso understanding of how Airbnb's power is embedded throughout its technical and social infrastructure, ultimately shaping the content of the platform. At this level Airbnb governs through user myths and relationships, creating a panopticon-like state of control by promoting general features of its technical systems, like search algorithms and smart pricing, but not offering details about how they work. For example, Hosts speculate across online forums and through word-of-mouth how to “beat” the search algorithm by being “good” users. The more visible listings are in search, the more bookings hosts can get, which garners more reviews, ultimately placing them in the stratification of hosts topped by the elite “Superhost” status. Superhosts can charge more for listings in exchange for upholding their

status by feeding this cycle of good reviews that come from prolific bookings and search visibility within the system. The micro building blocks of the platform comprise its meso level placemarkets, knowledge graph and platform architecture; platform processes then further define, circulate, and order them within and throughout this structure.

Standardization works in several ways at the meso level of Airbnb. Foundationally, Airbnb leadership hires employees who use and “love¹⁰³” the platform, setting a standard of “belonging” for those who build the technology. Collectively, these Producers then set further standards via collaboration and generating buy-in for how the platform should be designed, structured, and built, which ultimately does the work of *standardizing* the entities that are input into the platform by users. They then architect classification processes to create identifying containers in the form of categories which give them meaning and value within Airbnb’s knowledge graph. These categories can also be considered classifications and come from several places: existing content in the knowledge graph which reproduces legacy categories, new categories suggested by producers which imprints their world views on content and in time entrenches it within the system, and promotional categories created from the marketing team who want to sell a certain type of Home or Experience. Standards also order a stratification of hosts via rating scores, having the power to impact booking revenue and search visibility within the relational meso structure they create.

The micro associations between standardized and classified entities constitute Airbnb’s meso, thinking infrastructure of the knowledge graph. This enables consumable entities like Homes and Experiences to realize the value of being associated with informational ones like neighborhoods, restaurants, and landmarks. I argue that considering how standardization, classification, and associations work together is a useful mechanism to understand what platforms *do*, as well as their socially constructed nature via the politics that shape their products. My case example of Airbnb Plus shows one reason why this is important, finding that they structure a hierarchical relationship between Homes with “good” design and “bad,” governing how people who strive to be Plus Hosts design and present their homes around the

¹⁰³ “Love” is one of the brand components of Airbnb: people, places, love. It forms the upside down heart in the logo.

world. These processes work in concert to reinforce and make durable the values and world views of Airbnb's producers, as well as Airbnb's company imperatives, in its global knowledge system.

Airbnb makes place both digitally and materially at the meso level as well. I find Airbnb's user governance and platform processes work to digitize and therefore shape the Homes, Experiences, and other content associated with broader places, like Edinburgh, on the platform. This orders place to be consumable in a digital format by placemarket, extending Franklin's "tourism as ordering" (Franklin, 2004) into the platform placemaking context. This happens as Airbnb's digital configurations of previously residential spaces are turned into tourism places throughout cities and regions. Airbnb thus frames places like Edinburgh with a particular point of view, cultivating the desire to travel to them in the style of the platform with content that upholds its ethos of "belonging."

Airbnb materially shapes place at this level as well, which I find evidenced in the homes and streets of Edinburgh and in the case of Airbnb Plus. Airbnb Plus reaches further into the materiality of homes, suggesting and at times implementing interior design changes and aesthetics that meet its standards of what "good design" is by placemarket beyond Edinburgh, from Japan to San Francisco. This is a mechanism for Plus to impose its design ideals, shaping homes in many different cultural contexts via its centralized point of view. Keyboxes throughout the streets of Edinburgh turn the city's otherwise digitally hidden Airbnb listings into a visibly material phenomenon on city streets. They shape the character and aesthetic of certain areas of Edinburgh so much so that they have been the center of media attention and political controversy. Their placemaking qualities therefore extend beyond their own material presence and into top-down policy and urban planning discussions. They are a publicly observable signifier of the proliferation of Airbnbs in Edinburgh, and therefore a catalyst for advancing hosting regulation. Collectively, these digital and material placemaking findings shed light on how Airbnb drives the meso *destinization* of places, both digitally and materially, and creates corresponding controversies that come from local adjustment to this process.

