

Exploring a human-centred design of possessions

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Abstract

Understanding the idea of possession is essential for creating successful products and services, particularly in digital and access contexts. This paper examines current shortcomings in conceptualising ownership and possessions before presenting a framework for the process of developing user possession. The framework is grounded in psychological ownership theory and informed by interviews with thirteen participants. The theory considers ownership as a mental state in which users feel the object is theirs. The interviews explored this mental state under three contexts: traditional material possession, digital possession, and access-based possession. This work helps inform the meaning of possessions, and can aid designers and policy makers in how to approach the notion of designing possessions from a human-centered viewpoint.

Keywords: *possession, ownership, human-centred design*

1 Introduction

John Steinbeck's *Grapes of Wrath* begins with the grievous tale of Oklahoma dust bowl farmers who were forced from their homes in the midst of the Great Depression. In a stand of protest when asked to vacate their properties, the tenant farmers confronted the representatives from the bank that owns the land. "...but it's our land. We measured it and broke it up. We were born on it, and we got killed on it, died on it. Even if it's no good, it's still ours. That's what makes it ours—being born on it, working it, dying on it. That makes ownership, not a paper with numbers on it." The bank representatives responded that the orders were not from them but from the bank which is not like men—the bank has no personality (Steinbeck, 1939). The problem here lie in the conflicting nature of hybrid ownership with the tenants feeling they own the land as the result of their interaction with it, while the bank is purely interested in profit (Linklater, 2013). Hybrid ownership in which two or more entities have some degree of perceived or legal possession of an object is increasingly common. Social media accounts and shared items, for example, are generally legally owned by a company but the user certainly feels a degree of ownership over them. Ensuring proper design of such a system is essential to creating meaningful user experiences and, at times, viable business models.

The aim of this paper is to develop empirical understanding of the process through which individuals take possession of objects and how this is aided or debilitated by elements within the designed system. Based on the results of the research, the paper presents a human-centred

conceptual framework for possession. The framework is informed by an investigation of hybrid ownership of two types of possessions: digital (e.g. social media account, music album, internet domain name) and accessed (e.g. rented car, office desktop computer). A third category of traditional material possessions (e.g. iPhone, handbag) is considered as a reference point.

We begin with the premise that taking possession of something is an innate human desire (Belk, 1982; James, 1890). As such, understanding the concept of possession is critical to understanding many everyday interactions. For example, understanding possession is a prerequisite to appreciate the meaning behind selling, gifting, and stealing objects (Snare, 1972). As society has evolved, so have the laws, policies and norms that quite literally govern how we interact with the objects around us (Linklater, 2013). These laws have increasingly become dematerialised personal rights that mediate human-human interactions (Graham, 2011). In this paper, possession is taken as a mental state that is followed, not preceded, by policy.

To better understand the meaning of possessions and the processes associated with them we ground our work within psychological ownership theory. This theory describes the motives and routes that individuals take in order to reach a mental state in which they feel an object is ‘theirs’ (Pierce, Kostova, & Dirks, 2001, 2003). The theory has been previously applied to design in terms of describing user-object interactions (Baxter, Aurisicchio, & Childs, 2015a, 2015b). In this paper, we build on that work in two ways. First, we validate the usefulness of the theory in describing the interactions that users have with digital and accessed objects. Second, we expand the previous work by modelling the interactions of all relevant elements in the process of creating a system in which users take possession of objects. This work is relevant to companies and policy makers seeking to create meaningful experiences with possessions.

2 Background

Advancing technology and business models challenge the traditional concept of ownership and possession. The next sections explore ownership and possession for digital and access-based objects.

2.1 Digital Possessions

Digitalisation of the world has dramatically changed the way in which we view and take possession of objects. In some cases, personal possessions have transitioned from material to digital as seen with photos. The way users acquire, maintain, curate, and dispose of the digital world varies significantly from how they might do it in the physical world and has been the focus of previous work (Odom, Sellen, Harper, & Thereska, 2012). Understanding these interactions becomes paramount to creating meaningful transitions towards digitally owned things. In other instances, digital possessions have uniquely been created without a material transition as is the case with a domain name, website, or user account in a software program. The problem here is not in determining how interactions change but answering more fundamental questions. Why and how do users take possession of some objects rather than others? What do users want from digital possessions?

