

Too Much 'Stuff' and the Wrong Space: A Conceptual Framework of Material Possessions

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Abstract

Space for living in new build houses in the UK is at premium and households have more stuff than ever before. The way this stuff is accommodated in dwellings can significantly affect residents' quality of life and well-being. This paper presents a new conceptualisation of material possessions that could be of use to those involved in housing design. Three universal characteristics of material possessions; value, temporality and visibility are used to identify the space in the home that possessions might require. A conceptual framework that integrates these characteristics with spatial information about the interior of the home is developed. The paper argues that the conceptual framework could help designers, policymakers and house builders to better understand first the nature of material possessions, and second how those possessions could be accommodated in contemporary homes, ultimately supporting improved quality of life and wellbeing for households.

Keywords: architectural design, design practice, interior design, housing, storage

Introduction

Context

Material possessions can have an effect on peoples' wellbeing, physical and mental health, security and comfort (Cwerner & Metcalfe, 2003; Roster et al., 2016; Smith & Ekerdt, 2011). Over the last 60 years there has been a well-documented increase in the acquisition of material possessions (Carr et al., 2012; Hand, Shove & Southerton, 2007; Schor, 1998). At the same time, there has been a reduction of space in new housing in the UK (Park, 2017; Royal Institute of British Architects [RIBA], 2011; Williams, 2009). As a result, many households find that their material possessions overwhelm the spaces within their homes and affect their quality of life, health and happiness (Smith & Ekerdt, 2011). Empirical studies have shown that residents who perceive their homes to be over-loaded with material possessions can experience related stress reactions and low mood, sometimes leading to insomnia (Raines et al., 2015; Saxbe & Repetti, 2010).

The UK is currently in the midst of a national housing crisis, both in terms of units available and affordability (Department for Communities and Local Government [DCLG], 2017). The pace of housebuilding has not kept up with the household formation, and hence there is a recognised need to speed up the delivery of new homes (DCLG, 2017). Yet, one of the consistent criticisms of new housing is that it does not provide enough space for the storage/display of material possessions and that the space that is provided is not fit for purpose (Commission for Architecture and the Built Environment [CABE], 2005; 2009; RIBA, 2011). This paper argues that space for storage of possessions is an important aspect of housing design and that it needs more attention in the housing design process. Specifically, it argues that the design of new houses could be improved by understanding the nature of material possessions and how they interact with the physical space of the home. By thinking about possessions in a new way, those involved in housing design might gain a new perspective, leading to better-designed spaces in the home. Whilst the focus of this paper is the UK, these patterns are not unique to UK housing, and could be relevant in other countries in the developed world.

Despite the aforementioned growth in material possessions, and the established impact on living space, 'stuff' is largely overlooked in current debates on housing policy and design. There is little understanding of what households own, collect, store and dispose of, nor the implications this might have for domestic space design.

Of course, a key issue is the variability in household types, patterns of accumulation and dwelling spaces, which make generalisations difficult. However, there is enough universality in the experience of increased accumulation combined with reduced living space that makes it worthwhile to look for a better understanding of the dynamics at play. Hence, this paper draws on existing literature to develop a new conceptual framework of material possessions and their relationship to space in the home. The framework focuses on three key characteristics of possessions: their value, temporality and visibility. It is hoped that this framework could be used to improve storage provision in new homes, ultimately improving residents' quality of life and wellbeing.

Scope

To set the context for the conceptual framework, it is useful to understand how space for possessions is handled currently in the design process, and also to be clear about the parameters of 'possessions' included in the study. When designing new housing, architects often use a set of standardised house types across a site (e.g. detached four-bedroom, or two-bedroom apartment). These standardised types have a limited number of specific material possessions already considered within the design. Furniture such as a bed, sofa or dining table, will be considered and their space pre-allocated in the plans for the house. In this paper, this 'already considered' furniture is not addressed. The material possessions considered are the items and objects that make up the range of stuff that a person or a family unit accumulates through time, and have in their house, that is not generally planned for or accommodated as part of a standardised house-type layout. These possessions could be clothes, ornaments, sports equipment, collections, photographs and so on. Perhaps surprisingly, such material possessions have rarely been classified, or their characteristics identified, within the literature, and in particular, there are no classifications specifically targeted at informing the design of spaces in the home.