2.3 Macro Findings

Macro findings help stabilize our understanding of the micro and meso insights generated with this research by giving broader historical contexts and extending them to how we think about platforms more generally. The sociotechnical history of Airbnb since its origin story in 2007 shows that the platform has and will continue to always need to make users, and ensure those users produce certain content and use practices to sustain its market dominance and business goals. This macro insight stabilizes our theorization of the dynamic examples of how Airbnb has made users over the years, giving a deeper understanding of tactics like the Photography Project, Craigslist “hacks,” and the email I received to Airbnb my flat. Together with producers, hosts and guests co-construct the entities, products, and culture of use; their relationship with each other and the platform then produces the social, cultural, and technical system of Airbnb. As Crossley offers in his relational sociology, the interactions between actors “form a structure which creates opportunities and constraints for them, affecting processes, such as the diffusion of culture, that play out between them” (2021). Considering the macro relationship between technology and users as producing platforms can help us understand the labor, intentions, and market forces that drive their development; it implores us to not take them for granted as closed black boxes of technology (Pollock and Williams, 2009) but dynamic, multifaceted socio-technical systems. These findings position Airbnb as an agent that continuously produces a user community to meet its imperative to scale, shaping use patterns, relations between users, and cultural values that perpetuate its success.

The platform’s micro and meso components operate within the macro sharing economy imaginary, connecting with other platforms and the semantic web. Considering the sharing economy as an imaginary helps us understand the role the broader cultural ethos plays in making users and supporting Airbnb’s platform dominance. Moving beyond debates about whether Airbnb should be considered “sharing” and instead considering the components that are required for all “sharing economy platforms” allows us to explore what Airbnb does in a broader way. It must build social infrastructures of trust between people (or, users), connect with other technical infrastructures of platforms (to facilitate exchanges), and commodify and

leverage material infrastructures of inventory (cities that support neighborhoods and homes worthy of visiting) to continue its dynamic stabilization. Its externally reaching parts strengthen its own platform to work as both a comprehensive system and connect with others like Google and Facebook. For example, APIs that power features like Social Connections, which enables users to log in with their Facebook accounts, fortify trust and validation of usership; these are key components of the sharing economy imaginary. It does this by benefitting from the social validation of Facebook's existing structure and leveraging it to build trust amongst Airbnb users as well. Airbnb's property search functionality is powered by Google Maps, which benefits not only from Google's wealth of geo-locative data but also the trust it has built with its own users. Understanding Airbnb's place in the macro platform infrastructure (van Dijck, Poell and de Waal, 2018) can help us better understand its internal mechanisms as well. Airbnb's social and technical systems work together to entrench Airbnb as a major, enduring platform; if (or when) this changes, other platforms will (and already have) adopt these processes of dynamic stabilization to rise to prominence.

My work helps us understand Airbnb as a distributed and dynamic system, changing constantly, and its scale and breadth require both users and non-users alike to negotiate these changes over time. By exploring it over the past four years I have been able to show what processes endure through technical, regulatory, local, and global changes. These are the processes of making and governing users, standardizing, categorizing, and association building between platform entities, and making digital and material place at micro, meso, and macro scales. Methodologically, I have presented something fragmented, whole, visible, and invisible in a way that finds insight in these tensions and changes rather than dismissing them. My approach does justice to the evolving nature of the platform, offering a processual intervention that invites and empowers future scholarship to continue in this spirit. At our current fast pace of technological change, we need mechanisms with which to bring concepts together across silos, and this work offers a creative way to bring together these kinds of approaches to get us a bit closer to the heart of what is going on with platforms. To close, I will now comment on the limitations of this work and opportunities it offers for future research, then conclude by extending this discussion beyond Airbnb.

3. Limitations and Future Work

As is the case in most complex social science research, my work is characterized by several challenges, limitations, and paths not taken. I hope articulating these will give insight to future research and open avenues for further investigation. Overall, my ambitious aims and the sheer size of my research object required choices to be made about which themes to follow and which to leave for forthcoming work. I therefore prioritized more general user experiences to contribute a stronger baseline understanding of Airbnb's sociotechnical system. This builds a foundation for more focused processual research to be done within themes I did not explore explicitly, such as identity, discrimination, and life chances. By their definition, the flashes of insight afforded by facet methodology are just that - flashes. I do not propose that this work is an all-encompassing example of how to study platforms, or that my findings tell us everything that Airbnb is, does, and will be. However, it offers an attempt at how researchers can acknowledge and explore the complexity of platforms over time. A contribution, as well as a limitation, of my methodology is the challenge it articulates for reflexive researchers to study platforms as always changing, and always becoming, being made and (re)made by users, producers, and their own technology. I hope my attention to the micro, meso, and macro levels of Airbnb and aims to theorize its dynamic stabilization can offer theoretical approaches and methodological tools to social scientists researching platforms.