Understanding digital possessions is further complicated by the myriad of shifting policies surrounding the digital realm. Ownership in the material world has evolved over centuries of creating, amending, and disputing formal policies and legal terms. In the digital world the discussion has barely been going for a few decades and is rapidly changing. Furthermore, in the context of shared ownership, the sharing practices that are well established with physical objects do not seem to function well when it comes the sharing of digital content (Gruning & Lindley, 2016). This may have happened because of the uncertainty and even anxiety arising from the

ownership of digital possessions, especially when things are stored in the cloud (Marshall & Tang, 2012; Odom et al., 2013, 2012).

Policies around ownership, privacy, and consent within the digital space consistently make headlines and are disputed in courts. This will likely continue as we try to make sense of how to properly interact with these spaceless, formless, and placeless objects. Digital user-object interactions are often facilitated and/or hindered by a company adding another layer of complexity to understanding how to construct this hybrid ownership particularly when accessed via multiple services or devices. Using the same service (e.g. cloud service) but at the same time having individual repositories makes the understanding of ownership more complicated than that of physical possessions (Volda, Olson, & Olson, 2013).

An example of the conflicting nature of hybrid ownership in digital possessions emerged in 2014 when Apple teamed up with the band U2 to gift an album to 500 million Apple users. Despite any good intentions of the company there was a fairly severe backlash from many customers (Peterson, 2014). The backlash seemed to stem from the idea that Apple had infringed on what users felt was theirs since Apple had pushed the album into users' libraries regardless of whether or not users wanted the album. Slate magazine called Apple's move a reminder that music belongs to Apple as much as it does to us if we are to use iTunes, and that "consent and interest are no longer a requisite for owning an album, only a corporate prerogative" (Wade, 2014).

2.2 Access-based models

Recently there has been increasing interest in developing business models where consumers gain access to products rather than owning them (Lamberton & Rose, 2012; Rifkin, 2000). As such research has begun characterizing access. Belk (2010) differentiates access from sharing. Sharing, in his view, is an often altruistic and love and care driven concept to create a community in which ownership and responsibilities of the object are shared amongst users. Conversely, access is not necessarily altruistic nor is it used to create a community. Bardhi and Eckhardt (2012) offer six dimensions of access: 1) temporality, 2) anonymity, 3) market mediation, 4) consumer involvement, 5) type of accessed object, and 6) political consumerism.

Much of the dialogue around access models seems to focus on the idea that people want a result, not the means to get it. This is exemplified in the quote credited to Victor Papanek "people want the hole, not the drill" (Botsman & Rogers, 2011). Though this is sometimes the case, it often oversimplifies what users want. Perhaps the strongest evidence of this is the continued difficulty around getting consumers to adopt access-based models over traditional ownership (Tukker, 2013). In the instances where such models have been successful, the emphasis is placed on access and there is little or no sharing involved (Eckhardt & Bardhi, 2015). This is not to say that people do not (or can not) develop a sense of ownership over the accessed object.

An example of some issues in designed access-based models are found in car sharing schemes. Bardhi and Eckhardt (2012) found that car sharing users do not identify with the car, feel it is not theirs and subsequently have no stewardship and at times report a feeling of disgust that someone else used the car. Despite this, it is important to note that even if an object is used for a short time, individuals may refer to it as *theirs*. This suggests that a more nuanced view of ownership may offer meaningful implications for what it truly means and what it might mean in an access model.

3 Methods

To understand the process through which people take possession of objects, we designed a study to collect the perspectives of participants and analyse them using principles from psychological ownership. Through this study, we adopt a human-centered approach in which we combine existing knowledge of how meaning emerges into a design process in order to encourage desired interactions and avoid undesired ones (Krippendorff, 2005).

