

'Delete the family': platform families and the colonisation of the smart home

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ABSTRACT

On its surface, the 'smart home' marks an effort to augment everyday domestic life to the benefit of its members, through the pervasive digital technologies of the Internet of Things (IoT). Through an analysis of the family-imitating group accounts offered by both Google and Amazon, as part of their smart home ecosystems, this paper identifies a project of constructing a new site for platform capitalism, in the form of the platform family, and its effort to pacify domestic life. The platform family is an engineered simulacra of domesticity, formatted to run on the smart home operating system, serving simultaneously as a vehicle for domestic consumption, and a vehicle for consuming domestic life. Drawing on sociology of the family, we contextualise this by showing how the home has long been a site of struggles between internal and external control. Addressing the reconfiguration of membership possibilities within the platform family, we show how it seeks to intervene in domestic life, by reshaping family's material possibilities and normativities. Looking past the technologies to the social forms they imbue reveals a project that is ultimately motivated by a desire to colonise the home as a site for platform capitalism. We conclude by highlighting the potential for resistance in this space and ask whether the homogenisation of domestic life attempted by these interventions is not fundamentally contradictory, in denying the very qualities that give family its value.

KEYWORDS: Smart home, Internet of things, family, domestication, platform capitalism, data colonisation

1. Introduction

The home has long been recognised as a protected space for family (Mallett, 2004). Nevertheless, as a site of care, socialisation, and consumption, it has drawn the attentions of outside institutions, attentions often met with resistance. The legacy of these border skirmishes can be seen today in the delicate relationship between the liberal state and the home. The EU's 2016 General Data Protection Regulation (GDPR), a most contemporary legislative regime, which sets out the legal relationships between

institutions and individuals around digital data, retains a 'household exemption' clause which leaves domestic data practices beyond its reach.

One facet of the digital economy which prompted law makers to introduce the GDPR (Crabtree et al., 2016) is the emerging Internet of Things (IoT), a label applied to efforts to embed networked computing within everyday objects. The IoT is already realised in many areas of life, from joggers' Fitbits to globe-spanning logistics which track goods from factory to front door. Industry projections envisage connected objects growing from the low billions today, to a trillion within the decade. This paper is concerned with the IoT within family life, and within the homes they inhabit – the 'smart home'. Where the state has only carefully tread, the tech giants of Silicon Valley are rushing in. Amazon and Google, the vanguard of the smart home industry, now offer group accounts for families to manage their smart home. It is these accounts, which prescribe a domestic group and a series of roles within it, and which garb themselves in the language of both family and home, which we focus upon. In previous work, we explored how such technologies implicate, within domestic contexts, interpersonal relations (Goulden et al., 2018). Here we go a step further, to consider how the systems these technologies are a part of seek to capture, and in doing so remake, domestic life.

The IoT has very different origins to the Internet it builds upon. The Internet was a historical accident, open and decentralised by design in order to best serve its scientific and military goals, an architecture that came to support the emergence of Web 2.0 and its peer-to-peer exchanges (Beer & Burrows, 2007). By contrast, the smart home is a centralised, commercial endeavour, of proprietary 'walled garden' technologies, and captive information flows. More than simply offering another channel through which to consume, these conditions allow for the establishment of new monopolistic platforms – marketplaces in which domestic life integrates with global capital (Langley & Leyshon, 2017). In providing the machinery necessary for a marketplace, the smart home generates the possibility of "colonising" (Couldry & Mejias, 2018) a relatively untouched domain of social life:

Not all – and not even most – of our social interactions are co-opted into a system of profit generation [...] one of the reasons why companies must compete to build platforms is that most of our social interactions do not enter into a valorisation process. (Srnicek, 2017, p. 54)

Google and Amazon occupy a central position in the smart home market thanks to their conversational agents. Google's *Assistant* and Amazon's *Alexa* occupy their respective 'smart speaker' device (called *Home* and *Echo*), and are becoming standard features in third-party smart home offerings, integrating them into Google and Amazon's

platforms. The platform controller is a gatekeeper, not only managing access to the platform – shutting out rivals and ensuring their own services are defaults – but also demanding increasing quantities of the data flows between occupants and third-party smart devices (Day, 2019).

For Amazon, the largest e-retailer in the world, control of the smart home platform opens up the possibility of ensuring their store is the householders' default source of consumer goods. For Google, the largest advertising company in the world, control of the smart home platform means ensuring supremacy for the numerous digital services they offer, including searches, video and mapping, and promises in the longer term a new means of presenting advertising to users. For both companies, perhaps the greatest prize of all is data itself, generated through measurements of both the activities of humans and devices throughout the home, and their interactions. Here data's value is two-fold. Firstly, it promises a means of better understanding user preferences and intentions, with the goal of directing consumption. Secondly, and increasingly, data has value as a resource for 'machine learning' – the set of techniques by which many advanced automated services, such a conversational agent, are trained. There is a virtuous circle here for companies that take a lead in such services – using them to capture user data and using that data in turn to improve the capabilities of their services.