Practically, I encountered several empirical challenges in this work, which led to corresponding limitations in my findings. The most significant of these challenges was recruiting participants, especially Producers. As discussed in Chapter 4, I was limited by Airbnb's strict non-disclosure agreement that forbids employees to speak about the platform without approval from the press team. This being the first sociological research to engage with Airbnb's employees, and the limited studies done with digital producers more generally (Vallas and Schor, 2020), speaks to the difficulties, and importance of, of working with these groups. This challenge led to my small sample of four consenting producers, which I ultimately consider key informants more than participants in an exhaustive study. Because every producer was a past employee of Airbnb, the accounts I was able to collect should be considered more oral histories than current lived experiences. Future work could attempt to cooperate with Airbnb's corporate

leadership to gain deeper access to the experiences and approaches of producers. However, this limitation is a finding in itself that speaks to the guarded nature of platform production work, thus making it all the more important as a focus for future research.

Similarly, it was a challenge to recruit guests as well. The platform obscures users in offline situations, making them elusive research subjects. Research focused on guests could more deeply explore their use of the platform, impressions of places before and after traveling, and how they feel governed as well. My guest and producer sample sizes are small, leading me to extrapolate findings from a small group of informants rather than a representative sample. However, I address the limitations of my small sample of guests and producers with additional methods that could help future researchers explore these groups further. I supplement limited guest access with my own autoethnographic experiences of being a guest on the platform over four years of study. I attempt to balance this in my producers interviews with the historical look at Airbnb's becoming, conference papers and blog posts and other source material, as well as my own experiences within the platform.

Although empirically detailed, a deep engagement with certain classical sociological themes within the platform's use and production was beyond the scope of this thesis. Future work could build on themes of user governance through the lenses of gender and race, for example exploring findings of racial discrimination (Edelman and Luca, 2014; Jaeger and Slegers, 2023; Törnberg and Chiappini, 2020) through the lens of stabilizing processes. This could add clarity to these experiences being isolated or fixable with certain tactics or requiring more systemic overhauls to create a more just user experience. A specific focus of this work could be to interrogate Airbnb products like Project Lighthouse which algorithmically "fights discrimination and builds inclusion" on the platform¹⁰⁴ with the sociotechnical processual framework I offer. Future work could also build on my preliminary findings that women in heterosexual hosting partnerships feel they shoulder the emotional burden of hosting more than their partners. Merely alluded to in limited Airbnb research (Spangler, 2020; Ert, Fleischer and Magen, 2016), gender remains an unexplored, yet important, theme to develop further.

¹⁰⁴ Airbnb uses Project Lighthouse to "uncover and address disparities in how people of color experience Airbnb." More information about Project Lighthouse's initiatives can be found here: https://www.airbnb.co.uk/against-discrimination?_set_bev_on_new_domain=1690546588_NmVmOGNIN2ZiMzM5

From a cultural perspective, other products and features of the platform could also be focused on. For example, a more critical look at the recommendations of Airbnb's design blog¹⁰⁵ as an influence of approaches to home design around the world.

As Mackenzie and Wajckman point out, technologies contribute to and shape the wider systems they are a part of (1999). With that in mind, future work could build on Airbnb's role in shaping the components of the broader semantic web. How does platform content shape web content, driving the knowledge production processes of search engines like Google and other information discoverability (and context) around the web? I identify several connections and pathways between Airbnb and other platforms for additional research to substantially follow these and interrogate what is strategically shared across other platforms. This would deepen our insight into further processes of how platforms build relational structures, strengthening and solidifying themselves through this dynamism. Understanding if and how Airbnb shapes the other platforms we use would broaden our theorizing of the impact platforms have as sociotechnical systems, further contextualize the role of each in our platform society (van Dijck, Poell and de Waal, 2018). As Rosa argues, "fear of virtual social death" drives expansion (2017, p. 444). Therefore, applying insights from platform processes to notions of platform lifespan and cases of platform death (Corry, 2022; McCammon and Lingel, 2022) has the opportunity to deepen our understanding of platforms' dynamic stabilization throughout the life courses of platforms.