3.1 Data collection

To better understand how possession relates to a wider system we conducted semi-structured interviews with 13 participants. The interviews allowed us to collect first-hand accounts of interactions with and attitudes towards possessions. The strength of this approach is that it allows us to contrast a wide range of possessions in various contexts which inform the development of the ownership framework. Though all interviews were conducted in South East England, the research benefits from a culturally diverse group of participants who come from 6 countries roughly equally spaced across the Americas, Europe, and Asia. Among others, participant occupations included homemaker, photographer, engineer, management, student, and designer. A limitation of this research is that the average age of participants was fairly young (28 years old) and does not adequately reflect other age demographics.

Each interview included a series of questions around three categories of possessions: traditional material (i.e. owned) possessions, accessed (i.e. non-owned) possessions, and digital possessions. In this study, access was taken as anything material and not owned and no distinction was made between shared and accessed objects. All interviews were documented with audio recordings and notes. The audio recording was transcribed and coded into themes. Themes included the motives and routes found in psychological ownership theory in order to conduct a cross-comparison of the data. Other themes were identified through an iterative process in which the authors met and compared analysis of the interviews.

3.2 Data analysis

We use psychological ownership theory as the lens through which user-object relationships are explored. Psychological ownership is the mental state in which individuals feel that an object is theirs (Pierce et al., 2003). The theory describes the motives and routes leading to feelings of ownership for an object. Under the theory, the target of ownership can be any range of things including tasks, ideas, organizations, products, and digital spaces (Avey, Avolio, Crossley, & Luthans, 2009; Baer & Brown, 2012; Baxter et al., 2015a; Kim, Kim, Jeon, Jun, & Kim, 2016; Shu & Peck, 2011; Van Dyne & Pierce, 2004).

Psychological ownership posits that users have three motives for taking possession of an object and that this is achieved through three routes (Pierce et al., 2001, 2003). The three motives are: efficacy and effectance, self-identity, and having a place to dwell. Efficacy and effectance refers to the desire to feel competent through the ability to control and impact one's surroundings. Self-identity refers to the desire to create, continue, and/or transform one's public and/or private identity. Having a place to dwell refers to the desire to gain and preserve physical, emotional, and mental security through familiar and comfortable surroundings.

These motives are achieved through three routes: control, intimate knowledge, and self-investment. Control is the ability to access, use, or transform an object when and how desired. Intimate knowledge comes as users acquire information about the object through use or other means. Self-investment is the expenditure of time, money, physical effort, and/or psychological energy into an object. A prerequisite to the routes is that the object attracts or engages the user.

4 Ownership as a meaning making process

Ownership is a state of mind that results from the interactions that users have with the target objects. This state of mind signals meaning for users. For example, there is some embodied meaning in users changing their wording from “the object that I use” to “my object.” In this latter case, the object becomes something that the user connects with, expresses expectations towards, and often defends. While interactions varied, our research confirmed that participants readily identified material, digital, and accessed objects for which they felt some sense of ownership. The aforementioned motives and routes were the guiding principles for seeking to own and taking possession of all object types investigated. The study provided new contextual understanding of how user-object relationships develop with all the constituent elements. The resulting process of ownership is represented through five elements: the user, the object, the interaction between them, and core and auxiliary entities. The user-object interaction is enabled by core entities (e.g. producers, sellers, services), supplemented by auxiliary entities (e.g. family, friends, third-party service providers), and fulfilled by the aforementioned routes. A framework to depict this process is shown in Figure 1. Each of the elements of the ownership framework are discussed below and contrasted across possession types.

4.1 User

The user on whom the process is centered is characterized by motives, capabilities and responses within the context of creating possession of an object. The motives were consistent with those previously discussed in psychological ownership theory across the three object categories. For any given object, regardless of the category, multiple motives were often found suggesting that no one dominated an object category. Capabilities matched with product features afford interactions with objects. Finally, the responses that users have to possessions

