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Sarah Mills, James Ash & Rachel Gordon

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Children and Young People's Experiences and Understandings of Gambling-Style Systems in Digital Games: Loot Boxes, Popular Culture, and Changing Childhoods

Sarah Mills,[*] James Ash,[†] and Rachel Gordon[†]

[*]School of Social Sciences and Humanities, Loughborough University, United Kingdom
[†]School of Arts and Cultures, Newcastle University, United Kingdom

Developing current geographical debates on children's digital geographies and popular culture, this article examines children and young people's experiences and understandings of gambling-style systems in digital games. Chance-based mechanisms such as loot boxes are a growing feature of the global gaming industry. This article examines the space between gaming and gambling and provides new perspectives to this emerging field, drawing on empirical research from video ethnography game-play sessions with children and young people. This article uniquely foregrounds these accounts, giving room for their voices in a debate dominated by adults. We argue gambling-style systems must be understood within children's everyday sociospatial experiences, including friendship, family, and curating collections. We provide a fuller picture of children and young people's situatedness and negotiations around digital gaming through interviews with parents and game designers. We demonstrate the conceptually striking ways they narrate generational change, mobilizing powerful social constructions of childhood. We advance understandings of children's popular culture and nostalgia in academic debates on digital childhoods, arguing that loot boxes are a new and important lens through which to view wider anxieties. Furthermore, we reveal potential risks associated with these systems and offer recommendations for a timely international policy debate. *Key Words: children and youth, digital geographies, gambling, gaming, popular culture.*

The lines between gaming and gambling are blurring, especially for children and young people. These blurred boundaries are most striking in the context of paid reward systems in digital games. The global video gaming market continues to grow year on year, from $120 billion in 2017 to $214 billion by 2021, and is expected to be worth $321 billion by 2026 (PwC 2022). This industry increasingly uses gambling-style systems as a revenue stream within PC, console, and mobile digital games. It is this space between gaming and gambling that raises provocative legal, ethical, and moral questions about children's health, well-being, and their imaginative and interactive digital worlds.

This article examines children's own experiences of paid reward systems, specifically chance-based mechanisms such as loot boxes. Loot boxes are digital items that contain another digital item of unknown value, usually collectable characters or objects that can help with game-play advancement. Loot boxes can be earned during the game but also purchased with real-world money via in-game currency. This often takes the form of coins or gems that have a monetary value within the game platform itself but can be purchased via microtransactions from bank accounts or gift vouchers. Around $15 billion was spent globally on loot boxes in 2020, with estimates for 2025 set to generate $20.5 billion (Dealessandri 2021). Crucially, loot boxes operate via chance-based mechanisms and use a system of rarity. It is that feature that has led to their controversial status and ongoing legislative debates at the intersection of gaming and gambling (Wardle 2021; Xiao et al. 2022). Scholars have recently examined these digital features in addiction, behavioral, and legal studies (i.e., King and Delfabbro 2018; Garea et al. 2021). Our research is the first geographical study of paid reward systems in digital games and

reveals that loot boxes expose and normalize children and young people to gambling-style systems. Indeed, these increasingly aggressive and targeted digital paid reward systems use techniques from regulated gambling and betting, prompting wider concerns around children's engagements with these systems and future habits in adulthood (NHS England 2020; House of Lords 2022). Our argument in this article is that a geographical approach attentive to the sociospatial dynamics of children, young people, and families' everyday lives is vital for our knowledge and understanding of paid reward systems and their impacts. Furthermore, this empirical example contributes to wider academic debates on children's digital geographies, popular culture, and childhood itself.

Drawing on a three-year study investigating how paid reward systems across a range of digital games are used and experienced by children and young people, this article makes three distinct contributions to current debates in human geography and wider interdisciplinary literature on paid reward systems.

First, by focusing on children's own accounts of engaging with these systems, our research contributes unique insights into understandings of loot boxes and other gambling-style systems in digital games. This approach of introducing children's voices provides a much-needed counterpoint to a debate dominated by adult narratives in the form of hypercharged media moral panics, or at the other end of the spectrum, defensive corporate statements from the digital games industry. Our project findings are that paid reward systems such as loot boxes can and do cause emotional and financial harm, informing a series of policy recommendations (Ash, Gordon, and Mills 2022). The understandings and experiences of children in this debate are often sidelined, however, and therefore our child-focused approach allows for a more nuanced understanding than has previously been acknowledged. The key contribution of this article is therefore to interrogate how these new paid reward systems take place within children's everyday lives and to foreground their voices and experiences. This is significant because whereas children's engagements with digital technologies are a vibrant and growing feature of geographical research, paid reward systems in digital games such as loot boxes have yet to be considered in this field. Indeed, video games more generally

have been relatively understudied in children's geographies despite their global popularity over several decades (for exceptions, see Woodyer 2008; Willett 2017). Instead, studies of children's engagements with "the digital" have been dominated by important research on mobile phones (i.e., S. Wilson 2016), Internet technology (i.e., Holloway and Valentine 2001a), and social media (i.e., Volpe 2021). These perhaps reflect more palatable forms of (digital) play and communication, often studying how these technologies have shaped young people's schooling, mobilities, and leisure. Recent scholarship on childhood and digital life provides avenues for theorizing these changing worlds (Kraftl 2020) and this article extends this work by examining gambling-style systems, and in so doing, meets an urgent need given this fast-changing landscape. Moving from gaming to gambling, there are very few studies by geographers about betting or gambling (although see M. Wilson 2003; Waitt, Cahill, and Gordon 2022), but especially on children's gambling contexts, compared to other age-based legal restrictions such as teenage alcohol consumption (i.e., Holdsworth, Laverty, and Robinson 2017). We argue that gambling-style systems must be understood within children's everyday experiences at home and on the move, also highlighting the role of friendships and collectibles as a crucial part of this blurring between gaming and gambling. In critically examining children and young people's understandings and experiences of loot boxes and other paid reward systems, this article further develops children's digital geographies in new and novel directions.