Finally, I chose to focus on Airbnb as a specific case because of its size, "sharing" ethos, and market leadership, excluding other short term rental companies in my research. However, future studies could explore platforms like VRBO, HomeAway, and Bookings.com to see how widely universal my findings are in this short-term letting space. Which processes, like user governance, standardization, categorization, and association making, and placemaking, do these other platforms also employ, and how? Articulating the extent to which Airbnb's system is reproduced, evolved, or rejected elsewhere would give insight into the importance of understanding its specific internal workings as more generally applicable. Furthermore, Airbnb

¹⁰⁵ Airbnb's design blog is currently "taking a break," but has a plethora of educational content on their approach to design, accessible here: <https://airbnb.design/>

alternatives like Fairbnb¹⁰⁶ are growing, prioritizing local communities, and centering social sustainability in operational models (Petruzzi, Marques and Sheppard, 2020; Petruzzi, Sheppard and Marques, 2022). My argument that all platforms need to make users to continue existing and compel them to return to the platform would be interesting to explore in the context of more radical or democratic platforms, asking what platform processes endure in varying capitalistic contexts.

4. Beyond Airbnb

This thesis uses the case of Airbnb in Edinburgh to dive deeply, specifically, and empirically into a tangible research object. However, its insights are not limited to this case; it offers a particular approach to doing research and a way of thinking about platforms more generally. I ultimately contribute a new lens through which to explore, study, and understand platforms, which I hope can be operationalized in other contexts. As I developed my findings, I have found myself applying them to experiences I have with the other platforms I use in daily life, producing a more general *platform literacy*. Google provides a particularly rich set of examples for how this can be applied in daily platform use. As I notice tweaks to my Gmail inbox's affordances, such as reminders to follow up on emails that have gone unanswered by recipients, I now consider them in service of keeping me a happy, productive user. When I use Google search on the web, I see evidence of entities returned to me in what I now understand as its knowledge graph, bounded by semantic metadata and uniform research identifiers. Each time I log into my Gmail, I am governed to perform two-factor authentication across devices from my laptop to my phone and across applications, from Gmail to YouTube. I now think of this as making sure I adhere to the high standards of Google's safety protocols and serve as an agent of Google's security. When I use Google Maps to customize how I encounter and explore places, adding my own descriptions of destinations to our collective sense of digital place, I think about how this creates the desire to not only travel but to return to Google Maps as I do so. In the

¹⁰⁶ Fairbnb is a coop that invites users to #bethechange where they go, promoting "responsible" travel. This rhetoric can be found on their home page, accessible here: <https://fairbnb.coop/>

final year of writing this thesis, I noticed that Google Scholar began showing me predictive recommendations for scholarship about Airbnb and platforms below the empty search field before I ever began typing; Google no doubt played a role in shaping which scholarship I used throughout this writing. I now see these and other platform experiences as manifestations of the processes that sustain Google's growth and persistence, informed by my understanding of Airbnb's.

It is a critical time to confront how platforms change at a rapid pace. The past few months of 2023 alone have seen accelerated transformations in the major platforms billions of people use daily. Under new ownership, Twitter has deprioritized fact checking and content moderation, and uses its affordances to meet the further the cultural agenda of its new leadership (Roberts, 2022; Benton *et al.*, 2022). Meta has launched Threads to compete with Twitter, offering a text-based communication platform via existing Instagram accounts¹⁰⁷, inevitably creating new places for digital discourse and connection that have yet to be realized. Google is working to change the way they track online behavior as its web browser Chrome deprecates third party cookies starting in 2024¹⁰⁸, which has already begun to reshape the behemoth global digital advertising industry (MacKenzie, 2021). As each of these changes are introduced and subject to public attention, media coverage, and regulatory scrutiny, it is valuable to keep in mind the more stable processes driving them.