Markets require the creation of a sharp ontological distinction between *“things” to be valued and the “agencies” capable of valuing them* (Çalışkan & Callon, 2010, p. 5). We read the smart home to be a project for generating and harnessing this distinction, in the form of the platform family. The platform family comprises of both 'things' and 'agencies'. The latter consists of family members, participating as consumers in platform-mediated exchanges. The former is a *“pacified”* (Çalışkan & Callon, 2010) rendering of domestic life in software, done most visibly in the group user accounts we study here. Pacification allows for the stabilisation of the object, the disentanglement of it from the networks in which it sits, and its subsequent circulation through other domains (here, the market hosted on the platform). In other words, the platform family is both a vehicle for domestic consumption, and a vehicle for consuming domestic life. In its totality, the platform family comprises of an engineered simulacra of domesticity, formatted to run on the respective smart home operating system. Our concern here is not solely with describing the platform family, but considering how the ontological distinction created does not sustain in practice. Rather, the metrics deployed in this process act to both make judgments about members of the setting, and change the judgements they make about themselves (Beer, 2016). It is this act of pacifying domestic life, and its implications for those involved, which we address.

Sociality is not simply "rendered technological" by moving to [a digital] space; rather, coded structures are profoundly altering the nature of our connections, creations, and interactions. (van Dijck, 2013, p. 20)

This paper proceeds by firstly exploring sociological understandings of home and family, which we will later contrast with the rendering offered by the platform family. We then turn, in Section 4, to describing the group accounts offered by Google and Amazon, and then in Section 5 to their implications for domestic life. In doing so, it should be noted that we do not address families subject to coercive relationships. IoT technologies pose a specific set of challenges in domestic violence contexts, challenges which are just beginning to be recognised (Tanczer, Parkin, Danezis, & Patel, 2018), and require their own focus. Finally, Section 6 brings the two preceding sections together, to consider the specificities of Amazon and Google's respective pacifications of domestic life. This reveals the smart home to be a project of "data colonialism" (Couldry & Mejias, 2018), by which the totality of social interaction is sought for capture and commodification.

2. Home and family

Before addressing group accounts and their designs on domestic life, we first unpack two key concepts: family and home. We do not offer an exhaustive history. Instead the concern is with two aspects which the platform family perhaps impinges most directly on – the contrast between contemporary understandings of what constitutes 'family', and the functionalist intellectual heritage the platform family parallels; and the conception of home as a haven for families, where they might be free of the world beyond its walls. These accounts will inform our subsequent dissection of the platform family.

2.1. Understanding family

Highlighted here is a shift from conceptualising families as atomistic structures, to something far more relational, contested, and dynamic. Functionalist accounts of the mid-twentieth century emphasised the modern family of industrialised Western society as nuclear, a discrete grouping of individuals within a single household, in which clearly defined roles – father, mother, daughter, son – guided social interaction (Burgess & Locke, 1945). Parsons (1956) identified family as a key component in the capitalist system, specialised for socialising individuals, and providing for their material and emotional needs in a stable environment. Roles were ascribed largely by gender, the husband in the instrumental role as wage earner, the wife in the affective role of family carer (Parsons & Bales, 1956).

This account has come to be seen as deeply flawed by sociologists studying family. It essentialised family according to a white suburban American middle-class ideal

at the expense of recognising variation, struggle and conflict, in the form of poverty, race, class, and gender, the latter being naturalised as deeply unequal (Chambers, 2012, p. 22). The focus on how family structures served capitalist production and consumption resulted in blind spots such as those of domestic labour which overwhelmingly fell on women (Oakley, 1984). Relationships between LGBTQ couples, which even today remain outside the recognition of marriage in many societies, were ignored or characterised as deviant (Weeks, 1985).

The heterogeneity of 'family', underplayed or ignored in functionalist accounts, was – and continues to be – highlighted by empirical accounts. Far from being nuclear, families are found enmeshed within extended kinship networks (Young & Willmott, 1962). Structures vary within and between communities – for example in some, single female-headed households are common, positioned within a wider matriarchal kinship (Chamberlain, 1999). Highlighting the dynamism of family, divorce is shown to result in 'chains of relationships' extending across multiple households (Smart & Neale, 1998), and transnational migration detaches family from co-habitation, stretching it across national and continental boundaries (Williams, 2004, Chapter 6).

The mutability of family roles has also been debated. Giddens (1992) new 'democratic' family, in which personal choice and agency overcame traditional determinations of roles, has been accused of lacking empirical basis, by studies pointing to ongoing power differentials along lines of gender, generation and class (Jamieson, 1999; Smart & Neale, 1998), and the ongoing presence of gender-based violence (Goldsack, 1999). Nevertheless, more democratic ideals are acknowledged as an *aspiration* amongst partners seeking more equal relationships (Jamieson, 1999, Chapter 6).

The shift away from seeing family as a fixed structure of complementary roles is perhaps best accommodated by Morgan's (1996) notion of family as practice, that is as a set of doings composing the conduct of everyday life, which are orientated to other family members. Membership and practice are co-constitutive – family exists only insofar as it is reflexively performed by its members. In performing family, these practices 'display' it to both fellow members and to outsiders (Finch, 2007). The outcome of these writings is an understanding of family today which emphasises diversity and fluidity, and which greatly complicates its relationship with a single home as locus. The great irony, as we shall see, is that as those studying the family adopt the language of digital technologies to describe it as '*networked*' (Wellman, 2018), the companies behind those same technologies are reinventing family according to a functionalist template.