Second, this article reveals valuable new insights into debates on children's popular culture in human geography, cultural studies, and childhood studies (i.e., Mitchell and Reid-Walsh 2002; Horton 2010). It examines changing forms and understandings of collectibles, chance-based experiences, and indeed childhood itself. In providing a detailed analysis of how children understand loot boxes, we address Horton's (2014) call for more research on children's popular culture, and popular culture more broadly within geography (Horton 2019). We show how these objects of popular cultural consumption matter to children and young people in different ways, importantly extending this academic debate into forms of digital popular culture and those associated with gambling-style systems. Furthermore, we demonstrate how there are powerful nostalgic ideas and

social constructions of childhood mobilized by various actors within the loot box debate. For example, defendants of these systems will often point to the same (harmless) fun and excitement of purchasing a randomized collectable physical item, such as a packet of football stickers from a newsagent's shop, as simply "part of childhood." We show in this article, however, that there are important differences in the design and aggressiveness of paid reward systems in digital games. A key line of argumentation in this article is therefore that loot boxes can be seen as a lens through which to view wider debates and anxieties about childhood more broadly (Katz 2008, 2018). We demonstrate the conceptually striking ways that parents and game designers narrate generational change in this context. The article therefore develops new ideas about forms of children's popular culture and the place of nostalgia within academic debates on digital childhoods. These ideas are important as they can illuminate and inform wider understandings about contemporary childhood and youth.

Finally, this article contributes new knowledge to interdisciplinary research on loot boxes specifically and academic debates on paid reward systems in digital games. The field of gambling studies has examined loot boxes primarily through quantitative approaches importantly focused on problem gambling disorders and risk factors (i.e., Garea et al. 2021; Hunt 2023) or evaluating the legal regulation of loot boxes (i.e., Xiao et al. 2022). This article, though, demonstrates the value of qualitative research with children and young people and a geographical approach within this extant literature. It is well established within gambling and legal studies that there are design features involved in loot boxes and in-game currencies worthy of further research. For example, the utilization of progression systems in digital games encourages spending, either through purchasing in-game currency, loot boxes, or other random reward mechanisms. We argue these systems and interfaces are complex, interlinked, and have particular affects, and as we have hinted thus far, they borrow or modify techniques from machine gambling to drive repeat purchases. Elsewhere, we have argued that these dynamics and mechanisms can help further our understandings of time as an ordering of events (Ash, Gordon, and Mills 2023). In this article, we propose that a geographical approach can offer a unique insight into the spaces, practices, and performances of paid reward systems.

Specifically, that our understanding of loot boxes can be enriched by considering children and young people's everyday geographies at home, within family life, and associated parenting practices.

The remainder of this article starts by outlining academic debates on children's digital worlds and popular culture, revealing a need to address the fast-emerging context of loot boxes and paid reward systems. We then introduce the three-year research project underpinning this article's discussion and our methodology. The article is then structured into three analytical sections to provide a detailed discussion of our findings and argumentation, before offering our conclusions.

Children and Young People's Digital Geographies and Popular Culture

Research across the social sciences has charted transformations in children's digital play, with Grimes (2021) arguing that online playgrounds, connected games and virtual worlds "serve as the sites of complex negotiations of power between children, parents, developers, politicians, and other actors with a stake in determining what, how and where children's play unfolds." Researchers have examined how digital childhoods and digital parenting have transformed family life, including topics such as online safety, mobile technologies, and screen time (i.e., Livingstone and Helsper 2008; Bond 2014; Livingstone and Blum-Ross 2020; Mukherjee 2021). Video games have been a key focus in this interdisciplinary scholarship, especially given their marketization to children and young people (Kline, Dyer-Witheford, and de Peuter 2003). Yet the blurred boundaries between gaming and gambling introduced in the previous section remain relatively understudied.

Within disciplinary human geography, scholarship in children's and feminist geographies has highlighted the importance of space and place in understanding digital technologies in children, young people, and families' lives. Holloway and Valentine's work in the late 1990s and early 2000s on information and communication technologies (ICTs) and the emergence of "cyberkids" powerfully demonstrated how homes were reshaped with the advent of computer technology and Internet connectivity (Holloway and Valentine 2001a). They charted how technological competence was negotiated at home

and school (Holloway and Valentine 2001b) yet fraught with parental anxieties and where adults–child power relations and conflicts had to be navigated (Valentine and Holloway 2001). Their wider argument that children's real and virtual worlds are mutually constituted (Valentine and Holloway 2002) informs the debates in this article on gambling-style systems in digital games.

Twenty years later, with technological advancements and new digital platforms, the growth in digital geographies as a field has accelerated studies of online space and digital interfaces, including video games (e.g., Ash and Gallacher 2011; Ash, Kitchin, and Leszczynski 2018). Yet, there is relatively little dialogue between digital and children's geographies about video games, or a critical mass of work on children and young people's digital geographies beyond isolated studies on cyberbullying (Bork-Hüffer, Mahlknecht, and Kaufmann 2021) or online social contact (Thulin, Vilhelmson, and Schwanen 2020), for example. Willett's (2017) work is instructive in demonstrating the online gaming practices of preteens in U.S. homes, yet our specific focus is about children's lived experiences of a "digital cultural object" (Rose 2016)—loot boxes—and how these are understood, experienced and take place within children's lives. Indeed, the current academic debates on loot boxes, outlined shortly, tend to think aspatially about these systems and are not attentive to children's voices. Kraftl (2020) demonstrated how a focus on digital media is productive for theorizing childhood more broadly through his analysis of the visual and material circulations of childhood via social media and online marketplaces. Our article emerges from these debates and contributes new lines of enquiry within children's and digital geographies, bringing this literature into dialogue with work on popular culture.

Geographers have advanced debates on popular culture and its role in children's everyday lives. Horton (2010) used the example of a popular music single release as "illustrative of manifold cultural forms and practices which—being ostensibly banal, ephemeral, flippant, trivial, irrelevant to weightier scholarly concerns (and, furthermore, 'merely' childish, fun, populist, faddish and lowbrow)—continue to go largely unheralded by many geographers" (378). His case is compelling, highlighting work in cultural studies that demonstrates why children's popular culture matters (Mitchell and Reid-Walsh

2002). Horton (2014) later reiterated his call to children's geographers for further work in this area and extended his argument to social and cultural geography more broadly (Horton 2019). In this article, we focus on the *monetization* of popular culture through in-game currency and how globalized brands target children and young people through the very specific realm of digital objects in paid reward systems. In many ways, loot boxes are less visible than physical toys in shops or homes (i.e., Woodyer and Carter 2020). Yet, they are a pervasive feature and "matter" (Horton 2010) for millions of children and young people across the globe. Crucially, though, loot boxes are not just purchases that reflect popular culture trends, but they are desired and valued digital items enmeshed in gambling-style systems. We therefore attend to Horton's (2014) suggestion that "we might also consider children and young people's own practices of swapping, bartering, gambling, sharing or stealing popular cultural stuff (Buckingham and Sefton-Green 2003; Horton 2012)" (734). The items under consideration in this article, however, are distinctive given they are created within gambling-style systems from the outset, rather than becoming tradable due to popularity or scarcity such as physical items of popular culture previously researched in this field.