The material possessions that a person owns, not only facilitate the activities that take place in the physical spaces of their home (Shove et al., 2007) but are also intrinsically linked with the inhabitants' self-identity, personal values and biography (Belk, 1988; Miles, 1998; Pink, 2004; Richins, 1994). Material possessions accumulated during all periods of life, facilitate the inhabitants' lifestyle, and the physical space of the home facilitates the inhabitants' life (Miles, 1998), which in turn impacts on wellbeing (Smith & Ekerdt, 2011). For example, ordering and tidying the physical space of the house has been found to have an effect on both the well-being of the inhabitant and

the physical space of the house (Raines et al., 2015). Furthermore, different material possessions support different lifestyles at different points in people's lives.

Storage, within the context of this paper, is understood to be a fundamental dimension of inhabitants' inter-personal relationships and lifestyles. It facilitates order, both physically and mentally, and affects happiness and wellbeing (Cwerner & Metcalfe, 2003; Smith & Ekerdt, 2011). Storage can be seen as traditional shelving, cupboards and racks, but can also be attic storage rooms or outside bin spaces. When the physical spaces of the house are overwhelmed with material possessions (clutter), and the storage space is inadequate, it affects inhabitant's experiences of their home environment and has a detrimental effect on their quality of life (Saxbe & Repetti, 2010).

In housing design currently, space for living in is at premium, as housebuilders reduce the size of houses to address profit margins, development costs and housing demand (Mayor of London, 2010; Williams, 2009). This has led to the UK having the smallest newly built houses, and the smallest sized rooms, in Europe (CABE, 2009). In addition to being small, research has shown that the UK's homes also have inadequate storage provision (CABE, 2005, 2009; Karn & Sheridan, 1994; RIBA, 2011). In fact, storage is considered a key weakness of modern housing design (Mayor of London, 2010). Part of the problem seems to be that space for storage is not highly valued by prospective house buyers when purchasing a home. However, inhabitants often report subsequently that there is not enough storage for their possessions (CABE, 2005, 2009), as the space has been reallocated to more marketable rooms like ensuite bathrooms. Clearly, it would benefit house buyers if more consideration was given by those involved in the housing supply chain to where and how possessions might be stored and displayed.

Nevertheless, little attention has been paid in practice or research to the accumulation of material possessions in relation to the (re) configuration the house's physical space (Hand, Shove, & Southerton, 2007). In addition, the location (of storage) of these possessions within the physical space of the home has been overlooked in the literature, not only in consumption theory research (Cwerner & Metcalfe, 2003) but, perhaps more importantly, in design best-practice guidelines (CABE, 2009; DCLG, 2015; RIBA, 2011). This paper addresses this lack of consideration of material possessions when designing homes, and that the limited space available in standardised house types, especially for storage, could be better designed to ensure the dwelling is fit for purpose over time.

Methods

In order to identify the characteristics of material possessions, and to explore how material possessions and storage impact the occupants' use and experience of the home, a literature review was undertaken. It focused on relatively contemporary sources to reflect current studies of material possessions in the home but drew on older literature to give historical context where appropriate. The literature search used the following keywords and phrases: *material possessions, clutter, storage, storage practices, stuff, everyday practices, and home possessions*. It was carried out using Scopus, Google Scholar and the Social Sciences Citation Index databases. The initial searches indicated a number of core academic studies and 'grey literature' (Bryman, 2012) that were significant. This led to a pragmatic snowballing of the relevant references that helped conceptualise material possessions by identifying their characteristics (qualities) and categories (a set of shared qualities).

The review drew from three core disciplines: sociology, anthropology and consumer research (including material culture). While the core literature was drawn from these three fields, other fields such as marketing theory, psychology, architecture, planning and housing studies were also included as part of the literature review. However, there were far fewer studies in these areas, and those that did address material possessions (Oseland & Donald, 1993; Ozaki, 2003; Schor, 1998) focused on particular users, spaces or cultures. By encompassing such a range of literature, the study was able to make a series of connections across diverse fields of study, and select material that may have meaning to those involved in housing design (Noy, 2008).