Each of these changes are recent, significant, and contribute to the constant evolution of the platformed, semantic web. They create a dizzying, at times overwhelming environment for academics across disciplines to make sense of from social, computer, information, business, tourism, and other social sciences. The changes just mentioned are visible and public, but other examples of platform growth and change, like back-end API governance (van der Vlist *et al.*, 2022), evolving thinking infrastructures (Bowker *et al.*, 2019), and the continued platformization of data via knowledge graphs and the semantic web (Iliadis *et al.*, 2020). When considered at

¹⁰⁷ Meta's announcement from July 5th, 2023 introducing Threads can be accessed here:

<https://about.instagram.com/blog/announcements/threads-instagram-text-feature>

¹⁰⁸ Google has a plethora of advice for users and developers on how to navigate their phasing out of third party cookies, which can be found in their publicly available developer documentation:

<https://developer.chrome.com/docs/privacy-sandbox/third-party-cookie-phase-out/#:~:text=As%20part%20of%20the%20Privacy,starting%20from%20midway%20through%202024.>

such a broad scale, it seems cliché, obvious, and expected to say we live in a fast-paced, ever changing digital world. However, a processual turn in how we study platforms, the web, and the digital infrastructures that facilitate them could be a way to intellectually keep pace with these changes. If we understand the sociotechnical nature of these platforms, including their drive to make users to meet their business goals, their technical components and context, how they govern users, and what platform processes they facilitate over time, we can stabilize an understanding of what they *do* in their evolution. I therefore invite a processual turn in platform studies to help steady our consideration of their sociotechnical nature and theorize their widespread impact on our social lives.

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Appendix

1.1 Airbnb Host Project Information Sheet:

Research project title: An Ontological Exploration of Airbnb in Edinburgh

Research investigator: Addie McGowan

Email: addie. , University of Edinburgh, Edinburgh College of Art and the School of Social and Political Science

About the Project

- This project will leverage a modest ontological exploration (concerned with the nature of being) of Airbnb with the aim of introducing a framework that may be helpful both now and in future study. It aims to broaden our understanding of Airbnb and make visible the relational way it has become a participant in Edinburgh.
- This study asks: What are your hosting practices, how do you feel about being an Airbnb host, and what can these tell us about the nature of sharing economy platforms overall?
- The project is currently in the pilot phase, and interviews that take place during this time will be leveraged to develop and refine my research protocol, to collect preliminary data that aid in my foundational understanding of Airbnb in Edinburgh, and to further develop my research questions.
- The interviews that comprise this project will seek to uncover initial hosting practices and attitudes, and to also test out and refine my methodology and approach to interviewing.
- Specifically, my research design goals for this project are to practice interviewing in a reflexive way that identifies opportunities to optimize my approach in future interviews and to understand how difficult it might be to identify hosts and solicit their time.
- My empirical goals are to begin to understand the way hosts exist in Edinburgh and to see if and how the start of a host typology emerges from my interviews.

Who is responsible for the data collected in this study?

- Addie McGowan will be solely responsible for the data collected.
- Qualitative interviews will be conducted over Zoom (or other approved, agreed upon digital video conferencing tool) between Addie and participants. It will be recorded and transcribed by Addie.
- The data collected in this study will not be shared with other organizations.

What is involved in the study?

In 2020 Addie will conduct virtual, semi-structured interviews with Airbnb hosts (found via snowball sampling) to collect data. Each participant will be required to sign a written consent form and asked for verbal consent as well at the time of the interview.

What are the risks involved in this study?

The participants will be adults who host Airbnb properties in Edinburgh, and therefore reasonably assumed to be at minimal risk of vulnerability. However, given the controversial nature of Airbnb in Edinburgh, I will take care to protect the anonymity of participants.

What are the benefits for taking part in this study?

This project aims to contribute to the wider understanding of Airbnb, and potentially the sharing economy, in Edinburgh. Participants have the opportunity to share their experiences, reality, and navigation of the complexities of this phenomenon through this study to contribute to the understanding of this phenomenon.

What are your rights as a participant?

Taking part in the study is voluntary. You may choose not to take part or subsequently cease participation at any time.

Will I receive any payment or monetary benefits?

You will receive no payment for your participation. The data will not be used by any member of the project team for commercial purposes. Therefore, you should not expect any royalties or payments from the research project in the future.