2.2. Home as autonomous entity

Stinchcombe (1963) declared the protection from outside interference of small, autonomous social systems like the home to be the distinctive feature of the modern liberal state (p.151):

The maintenance of the boundaries of [homes] is necessary to their free and autonomous development. If agents of the state or strange private citizens can enter these systems arbitrarily and interfere with interaction within them, they cannot develop freely. (Stinchcombe, 1963)

This conception of independent enclave, to be guarded from outside interference, can be exemplified in the resistance states meet whilst intervening in childrearing practices (Bowlby, Gregory, & McKie, 1997). And yet, the performative coding of domestic life by external institutions has long been recognised. Religions and states intercede by naturalising particular notions of the family unit, historically in the West as the white, gendered, heterosexual nuclear family which formed the locus of functionalist accounts, as a means of imposing particular social codes amenable to their own interests (Wardhaugh, 1999). Exercising these interests extends to entering homes – the nineteenth century industrialising state targeted the homes of the poor as spaces in which the socialisation of subsequent generations must be policed, lest they be revealed as unfit to serve their societal role as workers, or the mothers of workers (Dingwall & Robinson, 1990). In early twentieth century Europe, liberal concerns about state interference problematised these increasingly organised interventions. In response the state medicalised their involvement in domestic management and child care (Donzelot, 1997). Using the very real threat of disease to justify interventions served to obscure the normativity of this work, and diseases' capacity to inflict suffering across social hierarchies allowed for the universalising of this surveillance regime, aiding in its de-politicisation.

The subsequent expansion of the state into healthcare and education, and relocation of work from home to factory, presented new ways in which domestic life was hemmed-in by external forces (Morgan, 2004), whilst simultaneously furthering the idea of the home as a haven from them (Hareven, 1991). Despite this status, as homes become ever-more socio-materially complex assemblages, through the accumulation of appliances, home furnishings, ICTs, the detritus of consumerism, and the conjoined rising expectations of comfort and convenience (Shove, 2003), the formal standards and categories embedded in those objects have in their own myriad, often imperceptible, ways come to 'torque' domestic social orders, twisting them into new forms (Bowker & Star, 2000). This is done through the selective identification of groupings, and the prescription of relations between them, the salience of which we shall see in Section 4.

Akrich (1992) refers to this process as 'scripting', in which designers configure their technology with a particular representation of user and setting in mind, which is then materialised in the technology. Much of the power of these representations lies in their invisibility to the user – just as early twentieth century European states presented their domestic interventions as the objective necessity of protecting public health, technology scripts' political efficacy is in part due their being hidden within the ostensible purposes of the object (Marres, 2010). In this manner the technologies which surround us form an invisible "built moral environment" (Bowker & Star, 2000, p. 326), their designs enabling some actions and prescribing others, surfacing some categories and erasing others. It is the obfuscation of their political goals which allows their shaping and reshaping of the home to progress without triggering coordinated resistance.

Resistance has many forms however, from outright rejection, to a far more subtle process of reauthoring designers' intentions. Whilst platform families seek to script the doing of family, Akrich (1992) does not claim technological determinism, but rather an exchange between designer and user. In practice, smart home technologies are being, will be, co-produced in the process of 'domestication' (Silverstone & Hirsch, 1994). Users might, presented with the constrictions imposed by platform families, refuse to adopt them in sufficient numbers, necessitating redesign. Alternatively, every system has its seams, where intentions might be unravelled by the curious or the subversive, restrictions circumvented. Users may apply technologies to applications the designers never imagined. Exploring such domestication processes is a step beyond our focus here, however. Partly this is because there is value in simply understanding the designs of these systems for what they reveal of the designer's intentions. Secondly, these technologies are still in-the-making, and yet to be widely embedded in everyday life, at least in the comprehensive manner imagined by the smart home vision. We take a deliberately anticipatory orientation towards a class of socio-technical conditions intended by their designers to become as ubiquitous in everyday life as the smartphone and social media are today. In addressing these systems as nascent constructions, we follow Urry's (2016) call to address the future, being "*too important to be left to states, corporations or technologists*" (p.7).

3. Methods

The material used in this paper was collected from Amazon and Google websites and apps in summer 2018. The goal was to generate descriptive accounts of the features of *Household* and *Families*, using the same information available to users of those services. Accordingly, all text from the Support sections of relevant websites and apps were gathered and analysed. Coding was limited to identifying and categorising these

'features', which consisted of described account roles, relationships, and their collective and individual affordances and restrictions. Key features are presented in Table 1. This material was not inconsiderable and distributed across multiple service and device specific pages – for example for *Household* this amounted to over 2000 words spread across multiple webpages, including on both the Amazon website, and Alexa app. Even then aspects remained obscured – for example no explicit statement on the possibility of a *Household* consisting of members registered in different countries was found. In cases such as this information was sought on official help forums, and where possible tests were conducted by creating dummy group accounts using multiple email addresses. Limiting ourselves to information available to users was a practical measure – we have no privileged access to the designers of these services – but it also served place us in the same position as those using the systems. The difficulty in establishing precisely the affordances and constraints of platform families is salient to this paper's broader concern for how the local agency is constrained by the adoption of these systems.