Exploring the Characteristics and Categories of Material Possessions

Identifying the key characteristics of material possessions ensures a better understanding of the stuff that people accumulate during their lifetime. There are a number of key studies where some classification has taken place with a sociological, anthropological and consumer research emphasis. From this cross-disciplinary perspective, and considering the relevance to house design, three main characteristics of material possessions have been identified. These are the value of the possession; its temporality and its visibility. The following three sections of the paper explain these characteristics in more detail, and articulate how they relate to domestic space. The conceptual model is developed by layering and integrating an understanding of these characteristics and their spatiality.

The value of material possessions: Valued and de-valued

In the context of this study, value is understood to be the worth placed on material possessions by a person or a household. The value given by the owner (self) and others (society) drives the categorisation.

Categories of value in material possessions

A significant body of research on material possessions focuses on their value and meanings (Csikszentmihalyi & Rochberg-Halton, 1981; Dittmar, 1991; Richins, 1994). The seminal study by Richins (1994) examined *important and valued* possessions, and attributed public or private meanings attributed by society or oneself respectively. Objects with utilitarian value (e.g. plates) provide something that is needed, as opposed to objects with enjoyment value (e.g. tennis racket) that facilitate a pleasurable activity. Other types of objects represent interpersonal ties (e.g. mementoes) and have historical, symbolic or sentimental meaning, or have identity and self-expression value (e.g. wedding ring). Additionally, objects might be of financial importance (e.g. antiques) and/or have and appearance-related value (e.g. clothes).

More recently, Marcoux (2001) studied material possessions in the context of moving home, when the people moving house must decide what is essential, what could be put into storage and what can be thrown away. Similar to Richins (1994), Marcoux (2001) identifies *obvious* possessions, like crockery and glasses, which are needed for day-to-day practical or utilitarian activities, and *important* things, that are valuable (either financially or sentimentally, as *mementoes*). For both Richins (1994) and Marcoux (2001), material possessions' values change over time, be it for practical, sentimental or financial reasons. In these studies, the specific time in the life of the inhabitant has an effect on how valuable, or not, certain material possessions might be. The value of material possessions in the home can therefore be seen as dynamic, and their classification must be linked to the specific moment in the life of the inhabitant, as well as to what is fashionable or not.

Just as some possessions can have a high value, others can become de-valued too. Possessions can be seen on a spectrum, that has significance for how they are dealt with in the home. De-valued items often still occupy the physical space of the home: their value may have diminished, but they are not completely worthless.

Addressing these issues, Thompson (1979) classified material possessions as durable, transient and rubbish, depending on how they were valued. Durable possessions (such as antique pieces

of furniture) increase in value and have an infinite lifespan. Items that are transient (such as a mobile phone) relate to trends, and their value will mostly decrease with time until they have zero- or unchanging-value, they become rubbish and are thrown away. Marcoux (2001) identified possessions that *might be useful things*, like old pullovers, which could be utilised at some future time, as well as possessions of *little importance*, like left-over medicines, which can be thrown away.

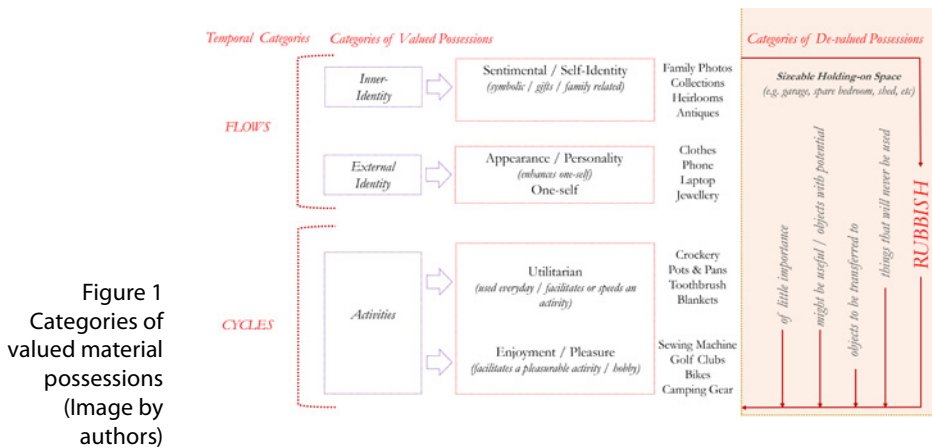
Building a conceptual framework for housing design: Valued and de-valued possessions