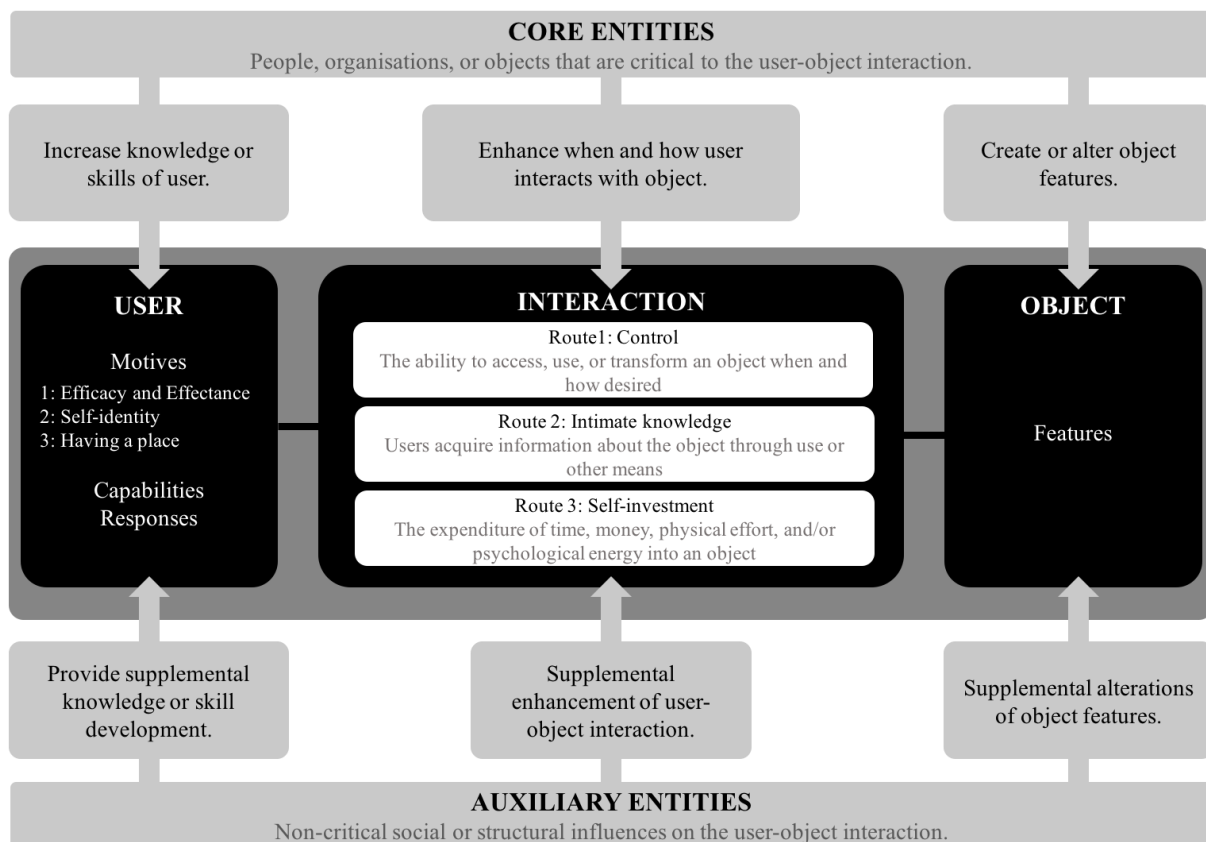


Figure 1. Human-centred possession framework.

are also an important consideration. Common responses include: higher valuation, stewardship, and altering how the object is used. Such responses can then shape future interactions. For example, stewardship can lead to more self-investment. Users are constantly changing through the possession process as they receive feedback from the interaction (e.g. how well objects fulfill the routes) and from core and auxiliary entities.

4.2 Object

The object (i.e. the target of ownership) is characterised by its product features. Features are the physical or digital aspects of the product which provide the user with perceived affordances. Features do not include prior knowledge or subjective attributes given to the object by the user. These are understood as either the user's response to how well a feature meets a particular motive—including motives not leading to ownership—or as cultural appraisals, which are considered to be an auxiliary entity. In the case of material possessions, the object may change through situations such as maintenance. In accessed and digital possessions, change is frequent and marked by upgrades, refurbishment and other practices.