Table 1. Description of group account roles and their key features.

Account	Age	Notable features
Amazon Household		
Adult (max 2 members)	18+ (20+ in Japan)	<ul style="list-style-type: none"> • Control over Teen and Child accounts as listed below. • If two Adults then must share payment details, else content sharing between them disabled. • Either Adult may remove the other Adult, or any other member, from the Household group.
Teen (max 4 members)	13–17 (13–19 in Japan)	<ul style="list-style-type: none"> • Able to access shared content libraries and make purchases from Amazon store <i>subject to</i> Family Manager or Parent approval.
Child (max 4 members)	–13	<ul style="list-style-type: none"> • Able to access shared content libraries <i>subject to</i> Family Manager or Parent approval. • Cannot make purchases from Amazon store. • Subject to both controls over time of use, and some goal-setting for certain content.

Account	Age	Notable features
Google Families		
Family Manager (1 member)	18+ (20+ in Japan)	<ul style="list-style-type: none"> • Control over Parent and Family Member accounts as listed below. • If also a parent in the Family then must share payment details with them. • May remove Parent or any other member from the Families group.
Parent (max 1 member)	18+ (20+ in Japan)	<ul style="list-style-type: none"> • Control over Family Member accounts as listed below.
Family Member (max 4 members)	No age requirements attached, but if under age 13 Family Link required, which gives all executive account controls to a Parent or Family Manager.	<ul style="list-style-type: none"> • Able to access shared content libraries and make purchases from Google stores <i>subject to</i> Family Manager or Parent approval. • Able to make purchases independent of Parent or Family Manager <i>if</i> using own payment option, and control whether or not purchase is shared. • Subject to controls over time of use if Family Link enabled.

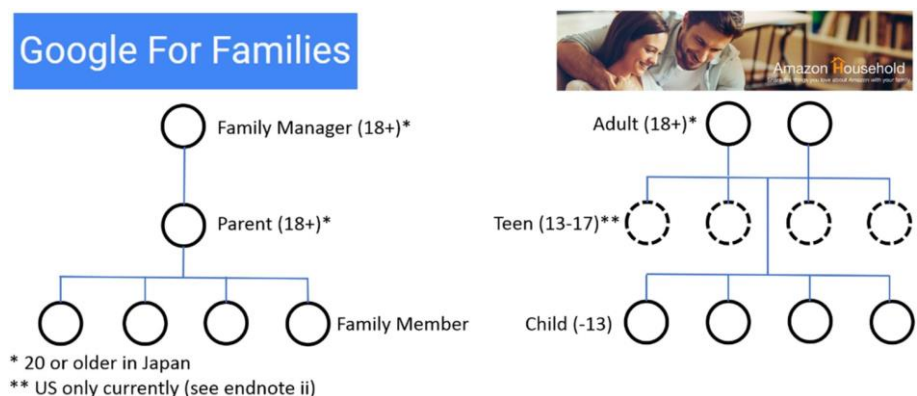
4. Family accounts

Amazon Household and Google Families are presented as tools for sharing digital content and coordinating activities, complementing the smart home hardware within both companies' ecosystems. Their intended application within families is made explicit in their straplines: "*Share the things you love about Amazon with your family*" (Amazon Household), "*Share entertainment and stay connected with the ones you love*" (Google Families). They support an ecology in which users might conduct multiple family practices without ever leaving the platform. We separate these practices into two groups: the shared consumption of media; and the coordination of everyday activities, via the management of both fellow members and networked devices. In contrast to comparable technologies like smartphones and laptops which are paradigmatically designed for *personal* computing, with content and control locked to individual user accounts, Household and Families ostensibly enable these activities to be performed socially, as coordinated or shared experiences between the members of small groups. They can then be read as a recognition of the fundamentally social character of the

action both enabled, and tracked, by IoT technologies *embedded within* homes (Goulden et al., 2018).

Both Families and Household operate as a scaffold of interlinked accounts. Amazon separates Household into three roles, corresponding to age: Adults (18-), Teens (13-17), Children (-13)¹. It may include ten members – two Adults, four Teens and four Children. Google Families are smaller, limited to six members. Families also consist of three roles, comprising one Family Manager, one Parent, and up to four Family Members. In both sets of accounts, different roles come with different affordances, and relationships with other roles, generating a hierarchy represented in Figure 1. As is readily apparent in the language used, the accounts purposefully associate themselves with family and home.

Figure 1. Representation of families and household account structures.



Addressing sharing firstly, within both Families and Household, sharing digital content can only take place between adult accounts which have first shared payment options. The credit card serves as the metric of intimacy for the platform, identifying a legitimate family by the willingness of its adults to trust one another with access to their finances.