For more information

This research has been reviewed and approved by the Edinburgh University Research Ethics Board. If you have any further questions or concerns about this study, please contact:

Addie McGowan
Tel: 07716 477625
E-mail:

You can also contact Richard Coyne, project supervisor:
E-mail:

1.2 Airbnb Host Project Consent Form:

Research project title: An Ontological Exploration of Airbnb in Edinburgh

Research investigator: Addie McGowan

Research Participants name:

The interview will take approximately 1 hour. We don't anticipate that there are any risks associated with your participation, but you have the right to stop the interview or withdraw from the research at any time.

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken from UK institutions require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Would you therefore read the accompanying **information sheet** and then sign this form to certify that you approve the following:

- the interview will be recorded and a transcript will be produced
- you will be sent the transcript and given the opportunity to correct any factual errors
- the transcript of the interview will be analysed by Addie McGowan as research investigator
- access to the interview transcript will be limited to Addie McGowan and academic colleagues and researchers with whom he might collaborate as part of the research process
- any summary interview content, or direct quotations from the interview, that are made available through academic publication or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed
- the actual recording will be destroyed after transcription so your voice will not be identifiable
- any variation of the conditions above will only occur with your further explicit approval

Or a quotation agreement could be incorporated into the interview agreement

Quotation Agreement

I also understand that my words may be quoted directly. With regards to being quoted, please initial next to any of the statements that you agree with:

	I wish to review the notes, transcripts, or other data collected during the research pertaining to my participation.
--	--

	I agree to be quoted directly.
	I agree to be quoted directly if my name is not published and a made-up name (pseudonym) is used.
	I agree that the researchers may publish documents that contain quotations by me.

All or part of the content of your interview may be used;

- In academic papers, policy papers or news articles
- On our website and in other media that we may produce such as spoken presentations
- On other feedback events
- In an archive of the project as noted above

By signing this form I agree that;

1. I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the interview at any time;
2. The transcribed interview or extracts from it may be used as described above;
3. I have read the Information sheet;
4. I don't expect to receive any benefit or payment for my participation;
5. I can request a copy of the transcript of my interview and may make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality;
6. I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

Printed Name

Participants Signature

Date

Researchers Signature

Date

2.1 Airbnb Producer Project Information Sheet

Airbnb as a Maker of Place

Research investigator: Addie McGowan, PhD Candidate

Email:

Institution: University of Edinburgh: Edinburgh College of Art and the School of Social and Political Science

I am a PhD student at the University of Edinburgh, specializing in digital sociology and the architecture of platforms. My thesis aims to study the social contexts in which Airbnb is developed and evolves, connecting this human side of tech to the end user experience of how cities are represented on the platform.

About the Project

I want to understand the social contexts in which the Airbnb's technology is architected and the ways in which marketing and user analysis impact its structure.

Specifically, I found that its foundational structure of the knowledge graph is socially constructed by developers with a practice of classification, user testing, revenue testing, and optimization. I also found that marketing and analysis play a role in impacting decisions that are made in the platform's development as well. My aim is to talk with developers, engineers, marketers, and analysts at Airbnb to hear more about how their social and human experiences at the company may manifest in the end user representation of cities.

In particular, I want to ask Airbnb employees, past and present, questions about:

- their overall work experience at Airbnb,
- their role in creating, marketing, or analyzing the knowledge graph,
- how classification decisions were made about entities and concepts,
- and how their career has progressed since

I am aware that the employees I speak with will likely not have an exhaustive memory or knowledge of the technical decisions made; this is perfectly fine. I hope to speak to a sample of about 10-20 employees to get a broader understanding of their experiences and perspectives. Those who agree to speak with me will have my guarantee of anonymity unless they wish to be named and will sign an official consent form before we speak formally.

This project is a part of a wider thesis that aims to broaden our understanding of how home sharing platforms like Airbnb (co)produce urban social and cultural phenomena. My aim is to begin to understand the way platform architecture and development

decisions are made at Airbnb in an effort to theorize the platform's role in cultural development.

Who is responsible for the data collected in this study?

Addie McGowan will be solely responsible for the data collected. Qualitative interviews will be conducted over Microsoft Teams (or other approved, agreed upon digital video conferencing tool) between Addie and participants. It will be recorded and transcribed by Addie. The raw data collected in this study will not be shared with other organizations.