The debate surrounding loot boxes has generated global media attention charting shifts in national legislation related to gaming, gambling, or consumer protection. At the time of writing, there have been attempts to regulate loot boxes in countries including Belgium (Xiao 2023) and China (Xiao et al. 2021), with draft laws or bills under discussion in Spain, Brazil, and Australia, for example. The United States currently has no legal consensus on loot boxes, yet there have been class action lawsuits brought to a U.S. federal court (Kim 2021). Loot boxes are not considered gambling in the United Kingdom (restricted to those over eighteen only) because unlike betting or online gambling, the digital items won do not have any real-world value, compared to a withdrawal of currency or winning a physical item. The UK Government has reiterated that loot boxes (for now) will continue not to be regulated (DCMS 2022, 2023). There has, however, been a recent shift to uplift the legal age of playing the National Lottery from sixteen to eighteen. Children's geographers are familiar with many of these debates on the sociolegal construction of

childhood and adulthood in the United Kingdom and beyond, often noting several contradictions (Skelton 2010). Yet gambling has not been considered by geographers as much as other health-related, age-based restrictions such as alcohol use or smoking (Tymko and Collins 2015; Holdsworth, Laverty, and Robinson 2017). There is, however, growing pressure to recognize loot boxes due to their randomized risk versus reward structure. Indeed, the manufactured system of rarity for loot boxes means that the chance of securing a highly sought-after item is slim, yet there are often no displayed odds as such and the value and desirability of these items drives repeat purchases, as we later demonstrate. In January 2020, the UK's National Health Service (NHS) Mental Health Director expressed concern about loot boxes contributing to youth gambling addiction and called for a ban, stating that "no company should be setting up kids up for addiction by teaching them to gamble" (NHS England 2020). Several game companies have amended their practice in recent years from blind luck loot boxes toward some preview packs, yet the dominant model in the United Kingdom is still a lucky dip style digital experience. Gambling experts have described paid reward systems as "predatory" as they "disguise or withhold the true long-term cost of the activity until players are already financially and psychologically committed" (King and Delfabbro 2018, 1967; see also Griffiths and King 2015). Research has linked loot boxes to problem gambling (Zendle and Cairns 2019; Close and Lloyd 2021; Davies 2021; Wardle and Zendle 2021), yet others have cautioned against a full "gateway" hypothesis from problem gaming to problem gambling (Delfabbro and King 2020; for an evidence review, see Jayemanne et al. 2021). Overall, the extant literature on paid reward systems in digital games has not yet fully considered children and young people's own voices, or the spatial and temporal dimensions of game play within the home, which our study sought to address within this debate.

The blurred boundaries between gaming and gambling have been compounded with the global COVID-19 pandemic (BBC 2020) and the changing nature of children's play during periods of lockdown. Yet other research has cautioned against growing fears, stating "we need to stop loot boxes becoming another moral panic" (Etchells 2021) and advocating for a more historical perspective on video games and longitudinal research (see also Jayemanne et al. 2021). Indeed, Holloway and Valentine (2001b) alerted geographers to the risks of technological determinism and essentialist discourses surrounding children and technology, which tend to fall into positive and negative extremes. For us, the debate about loot boxes in media and policy arenas can be understood as centered on three distinct yet interrelated concerns: first, about children's health and well-being in the here and now; second, those children's futures as adults with potentially problematic (gambling) behaviors later in the life course; and finally, a wider series of anxieties about future childhoods and the next generation. These are subtly different concerns that connect to wider conceptual debates about children and childhoods (Katz 2008, 2018; Kraftl 2008) that underlie our later analysis and discussion.

Methodology

The research this article draws on is based on fieldwork with forty-two families across the North East of England. The study conducted more than 100 hours of video ethnography via game-play sessions with children and young people aged between five and seventeen years old, typically through multiple visits to their homes, but also online through videoconferencing software with the later onset of the COVID-19 pandemic. Participants were mostly White and from a range of socioeconomic class backgrounds. The children and young people were predominantly male, although some female youth and multisibling households participated in the study. Although great efforts were made to recruit more girls and young women in the video ethnography component and include greater ethnic diversity in our research with families, our primary sampling criteria related to age, location, and that all participants were already playing games that contained the digital features discussed thus far. The video ethnography sessions focused on observations and discussions about a range of popular digital games on smartphones, consoles, and PC, including (in alphabetical order) Apex Legends, Brawl Stars, Call of Duty, Coin Master, Cookie Run: Kingdom, CS:GO, FIFA, For Honor, Fortnite, Genshin Impact, Jurassic World Alive, Roblox, Rocket League, and WWE Supercard. Although our study was based in the United Kingdom, and our discussion is situated

within a Global North context on video game production, consumption, and indeed childhoods, we want to stress that this topic relates to a global games industry. This is largely shaped by Westernized popular culture and globalized childhoods (Buckingham 2007), yet mobile gaming and the growth of in-game currency is clearly part of some children and young people's lives in the Global South (Penix-Tadsen 2019). It is important to recognize the wider divergent international landscape in relation to loot box legislation, introduced earlier, yet the United Kingdom is a timely case study given an estimated 93 percent of children in the United Kingdom play video games (Children's Commissioner 2019) and there are politically charged debates surrounding the Gambling White Paper (DCMS 2023) at the time of writing.