Enabling the sharing of digital goods – both Amazon and Google now sell films, TV shows, books, music, and apps – can be read as an inducement to households who have established expectations of sharing based on the affordances of physical media. CDs, LPs, DVDs, paper books – all allow for unconstrained informal sharing, and can

¹ At the time of writing, the Amazon Household discussed here is only available to users of amazon.com, the US site. Users in other territories are presented with a somewhat different family structure, in which the Teen role does not exist. Instead, there is simply two Adults and four Children. It is assumed that the Teen role, and associated app, is intended appear in other territories in due course.

circulate within families, whether as 'hand-me-downs' from older to younger members, recommendations, or (unsanctioned) 'borrowing'. As digital content, such media are increasingly only legally available with Digital Rights Management (DRM) embedded in them – code which ties them to the sellers' platform and its restrictions, in doing so modifying the possibilities for 'fair use' (Postigo, 2012). As a result, performing historically-common domestic sharing practices now *requires* – for digital goods – the adoption of a group account in order to circumvent restrictions imposed by the platform itself. Within-group sharing can be understood as a practical demonstration of the doing of family which contributes meaning – as altruistic, mutual, supportive, *socialising* – to it. The sharing functions of these accounts reconfigure a means of being family, to one in which Google or Amazon is now intermediary.

The second group of practices concern domestic organisation, in the form of control of other household members, and household objects. The integration of the latter with group accounts remains, at the time of writing, a work in progress, reflecting how inchoate the smart home project remains. There are though concrete developments – Google Assistant, for example, can recognise up to six (matching the size of Families) individual voices and assign them to their correct user account, allowing personalised control of shared devices. It is currently control over fellow household members that forms the focus of group accounts. Both Household and Families assume hierarchical relationships between different role accounts. Amazon's Adult accounts can control what media and apps Child accounts can access, view their browsing history, set time limits on account use, and set 'educational goals' – gamification mechanics which set targets for book pages to be read, and reward compliance with Achievement badges (this instrumentalist reimagining of the "joy of reading" a particularly brutish demonstration of the neoliberal rationalities of metricisation at work here (Beer, 2016)). As with sharing practices above, the platform simultaneously ruptures existing practices – here by supporting frictionless, pervasive access to almost-limitless digital content for adults and children alike – and offers a solution for that rupture which serves to embed the platform further into family life – here by offering the former tools to control the latter's access.

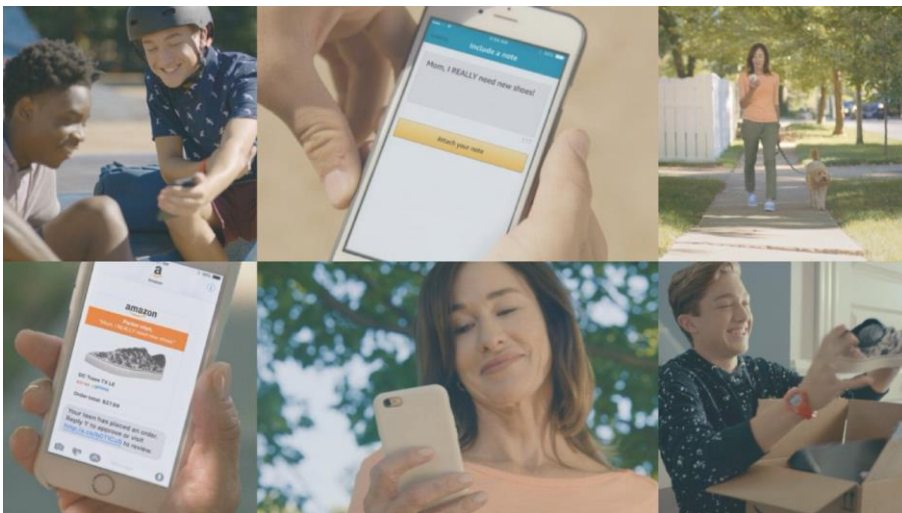
Google's Families works similarly, with Parent and Family Manager able to view purchases made by Family Members, and exercise control over their purchases, should they wish. More fine-grained control over these accounts is available here too, but through a separate feature called Family Link. Effectively, Family Link turns a Family Member account into the equivalent of Amazon's Children account.

Over and above these controls, there are executive functions relating to both certain accounts and the group in its entirety. These are the controls that adult account members hold over both dependants *and* their partner. Within Household, both Adults

hold the agency to remove their partner, and remove or add new Children or Teen accounts. Families takes a different structure, as reflected by Figure 1. Here the Family Manager alone holds the capacity for executive actions. In Google’s own terminology, these include “*Decide who is in the family group*”, and “*Delete the family group*” (Google, 2018). A summary of these roles and their notable features is given in Table 1.

Finally, there are platform-specific offerings. Household offers a service through which users on a Teen account can make purchases from the Amazon store through a dedicated Teen app. This uses the Household’s shared payment option (which is to say, one nominated by an Adult account), but only with Adult oversight, who must sanction any purchases (see Figure 2). Google offers shared calendars, and a service called Keep which acts like a digital family pinboard. These offerings reflect Google’s reliance on selling advertising driven by data generated by informational and organisational tools (e.g., Search, Maps, Gmail) which are free at the point of use.

Figure 2. Excerpts from amazon advertisement for teen accounts.



5. Implications for domestic life

The systems described above capture a swathe of domestic life within their platform infrastructure. This capture entails a reconfiguration of these practices – and a reconfiguration of the families conducting them – in the form of the platform family. In this section we consider the detail of this reconfiguration, drawing on Morgan’s (2004) typology of everyday life to do so. By way of example, we focus on one aspect of family

accounts: leaving and joining, which we contrast with the everyday maintenance and redrawing of family boundaries.