What is involved in the study?

In 2021-2022 Addie will conduct virtual, semi-structured interviews with Airbnb employees to build a dataset. Each participant will be required to sign a written consent form and asked for verbal consent as well at the time of the interview.

What are the risks involved in this study?

The participants will be adults who work for or have worked for Airbnb, and therefore reasonably assumed to be at minimal risk of vulnerability. However, given the potential sensitivity about being asked professional social contexts and politics, I will take great care to protect the anonymity of participants.

What are the benefits for taking part in this study?

This project aims to contribute to the wider understanding of how platforms like Airbnb, and potentially the broader sharing economy, contribute to cultural production. Participants have the opportunity to share their experiences, reality, and navigation of the complexities of this phenomenon through this study to contribute to this wider understanding.

What are your rights as a participant?

Taking part in the study is voluntary. You may choose not to take part or subsequently cease participation at any time.

Will I receive any payment or monetary benefits?

You will receive no payment for your participation. The data will not be used by any member of the project team for commercial purposes. Therefore, you should not expect any royalties or payments from the research project in the future.

For more information

This research has been reviewed and approved by the Edinburgh University Research Ethics Board. If you have any further questions or concerns about this study, please contact:

Addie McGowan
Tel: 07716 477625
E-mail:

You can also contact Richard Coyne, project supervisor: E-mail:

2.2 Airbnb Producer Project Consent Form

Research project title: *Airbnb as an Architect of Place*

Research investigator: Addie McGowan

Research Participants name: Bryan Dosono

The interview will take approximately 45 minutes to 1 hour. We don't anticipate that there are any risks associated with your participation, but you have the right to stop the interview or withdraw from the research at any time.

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken from UK institutions require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Would you therefore read the accompanying **information sheet** and then sign this form to certify that you approve the following:

- the audio interview will be recorded and a transcript will be produced
- you will be sent the transcript and given the opportunity to correct any factual errors
- the transcript of the interview will be analysed by Addie McGowan as research investigator
- access to the interview transcript will be limited to Addie McGowan and academic colleagues and researchers with whom she might collaborate as part of the research process
- any summary interview content, or direct quotations from the interview, that are made available through academic publication or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed
- if requested, the actual recording can be destroyed after transcription so your voice will not be identifiable
- any variation of the conditions above will only occur with your further explicit approval

Or a quotation agreement could be incorporated into the interview agreement

[Quotation Agreement](#)

I also understand that my words may be quoted directly. With regards to being quoted, please initial next to any of the statements that you agree with:

	I wish to review the notes, transcripts, or other data collected during the research pertaining to my participation.
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	I agree to be quoted directly.
	I agree to be quoted directly if my name is not published and a made-up name (pseudonym) is used.
	I agree that the researchers may publish documents that contain quotations by me.

All or part of the content of your interview will always be anonymized, meaning your names and personal details will not be shared. However, the information you provide about your experiences may be used in the following ways:

- In academic papers, policy papers or news articles
- On our website and in other media that we may produce such as spoken presentations
- On other feedback events
- In an archive of the project as noted above

By signing this form I agree that;

7. I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the interview at any time;
8. The transcribed interview or extracts from it may be used as described above;
9. I have read the Information sheet;
10. I don't expect to receive any benefit or payment for my participation;
11. I can request a copy of the transcript of my interview and may make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality;
12. I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

Printed Name

Participants Signature

Date

Researchers Signature

Date

[Contact Information](#)

This research has been reviewed and approved by the Edinburgh University Research Ethics Board. If you have any further questions or concerns about this study, please contact:

Addie McGowan

Tel: 07716 477625

E-mail:

What if I have concerns about this research?

If you are worried about this research, or if you are concerned about how it is being conducted, you can contact Richard Coyne, project supervisor, University of Edinburgh, via email at

Funding Bodies:

Joint Edinburgh and Glasgow PhD Studentship

Future Cities

3.1 Airbnb Guest Information Sheet

Research project title: How Guests Encounter, Use, and Experience Airbnb

Research investigator: Addie McGowan

Email: _____, University of Edinburgh, Edinburgh College of Art and the School of Social and Political Science

About the Project

- This project aims to listen to how a small sample of visitors to Edinburgh “live” the phenomenon of Airbnb in their travel experience, hoping to cast light on a few ways the platform frames Edinburgh to visitors.
- This study asks how visitors to Edinburgh:
 - *encounter, experience, use, and feel about Airbnb*
 - *evolve their perceptions of Edinburgh before, during, and after their travel experience*
- The interviews that comprise this project will seek to understand participants’ feelings, perceptions, and understandings of their use of Airbnb when visiting Edinburgh

Who is responsible for the data collected in this study?