In-person video ethnography was conducted using single and multi-camera video and can be seen as a contribution to research practice. Our in-person video-recorded sessions captured microspaces of play in the home and specific rooms, but also the actual moving game play footage and navigation of individual menus, items, and inventories that were so important to children in our later analysis. Our use of single and multiple video cameras and Elgato software illuminated the actual doing of paid reward systems and how they are enrolled into children and families' everyday lives. This was implemented by setting up one or two stand-alone video cameras on tripods for different angles of embodied game-play movements in the room itself, plus a separate recorded video stream via Elgato software capturing the direct game footage. This field work setup went beyond simply recorded video, and instead was an overall ethnographic approach of time spent with children, young people, and families, and of game-play sessions punctuated with questions and discussion. Online video ethnography (necessitated later in our study by the COVID-19 pandemic) had the same approach but involved participants using the camera on their device (e.g., laptop, smartphone, or tablet). Although this field work did not extend to researcher game play and embodied participation as ethnomethodology (Woodyer 2008), field notes and video content were crucial to our understanding and analysis of paid reward systems in digital games, including capturing emotions, tension, and the "affective relations" of gameplay (Woodyer 2008, 356). In this sense, our aim was to respond to

Horton's (2014) call for "detailed, in-depth, ethnographic, multi-site studies of popular cultural texts, objects and media in circulation in everyday lives" (735). This specific methodological component involved its own ethical considerations, such as not featuring screenshots or video footage of children and young people in their homes in publications or other outputs. This article therefore draws on direct interview quotes from those game-play sessions, but our overall analysis and arguments across this article are informed by the richness of the video ethnography (for an alternative presentation of material as a vignette focused on microscale embodied observations, see Ash, Gordon, and Mills 2023).

The multiple visits to families were also supplemented by two further sets of semistructured interviews conducted online. First, there were twenty interviews with individual parents from different households across the study (mostly mothers, but also some fathers) whose experiences ranged from very limited understanding of the games played by their children to a self-described "proper gaming family." Second, we conducted ten interviews with game designers from the United Kingdom, mainland Europe, and North America. These included designers and those involved in various stages of game production across a range of digital game companies, with a specific focus on individuals whose work related to monetization. Interview material was transcribed and coded in relation to thematic analysis, and our video ethnography sessions were recorded and analyzed both through individual coding and collaborative thematic analysis. All names are anonymized, and the research received full enhanced ethical approval from our respective universities.

In the remainder of this article, we introduce children's voices into this debate and provide a geographical analysis of their understandings and experiences of paid reward systems as well as demonstrating our wider argumentation on children's popular culture and the space between gaming and gambling.

Loot Boxes: Anticipation, Friendship, Gifting, and Gambling

Our research shows that children articulate strong likes and dislikes about loot boxes. They value the items they can win, including digital cars, football cards, or pets, and ascribe these items worth.

Importantly, they can enjoy the mechanism of opening or unlocking the box, egg, or treasure chest often just as much as the item itself. For example, one participant stated:

> I love opening the incubators … because they crack open and then they [go] "puff" … [It's] pretty cool. (Ten-year-old boy, talking about *Jurassic World Alive* during game-play session)

Animations and sounds are a vital part of the loot box experience as many games build delays into the reveal, including flashing lights, spinning wheels, or platforms that emerge from the ground. Anticipation was a major theme for our participants and some described how they made repeat purchases to try and experience the same positive feelings or "buzz" of a reveal, "packing cards," or winning rare items. As a twelve-year-old girl stated, "Whenever I wish, I get really excited because I might be getting a good character … sometimes you get really, really lucky" (talking about *Genshin Impact* during game-play session).

Conversely, many children and young people shared feelings of anger, disappointment, regret, and shame about their loot box purchases. Many participants disliked several things about these features, with one child describing the process as a "torment" (twelve-year-old boy, talking about *Rocket League* during game-play session). There are clear safeguarding concerns here that support our overall analysis about the emotional and financial harms of paid reward systems in digital games. As hinted earlier, our project found clear parallels between the visual and auditory design of chance-based mechanisms in some digital games and the design of regulated gambling machines and systems. For example, slots or spinning wheels featured in many games, with some portraying "near misses" that give the player the illusion they have just missed out on a higher valued item. We know that for some children and young people, this led them to spend more money on loot boxes than they had initially intended. These design features, coupled with other characteristics discussed later in this article, demonstrate the increased aggressiveness of paid reward systems and critical moments in user game play.

Children and young people in our study often disliked features of the systems and described them as unfair, usually with more awareness and cynicism as they got older. Indeed, some teenagers in this study talked about the importance of limiting one's spending online and changing priorities, often comparing the price of a loot box to buying a better phone or experiences such as cinema trips and meals with friends. Participants had some understanding of the role of risk, but many children and young people failed to fully understand the chance-based mechanisms underlying their favorite games. Most of our participants struggled to keep track of their spending or recall the monetary equivalent of their spent in-game currency. One young person strikingly described it as an addiction:

> As soon as I was getting better players, I wanted to get better and better and better and better, like, I couldn't stop. In my head I was like "stop," my guts were saying "stop," everything was saying "stop," but my brain wasn't. My brain was like "keep opening." It was hard. It was like when you're addicted to something. … People struggle to stop smoking. That's what it was like for me. It wasn't tasting nice but it looked nice, getting the good cards. It was hard to stop. (Twelve-year-old boy, talking about a mobile card game during game-play session)

This is an extreme example in our data set, yet it demonstrates the need for us to have worked closely with a national charity—the Young Gamers and Gamblers Education Trust (YGAM)—and their expertise to support families and children. This testimonial raises concerns for health and well-being, but in the context of this article's argumentation it demonstrates how these concerns can be understood in the three ways introduced earlier: first, the harm for this child in the here and now; second, an individualized concern for this specific child in the future, should these gambling habits continue into their adulthood; and finally, a wider sense of fear about the future next generation of gamers (and gamblers) with further market expansion. As such, this example reflects those subtly different but interconnected ideas around childhood and futurity (Katz 2008; Kraftl 2008) and our wider argumentation about the need for capturing children's voices in this debate. In the remainder of this section, we outline how these digital items are not produced or consumed in isolation, but rather are enrolled into friendship groups and wider social and familial relations.

Friendships are a key influence in shaping children's understandings and experiences of paid reward systems. Participants in our study all talked to their friends about loot boxes, often during their free time or at school. Many children enjoyed sharing the

experience of opening a loot box together with a friend in person or remotely via a video mobile phone call. Calling a friend on speakerphone while gaming, or after unboxing an item, was commonplace. Indeed, to understand how these paid reward systems take place within family homes, it is crucial to understand how multiple devices are used (consoles, tablets, and mobile phones) in both game play and the payment process. Furthermore, children and young people in this study enjoyed related content on the digital video streaming platform YouTube, often anticipating potential purchases through watching unboxing videos or making these videos themselves. These gambling-style systems do not stand alone but are deeply embedded within game play and online communities that include friends and social influencers.