Morgan (2004) approaches family not as abstract structure but instead as an idea applied by self-identified members "*in the very process of shaping family life itself*" (p.38). 'Life' here takes three intertwined forms – 'life events'; 'life's regularities'; and 'normative life' (pp. 37–38) – which between them constitute family as experienced by its members. We use this typology to highlight just a few ways in which family accounts reimagine domestic life.

'Life events' are non-routine features of family experience, major life-course experiences in which families are formed and reformed, including birth, death, marriage and divorce. 'Life's regularities' concerns the quotidian and mundane – these might include meal times, the school run, the Friday night film, chores. Finally, 'normative life' concerns the ideas the family attaches to itself and its activities, which define 'normal'. Their overlapping nature should be stressed – so the conduct of everyday doings serves to normalise such activities in the simple fact of their repetition, whilst the normative understandings of such activities legitimate them and so safeguard their ongoing enactment.

We focus in the following section on co-located nuclear families, but only as the form platform families are designed for. For other intimate groupings, the platforms' intervention is unlikely to be any less jarring.

5.1. Leaving/joining the platform family

Within Household, both Parent accounts have the agency to remove the partnered account. Once removed, an individual is effectively vanished from the digital enactment of the group. They have no recourse to their removal and lose parental controls over any Teen or Child accounts within the family. Content remains with the purchaser, regardless of which Parent the shared payment option belonged to. Family photos and other user-generated content become only available to the original uploader. Furthermore, one cannot be a member of more than one Household at a time, and upon leaving/being ejected from a Household, one may not join another for 180 days. In Google Families, only the Family Manager holds the power to remove others. Again, membership is exclusive to one Family at a time, and here one must wait 360 days before joining a different Family. A further restriction on both services is that families must reside within the same country to use many of the benefits offered.

In shearing another adult from the symbolic and practical attachments to home and family which are served by group accounts, a separation is performed which can be

read to signify a relationship breakup, ejection from the shared home, and potentially – in the case of marriage – divorce. These are life events, in Morgan’s (2004) typology, but with disruption to membership they also carry profound implications for life’s regularities, which may abruptly become highly *irregular*, before a new normal is established. Extracting oneself from the site of a long-term relationship is a complex process of unravelling affective, practical and material entanglements (Vaughan, 1990). The role of possessions in breakups is knotty – for the initiating party, objects which symbolise the relationship are rejected, at least in the short term, but for the partner, “[h]e or she not only covets objects that symbolise the initiator and the relationship, but may devote increased time and energy in them” (p. 133). The maintenance of ties between child and parent through life’s regularities is likely to be particularly fraught at this time. The experience of break up is commonly one of chaos (p.188), and even those patterns which are discernible are subject to variation, as well as reversal: “*though a given relationship has progressed through many phases of uncoupling, the process can be interrupted at any time*” (pp. 190–191).

Separation within the platform family looks very different. Ejection from the family group is instantaneous and final, involving entering a password, and clicking ‘Remove’. All previously shared material is automatically reallocated according to the criteria given above. Of course, material goods still need allocating, and emotional and practical entanglements remain, but increasingly the latter – particularly family leisure and organisational practices – are enmeshed in these systems via shared media and calendars etcetera. A richly meaningful set of entanglements, through which both family and post-family life are enacted, is here reconstituted, with the platform intermediating.

Third party mediation of family separation is not novel. Divorce allows the state to both legally mark the dissolution of marriage, and police its possibilities. The form this takes varies, marking political struggles between different interest groups seeking to impose their own rendering of family life (Hasson, 2006), but commonly the process allows for the distribution of resources and obligations according to criteria of assessed future need and/or past conduct. By contrast, within Household, ejection is decided simply by whichever Parent clicks first; within Families, whichever individual created the original Family Manager account is invested with ultimate power forevermore. The redistribution of resources is pre-determined, and no social obligations are recognised. Members of the platform family are offered automated disentanglement, in which affective and practical ties are unpicked as effortlessly as a commercial subscription might be.

This surgical separation offered by the platform’s intermediation is particularly striking when children are involved. The organisation of co-parenting is a central element

of post-divorce life, something often formally recognised by state interventions which specifically define divorce as the end of *marriage*, not of *parenting* (Chambers, 2012, pp. 82–83). The platform family allows no distinction here: as connections to ex-partners are severed, so too are those to the children.

We make these comparisons to highlight the specificity of the platforms' intervention into domestic life. The contrast demonstrates that at the moment of relationship breakdown, the social paradigm – in which family accounts are designed to enable shared practices – reverts to one of personal computing – in which the sovereign consumer exercises control, free of accountability to others, awarded fiefdom to delete the family. This model transgresses the norms of reciprocal obligations which marriage merely formalises between committed relationship partners and does so by commoditising family as a product like any other. The long-term implications for normative family life are unknowable, but it is already clear that the platform family brings with it very practical consequences for life's events and regularities.

6. Discussion: platform families

The history of the home as a space apart from the world beyond its walls is a complex one. Stinchcombe's (1963) work highlights the distinct status of the home within liberal societies, and this remains recognised in contemporary legislation like GDPR and its household exemption clause. Yet external institutions do leave their marks on life inside the home's walls. Amazon and Google's efforts can be read as a continuation of this, and like nation states and organised religions before them, their imagining of domestic life is in service to their institutional interests.