4.3 Interaction

The interaction between the user and the target object is of interest as it fulfills one of the three routes to ownership. All object categories investigated showed numerous examples of the routes being fulfilled demonstrating their usefulness across various possession conditions. Changes in the fulfillment of routes was due to differing product features, user capabilities or the supporting entities around them. Interactions are supported or hindered through the influence of core and auxiliary entities. Examples from the study suggest that this may be due to influencing how and when the object is used. For instance, P2 reported feeling ownership for a particular location, where she locked up her bike (access). When another person had taken the spot, she felt a lack of control over using the location when desired and found another spot that she could make *hers* and that she would have more control over. Finally, interactions are events that happen over time and should be considered across some specified period of use.

4.4 Core entities

Core entities have a critical influence on the user-object interaction. At a minimum this includes an individual since the features of the object were designed by a designer. In practice, there are often multiple core entities that produce, sell, facilitate, service or otherwise critically enable interaction with the object. Multiple users spoke of a mobile phone as a possession example. In this case, formal entities included companies behind the hardware, operating system, and mobile phone service. In some cases, the interaction with the features of a phone (e.g. messaging services) is dependent on another user having the same features. In this case the other user and the feature developer would also be considered core entities. Other products can act as core entities when the fulfillment of a user's motive depends on it. P3 shows an example of this in talking about his video game which requires a game console to be used. In this sense, the core entities mediate the interaction between the user and the object. Core entities also moderate the interaction in that they can influence the fulfillment of routes in a positive or negative way. In the case of material possessions, the main role of the core entities ends at the point of sale when the object and all the rights that go with it are turned over to the user. Access and digital contexts, however, are similar in that they often maintain an influence over the user, the object and the interaction throughout the use of the object.

4.5 Auxiliary entities

Auxiliary entities are characterised by their non-critical influence over the user, object, or interaction. The results suggested two types of auxiliary entities: social and structural. Social entities included family, friends, celebrities, or cultural frames. Structural entities provide types

of supporting services such as maintenance shops, accessory producers, and special interest groups. While these are not critical, they do act as moderators in that they can enhance or hinder the fulfillment of the routes. These entities exhibit influence over the user, object, and interaction throughout use. This differs from core entities in that this influence is generally continuous for all types of possessions including material ones.

5 A contextual understanding of possession

The base case for this study is that of traditional possessions as they are the most familiar and often act as a starting point from which accessed possessions are created and digital possessions are conceptualised. Examples of traditional possessions explored in this study include: a purse, a money clip, a coat, lapel pins, a laptop and toys. Traditional possessions share the physical nature of interaction with accessed possessions but differ in the contextual construction of those interactions. Accessed possessions considered in this study included: a city bicycle, a family car, an apartment, a company desktop computer, and a company mobile phone. These often share a common contextual basis with digital possessions when neither are legally owned. At the same time they differ in material nature. Examples of digital possessions considered in this study included: a web domain, a video game, social media accounts, spreadsheets, cloud-stored photos and mobile phone application accounts. Variations in context influences expectations and trust.

5.1 Expectations and trust

Traditional material possessions often transfer meaning to the users at the point of sale. While the feelings of possession and the meaning derived by the user change over time, the expectations from the product do not seem to change significantly. For a material possession, the expectations generally revolve around the object performing an expected task over an expected time period. This embodied expectation is somewhat unique to material possessions. For accessed and digital possessions the expectations are often not on the object, but on those core entities involved in enabling the interaction. P13 shared the experience of moving into a rented property for the first and the frustration in relying on the landlord to fix things. “We had a weird smell coming from the sink and we had to call someone else to get it fixed instead of being able to fix it on our own. [Later] one of the faucets was [...] leaking into the flat downstairs but no one came to tell us. They tracked down the landlord and told him, and he called to tell us that there was a leak [instead of] a more direct approach to come upstairs and [tell us].” P11 spoke of a digital messaging service she would use it to communicate with her friends and family around the world. Her frustration was with bad user interface features and she expected the company to improve to enhance her interactions with time.

There was a sense of tension around feeling the core entities can be trusted. Trust implies that someone or something will perform in a particular way in the future. For material possessions this is fairly well established as trust was placed in the finished object. Users felt that their bag, clothes, toys or other objects had a lifespan and they expected to get value from within that lifespan. For accessed and digital possessions, trust was transferred to the company. P12 spoke of his hesitant trust in a cloud service to protect his photos. P4 spoke of a social media account used on the phone and highlights the expectations and trust placed in an organization. “I hope the company who owns the app does something to make it better [...] but I do not allow this company to do something illegal, like leaking out my personal information.”