Many participants in our study expressed that a strong motivation for playing digital games and their in-game purchases were to be better than their friends, often comparing performance through online leaderboards. The luck of loot box wins, alongside the competitiveness of their embodied competencies in gaming, combined as important parts of their everyday experiences of fun and friendship:

> The packs, they add tension to your life, at the weekend, went to my friends, took my Xbox. … My friend got this great one, he packed this icon, [then] he only did it again didn't he?!? I was fuming. (Fifteen-year-old boy, talking about FIFA during game-play session)

Our findings also reveal how some participants, often older teenagers, developed sophisticated understandings of these systems and their digital objects, often far surpassing the knowledge of parents and the researchers (see Holloway and Valentine 2001b on children's performances of technical competence). This was particularly striking in relation to online marketplaces and trading hubs. This feature of the digital games industry enables players to resell some items, often to generate income and manage duplicates. Some young people in our project took these transactions seriously and loot box purchases became a form of making profit rather than expenditure. This observation speaks to the wider academic debate about children as competent social actors (Holloway and Valentine 2001b). Indeed, in other contexts, these skills and behaviors would be encouraged as creative, savvy, and entrepreneurial. One child in a game-play session showed the researcher

an inventory of unopened crates that he was holding back, partly to delay the gratification of unboxing, but also because "I'll probably sell them." This same participant, however, expressed dismay that "my friend got scammed out of all his items" (thirteen-year-old boy, during game-play session). Indeed, a more common experience for our participants was failing to understand these complex systems or keep track of their spending. Yet this example shows that children are a diverse and heterogenous group, even within our sample, in relation to their knowledge and understandings of paid reward systems.

Participants in our study negotiated the value of loot boxes and their contents with friends and other peers. They often gifted items, again demonstrating the importance of friendship in understanding paid reward systems:

> If it was someone's birthday, you might get them something you thought they'd like or something, you know, a bit more expensive than usual. (Thirteen-year-old boy, during game-play session)

In another family context, when a child was flicking through screens of their favorite items and narrating their decision-making, it became clear there were strong emotional bonds behind some game-play purchases connected to siblings:

> One of the times it was 80s season … and it was ET wheels and my brother *really* wanted them so I went on his Xbox and then just went on Rocket League nonstop and then got 'em—I was like, "you need to play this last game, so when you play this last game, you'll get [access to] the wheels and then you can buy them." (Eleven-year-old, older brother, during game-play session)

There were strong moral ideas expressed by participants about fairness, luck, chance, rarity, worth, and value, which also extended to friendship groups. Children and young people had devised hierarchies of (un)acceptable behaviors in relation to loot boxes and purchasing power. For example, in a joint game-play session with his brother quoted earlier, a child talked dismissively about friends who had "bought their way up," referring to how in-game spending can facilitate advancement in game play through shortcutting levels or securing items that boost performance:

> I don't think it's actually fair … you're not working hard for it, just being lazy, and [saying] "I'm the best at Fortnite." (Nine-year-old, younger brother, during game-play session)

Many participants held the view that you should only progress in a game through skill, perseverance, and a significant investment of time. The preceding participant added, as his older brother excitedly switched between menus:

> I think it's not fair! I think there should be a limit how much V-Bucks you can get for Tiers[1] … it's wasting me Mam's money or Dad's. (Nine-year-old, younger brother, during game-play session)

Capturing children's voices in this debate hints at the wider management of paid reward systems within home and family life. Our study established that items and in-game currency are bought through (1) regular pocket money, sometimes linked to household chores, either via a direct payment from a parent's bank account or a child-friendly debit card; (2) gifted as one-off treats by parents, perhaps for a good school report or following a specific request for an item; and (3) a more substantial gift card of in-game currency as a birthday or Christmas present, often from family members. The dynamics of family purchasing decisions, parenting practices, and conflicts in home space are beyond the scope of this article. It is worth noting here, however, that children were aware of the pressures their requests for in-game currency could put on family finances, with many of those in this study spending hundreds of pounds on these items, in some cases thousands, often without realizing the true financial costs.

Overall, loot boxes are embedded in digital worlds designed for children and young people and they mattered to our participants. They generate moments of joy and tension where a digital box is anticipated, purchased, opened, and its digital contents revealed. This either becomes a prized possession, a lucrative duplicate to perhaps sell, or a disappointing purchase of regret and shame. The discussion thus far has therefore demonstrated a more complex picture than children as empty vessels who are vulnerable or hoodwinked. Indeed, many have sophisticated decision-making around their loot box purchases, and yet the overall picture is that they can and do cause emotional and financial harm with striking examples of addictive behaviors. These data support our argument that we cannot understand paid reward systems in isolation. We must consider children's own experiences in purchasing and consuming these digital items to enhance our understanding of these increasingly popular features of the digital games industry. Furthermore, we have demonstrated the role that friendships, siblings, and online peers play in how these paid reward systems take place.

Skins: Social Currency and Curating Collections

This section outlines the relationship between loot boxes and popular culture, focusing on how digital items express social currency and the importance of curating collections. We demonstrate how the digital objects themselves are desirable and have become part of popular culture, but that they also draw on wider popular cultural trends, merging and mixing with physical items and globalized brands in children's media and lives (Buckingham 2007). This is most striking in relation to skins: costumes or clothing that change a character or avatar's appearance within a game. These are popular loot box wins but can also be purchased directly from some in-game shops. This section outlines the distinctions children and parents made between physical and digital items, as well examining powerful ideas of collections and rarity that underlies our later analysis of gambling techniques.

Children in our study valued and desired the digital items secured from chance-based mechanisms and skin lotteries. Talking to children revealed why individual items become popular, usually a combination of aesthetic design, color, texture, and what those digital items enabled for customization or game play. A popular feature within our data set was the exclusive collaborations between digital game Fortnite and comic book publishers DC and Marvel. More broadly, game designers and producers in our interviews who worked on a range of digital games were acutely aware of likes, dislikes, and what had the potential power to become popular with children, thereby driving game play hours and revenue. For some children in this study, the entry point to this digital world was physical toys or mystery boxes linked to an online game series, such as Roblox. We therefore argue that children's wider popular culture is enfolded into these digital imaginative and interactive worlds through powerful collaborations, as well as these digital items themselves becoming part of popular culture and children's everyday lives.