These interests can be seen in their particular formulations. When compared with those past interventions, one notable absence from Household and Families is an overt heteronormative gendering of roles. In use, neither platform's family structure attaches sex, gender or ethnicity to any role or affordance. They are agnostic in this sense, though in placing a particular set of devices at the heart of family, the gendering of those devices becomes salient. If Google's Family Manager derives ultimate authority from being the first adopter in the family, the fact that the associated technologies are designed by and for men (Oudshoorn, Rommes, & Stienstra, 2004), or more specifically 'Resource Man' (Strengers, 2014), has deep implications for how agency is distributed within the platform family. (Ironically, one consequence of broader adoption of these systems may be an increase in male domestic labour, as the family member most likely to be tasked with maintaining technical systems (Strengers & Nicholls, 2018).

Applying such categories to users would be counter-productive for the platform's logic – pacification calls for the homogenisation of a universal unit of exchange. The network effects the platform leverages ~~is~~ are in part dependant on the vast economies of scale it derives from negating territorial difference through the application of transnational standards. The only deference to localism detectable in Families or Household from the information they provide lies in their classification of Japanese Adults as aged 20 or older. Here they bend to the idiosyncrasies of Japanese law, which allows for voting from the age of 18, but only allows for credit cards to be held from the age of 20.

This metric offers a blunt declaration of the commercial interests informing these designs. The totem at the heart of both Families and Households is the shared credit card. Adulthood here is established by initiation into the financial system, and intimacy by shared participation in it. Rendering this requirement, the metric of intimacy serves distinct purposes in establishing group boundaries. For those counted within it, it establishes consumption at the centre of platform family practices. For those the platform operators wish to exclude, namely non-intimate groups seeking to share media content, it serves as a demonstration of mutual trust which those entering into these groups must perform.

By inserting itself within domestic practices, by capturing material and symbolic elements of it, the platform family seeks to supplant social forms which currently lie outside their valorisation systems. Accordingly, consumerism is awarded primary position in this new form of doing family. Bauman's (1987) fears that – through consumerism – intimate social interactions are supplanted by signalling via consumer goods appears realised by the advertising of Amazon Household shown in Figure 2. Here the entirety of the interaction between mother and son takes place through the platform, in the act of negotiating the purchase of shoes. In the associated branding, Amazon celebrates such interactions between parent and child as '*teachable moments*' (Amazon, 2018).

The influence of business model extends deeper, to the conceptualisation of family itself. In defining both a single site and formal roles, Amazon's '*Household*', with its two 'parents' and up to eight 'children', has echoes of the functionalist accounts of the archetypal nuclear family. Google's offering is slightly different – its Family Member role is more flexible than Amazon's Teen and Children, in not presuming (pre)adolescence. Kin here is undefined. This difference is revealing of the platform builder conceptualising family through the prism of their business model. Amazon – its core consumer-facing business the delivery of physical goods to the home – renders home as a single site occupied by the nuclear family. For Google, delivering advertising and extracting data

through their organisational and communication tools, family is a potentially dispersed (within territorial boundaries) kinship network.

Where local difference implicates the profitability of the platform, its structuring of domestic life becomes unyielding. Given the threat in-group sharing potentially carries for product sales, there is a clear interest for platform operators to limit its scope. This provides a rationale for the restriction that any member can only reside in one size-limited family at a time – never mind that separated families are a common occurrence in contemporary western societies, or that in minority cultures particularly, family may consist of tight-knit kinship groups much larger than the six or ten members allowed. Other non-nuclear families are similarly marginalised. Transnational or migrant families, in which members occupy different territories, are in many cases simply proscribed by both platforms. The assumption of two parents in the nuclear family template is also more ill-fitting for some cultures than others. In some, single parent households are common (Chamberlain, 1999). This is accommodated by both platforms, but such households' tendency towards larger, matrifocal kinship networks of parental figures, in place of the nuclear couple, is not.

Bowker and Star (2000) direct our attention to the moral agency that operates within seemingly sterile information infrastructures:

To classify is human [...] We all spend large parts of our days doing classification work, often tacitly. [But] each standard and each category valorizes some point of view and silences another. This is not inherently a bad thing – indeed it is inescapable. But it is an ethical choice, and as such it is dangerous – not bad, but dangerous. (pp. 5–6)

Amazon and Google's group accounts offer an ontology of family, defining structures, identities and roles – the most fundamental of group features. Ontologies are not simply isolated accounts of phenomena but are in themselves performative (Law, 2009). Shaping the ethical choices taken are the commercial interests of the platform operator. In the particular formations of family which the platform valorises, it is normalised as being of a certain size, as co-located, as isolated, and as stable and enduring, in which authority over others is formally vested in one, or perhaps two, key roles. In these aspects the platform family comes to resemble the nuclear family of mid-twentieth century suburban America idealised by Parsons (1956). Encoded into the software running on the home's networked objects, the platform's ontology is also realised as a material infrastructure which shapes both life events and everyday regularities. Transnational or migrant families, spread across nations and continents, are simply excluded. For those who are allowed to digitally consummate their family, their practices

which become incorporated by the platform are subject to its commercial and legal frameworks.