- Addie McGowan will be solely responsible for the data collected.
- Qualitative interviews will be conducted at various tourist sites around Edinburgh, recorded on Addie McGowan’s iPhone, transcribed with otter.ai, and edited for accuracy by Addie McGowan.
- The data collected in this study will not be shared with other organizations.

What is involved in the study?

In 2022 Addie will conduct in person, semi-structured interviews with visitors to Edinburgh. Each participant will be required to sign a written consent form and asked for verbal consent as well at the time of the interview.

What are the risks involved in this study?

The participants will be adults who are travelling to Edinburgh, and therefore reasonably assumed to be at minimal risk of vulnerability. However, given the controversial nature of Airbnb in Edinburgh, the face-to-face interview format, and potentially sensitive information about location of accommodation, I will take care to protect the anonymity of participants.

What are the benefits for taking part in this study?

This project aims to contribute to the wider understanding of Airbnb, and potentially the sharing economy, in Edinburgh. Participants have the opportunity to share their experiences, reality, and navigation of the complexities of this phenomenon through this study to contribute to the understanding of this phenomenon.

What are your rights as a participant?

Taking part in the study is voluntary. You may choose not to take part or subsequently cease participation at any time.

Will I receive any payment or monetary benefits?

You will receive no payment for your participation. The data will not be used by any member of the project team for commercial purposes. Therefore, you should not expect any royalties or payments from the research project in the future.

For more information

This research has been reviewed and approved by the Edinburgh University Research Ethics Board. If you have any further questions or concerns about this study, please contact:

Addie McGowan
E-mail:

You can also contact Richard Coyne, project supervisor:
E-mail:

3.2. Airbnb Guest Participant Consent Form

Research project title: *How Guests Encounter, Use, and Experience Airbnb*

Research investigator: Addie McGowan

Research Participants name:

The interview will take approximately 15 minutes, extending up to an hour depending on your interest in the conversation. We don't anticipate that there are any risks associated with your participation, but you have the right to stop the interview or withdraw from the research at any time.

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken from UK institutions require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Would you therefore read the accompanying **information sheet** and then sign this form to certify that you approve the following:

- the interview will be recorded, and a transcript will be produced
- the transcript of the interview will be analysed by Addie McGowan as research investigator
- access to the interview transcript will be limited to Addie McGowan and academic colleagues and researchers with whom she might collaborate as part of the research process
- any summary interview content, or direct quotations from the interview, that are made available through academic publication or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed
- if requested, Addie will take certain steps for anonymity and accuracy: if desired, you will be sent the transcript and given the opportunity to correct any factual errors, and if requested, the actual recording can be destroyed after transcription so your voice will not be identifiable
- any variation of the conditions above will only occur with your further explicit approval

Quotation Agreement

I also understand that my words may be quoted directly. With regards to being quoted, please initial next to any of the statements that you agree with:

	I wish to review the notes, transcripts, or other data collected during the research pertaining to my participation.
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	I agree to be quoted directly.
	I agree to be quoted directly if my name is not published and a made-up name (pseudonym) is used.
	I agree that the researchers may publish documents that contain quotations by me.

All or part of the content of your interview will always be anonymized, meaning your names and personal details will not be shared. However, the information you provide about your experiences may be used in the following ways:

- In academic papers, policy papers or news articles
- On our website and in other media that we may produce such as spoken presentations
- On other feedback events
- In an archive of the project as noted above

By signing this form I agree that:

13. I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the interview at any time;
14. The transcribed interview or extracts from it may be used as described above;
15. I have read the Information sheet;
16. I don't expect to receive any benefit or payment for my participation;
17. I can request a copy of the transcript of my interview and may make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality;
18. I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

Printed Name

Participants Signature

Date

Researchers Signature

Date