In our study, there was often real joy when the children showed their favorite skins and emotes[2] during game-play sessions. For example, one thirteen-year-old girl went back and excitedly showed items she had purchased when she was eight years old. These items were explained in detail and seen as cool and special, described by other participants as cute, stylish, fresh, and funny. For example:

> My favorite ever … it's a hamster, called wrecking ball, and he's inside this like … robot? You can change into a ball, so you can go faster, and then there's … really dramatic music, and when it gets louder, he turns round, and he goes [pulls animated expression] and it's hilarious! (Eleven-year-old boy, talking about Overwatch during game-play session)

The proliferation and sheer volume of skins optionality is huge when one considers the number of digital games and platforms available. Parents in this study often narrated their children's likes as obsessions, sharing how these were routinely performed within home space in everyday contexts:

> He'll go, "Look at, look at my new skin, isn't it great?" And he'll show off his new skin that he's got, yeah … And he'll show off his new dance as well and go, "Look, look, look, look at this, look at this dance, this dance is so cool" … you know? (Interview with mother of fourteen-year-old boy A)

Some parents suggested these digital items had the power to replace more "traditional" material objects or forms of popular culture. As the preceding parent narrated the change in her child between the age of twelve and fourteen, and two sets of interviews, she said:

> At the moment, he's increasingly prioritizing his digital items over other items. The other thing he was prioritizing and that seems to have dropped off a bit, was trendy clothing … he likes his designer labels, he's into Rap and Grime and Drill. … And he really cared about his hair … but that's all gone at the moment. (Interview with mother of fourteen-year-old boy A)

More broadly, children and parents narrated passing trends in games and within wider popular culture. The fast-changing attribution of value and worth were therefore often hard for parents in our study to understand. For example, one described these digital items as "these little floaty bits of crap that are just, you know, there's nothing to that and it's exploitative" (interview with mother of thirteen-year-old boy). Other parents described that they "place much more value on something that you can physically hold" (interview with mother of fifteen-year-old boy), yet most parents recognized that skins were important to their children and often reflected on their own childhood desires for the latest popular trends:

> I was desperate for the next Barbie horse, Sindy or whatever, My Little Ponies, all the things that I loved. Maybe we've just gone digital with it? (Interview with mother of eleven-year-old boy A)

We return to a fuller discussion of parents narrating change through childhood memories later in this article. In this section, though, their views on how children understood and experienced digital items such as skins were revealing, chiming with Horton (2010), who noted the "frequent opacity" of children's cultural phenomenon to adults:

> When he was younger especially, it's like instant gratification so he's got all of these skins and everybody going "Oh, I've got this backpack and all that." It's very strange. At first I was saying, "What advantage does this give you?" and he went, "Well not, just makes me look cool" … but that's his thing. (Interview with father of ten-year-old boy)

For many of the children and young people in this study, there was embarrassment about using the default skins that come free with a game. Children recognized that new items secured via chance-based mechanisms communicated buying power, popularity, but also the length of time you have played a game and skill level. One parent described that this whole landscape is "playing 'keep up with the Jones's' a lot" (father of eleven-year-old boy B) and another described skins as "vanity wear." Mothers and fathers expressed fears about peer pressure and their children's happiness at school, justifying their own spending decisions and trade-offs within this context. Game designers were very aware of the social currency of skins, the importance of their novelty at school, and their ability to facilitate inclusions and exclusions within peer groups (Horton 2012), with one stating:

> Turning up in the generic basic costume is as big a sort of social sin as turning up in shitty old … trainers or your older brother's t-shirt at the playground. (Interview with Digital Game Producer A)

Skins of penguins or bananas might seem trivial but they are highly valued by children and young people, and prompt the desire to collect sets, albums, and whole collections of digital items (explored in the next section linked to gambling techniques). Indeed, a strong motivation for purchases within our data set was a sense of pride in collecting items and genuine joy in curating inventories and full "screens" of items and skins.

Parents in this study described their children's attachment to these digital cultural objects, with one sharing:

> He flicks that much through it. I don't understand it. But yes, he probably does have some sort of proudness in his collection and he's always looking. (Interview with mother of fourteen-year-old boy B)

We argue that although the loot box reveal itself might be a quick, temporary, and fleeting moment, the actual items can become precious and treasured possessions for children. Indeed, we found that in many cases, these digital curated collections lasted longer than physical toy collections (even within the same enduring franchise, such as Pokémon). Some parents described recent toy clearouts and removals of plastic "junk" from their children's bedrooms (see Horton and Kraftl 2012) with a surprising realization that digital collections were perhaps more permanent than material objects, particularly in one family context of residential moves following a parental divorce. For some children, these digital items were indeed more stable collections than the physical material "stuff" of childhood (Horton 2010, 2012) and skins could be owned and stored beyond the confines of their bedroom, avoiding its regular "decluttering." Parents often narrated how their children looked back at their past digital creations and collections:

> He likes to see the worlds that he was making when he was young. So it's a nostalgia thing. He likes to see what he was up to … when he was six, seven, eight, nine. (Interview with mother of fourteen-year-old boy A)

Nevertheless, there were some isolated examples of digital storage becoming full or forgotten passwords. These fears were sometimes managed via transfers to parental devices or securing more memory on new phones. Yet for one digital game that routinely issues new versions each year—FIFA—whole collections of digital cards become redundant,

with some children enjoying this chance to "start over." These data therefore reveal how children's popular culture and collectibles are tied up with memory and nostalgia, looking back at one's childhood (digital) "stuff" and protecting potential loss, yet also a marketized desire to keep building anew.

Furthermore, rarity is a key feature of the collecting practices outlined in this section. This is exactly what has been monetized by the digital games industry, with another parent revealing the emotional impacts on home life:

> They're almost like collector pieces, they're almost like trophies for him … he says, "I've got to get this skin, it's a one-off, it's never going to be there again, they've said on the game it's a limited edition and it's only limited edition at this price … and then it will go up," and he gets really distraught because the price is going to go up … and if he doesn't get enough [in-game currency] or whatever, to get it at that time, then he is visibly shaken and distraught. Then he becomes withdrawn and he's quiet. (Interview with father of twelve-year-old boy and girl in study)

Overall, this section has examined why children enjoy creating collections of digital items such as skins and emotes. They enjoy curating collections and securing rare items, which can help to build social currency. This digital loot is in some ways transient, with the potential to be lost or made redundant, but in other ways it is more permanent and precious memory boxes of childhood "stuff." Children were attached to these items and enjoyed revisiting them, often for the consistency they provided amongst the churn of bedroom clearouts. Furthermore, our research found that it was the release of new and rare items, and changing popular trends, that drove young people to spend more on chance-based mechanisms. The next section examines the relationship between in-game items and gambling-style techniques in more detail, and how this speaks to wider debates on childhood and generational change.