Finch (2007) draws attention to how the 'display' of doing family is itself important, meaning the shared participation in recognised family activities which signal to both participants, and those observing, that the group are a family. This is particularly so during moments in which family structures and roles are in flux, such as when a child moves out of the family home, or a new parental figure joins the family. At such times, a statement of the group's contours, through public appeal to normative understandings of family, can aid in stabilising the group for its members. The platform family offers such opportunities, yet its restrictions constrain display, limiting who can join, when, and under what circumstances. Regardless of their own experience, those cast out from the platform family must remain in the wilderness for 180 days, or a year, depending on platform operator. Children or adults finding themselves, through family separation and reformation, in 'chains of relationships' (Smart & Neale, 1998), must choose the one which will be their sole digital home.

The platform requires that family must be rendered such that it is both encodable within digital systems, and commensurate with the platform's commercial logics. This requires the informal, situated orderings of domestic life, which allow for family to take a near-infinite variety of forms in order to endure the changing relational circumstances of members, be formalised in its structure and codified in its rules. This formalism is, in contrast to past interventions in the home, not determined by any explicitly normative programme, but rather by the mechanisms of the market which the platform captures the family within. The purposive design nevertheless leads the platform family to be understood as a form in the service not of its members but of industrial society. Accordingly, it both echoes Parson's nuclear family in conception and shares its failings, in favouring homogeneity over the diversity and fluidity of families as they are experienced by members. Parson's work, however, was intended as merely descriptive – the platform family is *prescriptive*.

7. Conclusion

The overtly technological nature of the smart home project risks blinding us to the socio-political implications of it (Marres, 2010). Google and Amazon's family accounts are presented as allowing for the integration of digital technologies into domestic structures. We suggest they are better understood as allowing for the integration of domestic structures into platform capitalism, in the form of the platform family. This is achieved through tools which camouflage themselves in the language of family and home, and sell

a vision of user empowerment, but which in many respects act simply to (partially) solve constraints that they themselves impose – constrictions of the market they serve.

We began by arguing that the platform family generates two forms – the family as consumer, ‘agencies’ (Çalışkan & Callon, 2010) of the market; and the rendered family, as ‘thing’ to be valued and exchanged. The market these forms serve relies on their distinction, but we demonstrate how the ontologies of Google and Amazon’s family accounts are performative, repeatedly passing back and forth across this divide. As such, the platform family exerts tensions on the two conceptualisations we highlight in Section 2: the home as haven from external interference; and the family as nexus of relational practices, rather than purposive structure. Google and Amazon offer a technical, yet inevitably normative, account of what home is, and family does. As scripts, these categorisations carry material force – creating new possibilities for life’s regularities, events and norms, whilst precluding others. In arguing for conceptualising contemporary capitalism as data colonialism, Couldry and Mejias (2018, p. 11) highlight Quijano’s (2007) description of historical colonialism, specifically its efforts to erase cultural heterogeneity, and impose a single reality. The smart home, and the code running through it, can be read as such – as not merely a landgrab, but a concerted effort to rewrite the lives situated within it, such that they are permanently in the service of the platform and its generation of surplus value.

This paper, and the identification of platform families, raises questions for future work, the most pressing of which is the forms resistance to this project might take. How might heterogeneity be recovered from the pacification (Çalışkan & Callon, 2010) of the platform? There are undoubtedly many seams in these systems – for example, the reliance on email accounts for identification is crude and open to manipulations – and the recent travails of Facebook, now under growing regulatory pressure, point to a changing political environment, in which more organised resistance is possible. Certainly, the almost aggressively transgressive nature of particular elements of the platform family create conditions ripe for the kind of moral panics social media platforms are currently being swamped by. First and foremost, however, civil society needs to recognise the (un)ethical project embedded in this ‘built moral environment’. Academia has a part to play here: great attention has been given to the privacy implications of the smart home, and IoT more broadly, but this surveillance lens has a tendency to overlook the *lived experience* of these technologies, and the consequences therein. More light needs to be shone here.

Thoughts of resistance also prompt questions of the lived experiences of inhabiting the platform family. Ironically, whilst the platforms adopt a functionalist account of family in order to capture its value-generating, it is the doings of family

practices where that value creation – as defined by members – actually takes place. The informality of the family as a social system gives it its institutional durability, but it also spawns the heterogeneity, the dynamism, which the market cannot allow of the objects it trades in. Are then the colonial ambitions of the platform builders ultimately self-defeating? And how do these tensions play out for those living within the platform family? Given the heterogeneity of these groups, how do the prescriptions of the platform family play out across their different forms?

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Data availability statement

All data used in this paper is taken from the public domain.

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Murray Goulden is an Assistant Professor of Sociology at the University of Nottingham, and current holder of a Nottingham Research Fellowship. Through the Fellowship he is exploring the sociological implications of Internet of Things technologies for domestic life. His most recent work addresses the 'smart home' as an instantiation of platform capitalism, and the implications of IoT-generated 'interpersonal data' for intimate social groups. He has worked extensively on research applying novel digital technologies to real world settings, with a focus on digital data and infrastructures, smart energy technologies, and their role in (re)configuring associated social practices, and the implications for policy-making and design.

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