As an object becomes a possession, users tend to report a greater sense of stewardship. P7 explained that he feels ownership for his father’s car when he uses it and invests in it. As a result, he also takes better care of it. “When I use my father’s car, I really think it’s mine and I

clean the car, take care of the car. [...] I feel like the car is mine. It becomes part of my life.” P1 talked of feeling responsible to quickly repair material objects. Stewardship was particularly strong when another person was going to use the object later. P9 talked of the city bicycle used to commute each day to work. “I think I need to take care of it. I think it’s mine because I don’t want to destroy it. Because other people are gonna use it too.” A unique finding of this study is the seemingly reckless behaviour that users showed toward their objects in contrast to others. P1 spoke of an expensive bag that she uses for work. “Maybe I do throw things into it a little more often than I would if it weren’t mine—obviously I would never put something in someone else’s bag. But I think the way that I put things into it [...] wouldn’t really damage it or anything. But I’m definitely more relaxed with my bag than [someone else’s bag].” P7 spoke of the risks he takes in drinking near his laptop and precariously holding it. He would never use another laptop that he did not own in the same way. This reflects the risk users are willing to take with their own objects in order to better fulfil the motives of ownership and the caution they feel when the object will be used by another.

6 Discussion

We sought to describe possession from a theoretical perspective and provide a model to understand interactions in context. In so doing we have highlighted the complexities of possession and the key roles that each of the elements play. In many ways we view digital and accessed possession as having the potential of being far more advantageous to companies and consumers given their continued connection throughout use. We suggest that consumers want efficacy and effectance, self-identity, and a place to dwell from those objects with which they interact as well as a system that reinforces these, not necessarily legal ownership. In this context, we place the motives in the centre of our thinking and suggest that any successful models in which users have a positive experience should consider these implications.

The model presented in this paper offers a holistic approach to understanding ownership for accessed and digital objects. These possessions challenge traditional understanding as different forms of ownership can co-exist leading to situations of hybrid ownership. The model adds structure to other investigations of possessions and a framework through which designers might understand and analyze user ownership within a given context. It focuses first on user motives and joins with that product features as well as the roles played by core and auxiliary entities in the fulfillment of three routes that lead to feelings of ownership. In hybrid ownership conditions this becomes particularly useful as it provides a more nuanced understanding of what a possession is, why users want to take possession of things, and how various elements participate in the process.

Perceived ownership and the value derived from an object are directly proportional to the criticality of the object in fulfilling one or more motives. Users had a high degree of perceived ownership for those objects that were critical to fulfil a particular motive. They had a low degree of perceived ownership for objects that were not critical either because the motive was poorly fulfilled or there were available alternatives. Successfully fulfilling these motives then becomes an important step in creating meaning for the user.

This study suggests at least four ways in which design might enhance user ownership. First, the way in which an object specifically fulfills the motives of ownership can be more effectively communicated. Second, user skills can be enhanced to better utilize the existing features and functions of the object. This may be achieved by the core entities or through a myriad of support communities found in auxiliary entities. Third, the interaction between the object and the user can be improved by providing less restrictions on how the object is used. Fourth, object features

can be enhanced to provide added opportunities to create meaningful interactions. In situations in which ownership is being altered or avoided, the framework also proves useful. Designers benefit from understanding more precisely what the user wants from the object in terms of motives and how the motives might be fulfilled in some other way.

7 Conclusions

The concept of possession is important in creating meaning for users. It is not well understood, particularly in digital and access contexts. Using a human-centered viewpoint, based on understanding the motives of the user and the surrounding system, we provide a detailed description of what ownership is, what users want from ownership and how ownership is realized. This is particularly useful in creating new business models in which a hybrid ownership approach is adopted or in navigating the meaning that users get from their existing objects. Though there are as many forms of possession as there are objects and ways to interact with them, the basic functions of the elements of the framework are consistent across object categories. The framework presented in this paper aids designers in navigating feelings of ownership and understanding how such feelings can be influenced.

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