Gambling Techniques, Newsagent Nostalgia, and Narrating Generational Change

This article has thus far demonstrated how digital items secured via chance-based mechanisms are popular and desirable. This section outlines how this

translates into purchasing decisions, linked to monetization and gambling-style techniques. Essentially, game designers are "tapping into" the collectible impulse outlined in the previous section:

> The stress comes at the last week, the clearance like, "Come on, finish your album. You're almost there. You're 90 percent there. Oh my god. One more cent, two more cents." Then you monetize the shit out of it. Really, it's a heyday when you close an album. (Interview with Digital Game Designer A)

At this point in our discussion, the "newsagent's shop" analogy is a powerful exemplar, both to understand the shift from physical to digital collectibles but also as this image is often mobilized in a nostalgic defense of loot boxes. For many readers, particularly those in the United Kingdom, the random nature of the rewards and rarity of collectibles described thus far might seem very familiar to the unknown contents of a packet of football stickers purchased with pocket money from a newsagent's shop. Although some children in this study still collected physical cards and stickers, they were used as a nostalgic reference point by many parents to narrate change, or by those within the digital games industry to explain that chance-based mechanisms are "just a part of childhood." A digital game producer, also a parent, stated:

> You have the same conversation about blind bag toys, real-life ones. You're like, "Do you want to spend this much and know what you're getting, or spend this much and not?", and sometimes the "not" is more exciting… . There is that enthusiasm and excitement … but it's no different from Panini stickers and things like that. (Interview with Digital Game Producer B)

Our argument is that it is different, yet it is conceptually striking how this feature of randomized collectibles has been socially constructed as part of a "normal" childhood. Although there are continuities in the childhood experience and fun of collectibles, we argue that there has also been dramatic change. Specifically, monetization and techniques from machine gambling are used to meet revenue targets for some games production companies. Indeed, something different is happening from the newsagent's shop, even though "wanting to finish a collection" is a similar childhood experience. For example, a newsagent does not give you a free daily spin opportunity to win an item. Items in a physical shop do not flash with a countdown timer of just twenty-four hours.

Crucially, after opening a physical packet of football stickers, a shopkeeper does not show you the items you could have won to encourage a repeat purchase. In addition, we have found that some games companies use complex formulas and tools to "balance" the economy of a game. They analyze data to change odds and determine when to inflate or deflate specific in-game currencies, with interviewees describing manufacturing or engineering the "feel of luck." As one designer explained:

> You know, fate [is] doing its work a little bit, but I'm helping it along the way, I allow you to maybe, sometimes, feel lucky. (Interview with Digital Game Designer B)

Furthermore, design techniques can be used to keep players in a particular "zone" of winning or losing to entice more spending. Put bluntly:

> We as designers rigged the moment where you would lose a game. We rigged it on purpose so the feeling that you have is like "I almost won." (Interview with Digital Game Designer C)

We recognize that there were moral dilemmas and struggles for game designers we interviewed, many of whom were also parents. Nevertheless, this discussion highlights the monetization of popular culture in the space between gaming and gambling. This provides another layer of understanding to geographical debates on children's popular culture and our article's focus on the digital geographies of childhood. Beyond the newsagent's shop analogy, however, there was a wider sense of narrating change in our interview material with parents that is relevant to our wider discussion.

Our argument in the remainder of this section is how loot boxes can be a lens through which to view wider debates and anxieties about the state of (contemporary) childhood. There was a strong sense of generational change articulated by parents in this study who often lamented the loss of a perceived more innocent time and drew on popular social constructions of more authentic "natural" childhoods. Strikingly, there was a sense that some parents believed digital games and loot boxes had led to the demise of childhood itself as they narrated their children growing up and changes in outdoor play, in one case detailing how in-game currency had changed the nature of Christmas stockings and was even to "blame" for revealing the truth about Santa Claus. At times, parents' reflections on their

children's childhoods led (unprompted) to reflections on their own childhoods. They referenced popular cultural trends from the past, comparing digital play to physical items such as bikes, books, and other treats:

> We talk about it, me and his Dad, there's been such a shift like … we were happy with £2 and got sweets. Sweets—he [our child] just has those, and then a treat is money for his game. (Interview with mother of eight-year-old boy)

Interestingly though, many parents also referenced digital or video games from their own childhoods to narrate generational change:

> Back in the old days, with Nintendo, you would buy a cartridge and that would be it. (Interview with a father in this study)

Although this finding suggests a slight generational amnesia about the fears surrounding video games in the 1990s, it speaks to concerns about changing forms of digital-based play in the context of gambling-style systems. Parents described the "astounding" amount of money spent on in-game currency and referenced moves away from CDs or floppy disks, again highlighting a distinction between physical and digital items that has run throughout this article:

> Now you can pay sixty quid, seventy quid and it's just all digital and you think, "Well what have I actually bought?", but that's the way of the world. (Interview with father of twelve-year-old boy and girl in study)

Our analysis is that these accounts are similar in tone and style to the wider cyclical fears and anxieties about children's play, modernity, and generational change (Holloway and Valentine 2001b; Karsten 2005; Novotný et al. 2021). Overall, this debate on loot boxes shows the continuities and discontinuities in how childhoods are understood over time. These distinctions were also noted by children in this study, for example describing some of their parents as "past it." Parents themselves recognized and struggled with these transitions, often describing themselves as "a bit behind" (mother of fourteen-year-old-boy B) or that they felt "a bit old and out of kilter with the world" (mother of eleven-year-old boy A). They talked of seeing a "generation gap"

and often expressed views about loot boxes in relation to waste, transience, and generational change (Katz 2018):

> I do believe when they hear me saying, "I feel as though it's a waste of money," or "You can't touch it," and things, I think they just look at me as if I'm talking a different language. (Interview with mother of two sons aged fourteen and seventeen years)

Strikingly, in the context of this article's argumentation, is how wider forms of popular culture such as music were often used as a point of reference:

> If he wants to spend his money on literally nothing, but it makes him happy. I'm very well aware that I sound like one of those parents in the [19]50s saying, "This crazy rock 'n' roll music!" (Interview with mother of thirteen-year-old boy)

This parent continued by reflecting on their own childhood (collections), demonstrating our argument about how the shifting material cultures of childhood are used to narrate change:

> When I was his age, I used to spend a fortune on music and stuff like that. So it's like that's his equivalent, I'm guessing. I had loads of CDs and cassettes and then that's all gone, means nothing. I suppose everything's transient really. (Interview with mother of thirteen-year-old boy)

Overall, this section has outlined gambling-style techniques underlying some digital games designed for children and young people. We have shared how this debate often evokes nostalgic references to physical cards or stickers, drawing on social constructions of "normal" childhoods that include collectible randomized rewards. Yet, we have shown the differences to that childhood experience in relation to aggressive monetization and digital microtransactions. We have highlighted how parents know their children enjoy loot boxes, but they struggle with purchasing decisions and are concerned about potential harm. Furthermore, parents struggle with what these digital items represent more broadly. They lament their own passing childhoods and wrestle with their parenting practices, trying to make sense of shifting forms of popular culture in the context of generational change. We turn now to our wider conclusions that outline this article's contributions, present some more expansive and agenda-setting prompts, and share our main policy recommendations.

Conclusions

Geographical research on children's popular culture and digital lives has previously captured the changing worlds of children, young people, and families with the advent of new technologies and emerging trends. The rapid growth and nature of gambling-style systems in digital games, however, provokes a new urgency to understand children and young people's engagements with digital play and its impacts. The ongoing monetization within digital games and increased use of gambling-style techniques associated with in-game currency are striking. Indeed, we began this article by stating that the lines between gaming and gambling were blurring, but as one of our game designer interviewees stated, "the lines are blurring because there are no lines."

Our findings reveal new knowledge about children and young people's experiences of gambling-style systems in digital games through foregrounding their voices and situating those within wider understandings of parents and game designers. Our study concludes that children value and desire the digital items secured via loot box purchases, yet these chance-based mechanisms cause financial and emotional harms, exposing and normalizing children and young people to gambling-style techniques. We contend that paid reward systems in digital games need to be regulated with a new independent regulator for the gaming industry. Specifically, we recommend that all loot boxes that can be bought with real-world money should be age-restricted products for people over the age of eighteen only (for full details, see Ash, Gordon, and Mills 2022). More broadly, this article has important implications for scholarly work on children's digital geographies, popular culture, childhood, and wider research on gaming and gambling.

First, the article demonstrates the importance of capturing children and young people's own voices for exploring new and emerging digital geographies, changing forms of digital-based play, and the consequences of those changes for their everyday lives. The study reveals the importance of understanding how children and young people navigate the space between gaming and gambling within wider social relations of family and friendships. The article demonstrates how loot boxes, skins, and in-game currency take place in children's and young people's everyday lives, which is key to capturing lived experiences of these systems. In that vein, there is clear scope to further examine children's digital geographies related to gaming and gambling in a range of diverse geographical contexts and other digital experiences at home and in family spaces. Indeed, our study pushes children's digital geographies into some new and novel directions, given the relative lack of attention on gaming and gambling in this field. This article's discussion therefore raises provocative questions for us, and hopefully others, about the wider geographies of digital childhoods, such as how we engage in research around less palatable and potentially harmful forms of popular culture, in this case of gambling-style systems in digital games. There are ethical and moral dimensions to work on children's (digital) childhoods, with productive, much-needed conversations to be had at the intersection between digital and children's geographies.

Second, our discussion has wider relevance for the geographies of popular culture, advancing and developing existing debates in the literature. Our findings demonstrate the desirability of these digital items, their social currency, and how they have become a valued part of children's collectible culture, often drawing on other media franchises and popular trends, yet also making and shaping new cultural forms. More powerfully, though, beyond the specific loot box debate, the article shows how generational change is narrated (here, by parents and designers) with reference to shifting popular culture, pushing forward debates on anxieties and fears about childhood and future adulthoods. Our article spotlights the role of nostalgia in debates on changing (digital) childhoods, offering a fruitful line of conceptual enquiry for those studying popular culture in geography, childhood studies, and cultural studies.

Finally, the geographical and methodological approach of this article provides new insights to interdisciplinary debates on loot boxes, currently dominated by quantitative and legal studies. Our approach attentive to the sociospatial lives of children, young people, and families could be extended to other related fast-growing markets, with the latest monetization features of digital games going beyond loot boxes to include blockchain, pay-to-earn, and NFTs.[3] Indeed, in-game purchases in digital games are not a fad or trend, and clearly they affect adult gamers as well as children and young people. More broadly, future research could examine the wider use of chance-based mechanisms and paid reward systems in other digital products, including a growing number

of mobile apps that incentivize participation in sustainable behaviors. Geographers are well placed to examine the spatial and temporal dynamics of gambling-style systems used in these new ways, including those that reward users with in-app lottery ticket entries and prize-based incentives for taking public transport or picking litter, for example. Overall, given the significance of gambling as a global public health issue, our hope is that paid reward systems, including loot boxes, are given the urgent attention needed to improve the lives of children, young people, and families now and in the future.

Data Availability Statement

The interview data that support the findings of this study are available via the UK Data Service at DOI:10.5255/UKDA-SN-856220, https://beta.ukdata-service. ac.uk/datacatalogue/studies/study?id=856220, reference number SN: 856220. Due to the nature of the research and ethical restrictions, supporting data from video ethnography are not available.

Notes

1. Used within the game Fortnite, tiers represent your skill level but can also be purchased with the in-game currency V-Bucks.
2. Emotes are expressions, dances, or actions a character can perform in a game.
3. An NFT is a nonfungible token, a unique digital asset and digital collector's item.

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SARAH MILLS is a Professor of Human Geography in the School of Social Sciences and Humanities, Loughborough University, Leicestershire LE11 3TU, UK. E-mail: S.Mills@lboro.ac.uk. Her research focuses on the geographies of children, youth, and families.

JAMES ASH is a Reader in Technology, Space and Society in the School of Arts and Cultures, Newcastle University, Newcastle Upon Tyne NE1 7RU, UK. E-mail: James.Ash@newcastle.ac.uk. His research investigates the cultures, economies, and politics of digital interfaces and digital geographies more broadly.

RACHEL GORDON is a Research Associate in the School of Arts and Cultures, Newcastle University, Newcastle Upon Tyne NE1 7RU, UK. E-mail: Rachel.Gordon@newcastle.ac.uk.   Her research includes ethnographic and ethnomethodo-logical studies of infrastructure, technology use, and practice in complex settings.