From the literature, material possessions characterised by their value can be categorised as: *utilitarian, for enjoyment/pleasure* if related to activities, *symbolic/sentimental (inner-self)* when related to interpersonal ties, and *appearance or personality of one-self (external self)* when related to external identity (see the second and third columns in Figure 1). When material possessions aid an activity, they can be part of a utilitarian or pleasurable activity; for example, a tin opener is completely utilitarian when used indoors, whereas as an item of camping equipment is part of a pleasurable activity conducted outside the home. On the other hand, when a material possession reflects the identity of the inhabitant's self, it can enhance external appearance and self-expression that reflects inhabitants' own personality, or it can strengthen the internal self-identity related to familial or friendship ties, sources of pride or success, or strong sentimental value. For example, a designer leather bag could reflect the owner's external personality, whilst a family photo could reinforce personal and sentimental history. Therefore, material possessions related to inner-identity will be associated with values of sentimentality and self-identity, whereas material possessions related to external identity will have values related to appearance and personality (see the third column in Figure 1).

Obviously, the above categorisation is a simplification of a complex situation, and material possessions could have value in more than one category, but often their value in one category will be dominant. The value attributed to an object is subjective, will vary from person to person, and will also vary over time.

The categories of de-valued possessions can be conceptualized as: *of little importance, might be useful, objects with potential, objects to be transferred to, things that will never be used* or simply *rubbish* (see the shaded box in Figure 1). If a material possession loses value over time and becomes redundant, be it aiding an activity or enhancing the inhabitant's self-image, it is placed in a *holding* space while the inhabitant reassesses its value and decides if it is to be thrown away

or has the potential to regain value. At present, such redundant possessions dominate spaces like spare bedrooms, attics, cellars, sheds, garages or even off-site storage units. They usually put significant pressure on space.



Temporality of material possessions: Cycles and flows

The frequency of use of possessions will influence where it is placed or stored. Material possessions in the home are influenced by two temporal categories: *cycles* of time, and *flows* of time (see the left-hand column of Figure 1). Cycles are driven by daily or weekly routines, and seasonal or annual changes in living, and are therefore directly related to activities that take place in the home. Flows, on the other hand, are unidirectional and related to changes in life, lifestyles, fashion trends, technological advances, sentimental values and so on.

Cycles of time as a temporal category of material possessions

Pink (2012) identified material possessions as part of a short, medium or long-term cycles of activity. Stuff moves through cycles of space, transferring from one space in the home to another (Cwerner & Metcalfe, 2003; Shove & Southerton, 2000) based on the cyclic nature of the activities that take place there. Activities such as cooking, eating, socialising, playing, entertaining, working, studying, and sleeping facilitate a contemporary way of living that requires spatial cycles with a wide range of time-periods.

Some storage areas hold material possessions that aid a regular activity, such as eating, drinking or cleaning, and these associated possessions will only need to be stored for a few short cycles before being consumed and discharged (Hirschman, Rubio, & Belk, 2012).

Other material possessions go through cycles of tidying, sorting and storing in the home. For example, Laermans and Meulders (1999) explored these cycles through activities linked with the laundry process of wearing, collecting, washing, drying, ironing and storing. Such possessions also need space to be stored whilst their medium-term cycle is completed (Hirschman, Rubio, & Belk, 2012). Those that are part of a frequent routine tend to be stored close at hand, whereas those of infrequent longer-term cycles are often stored further away from the activity.

In addition, the cycles themselves are not static, and the time taken to complete a specific cycle may well change as lifestyles change. They are also dependent on the specific cultural and socio-economic make-up of the inhabitants and external fashions (Shove et al., 2007). Each change may require a reconfiguration of the physical space of the home to accommodate it (Hand, Shove, & Southerton, 2007). Through storage practices, space is organised and clutter (material possessions in a state of untidiness) kept under control to allow the cycles of activities to take place (Hand, Shove, & Southerton, 2007).

Flows of time as a temporal category of material possessions

Householders' lives and lifestyles change over time, requiring different types of material possessions that will need to be accommodated within the physical space of the home. There are also flows related to possessions that are valuable and have an emotional or financial attachment for an inhabitant. Such possessions have been referred to as *sacralised* (McCracken, 1986) or *symbolic* (Chevalier, 1998), as they are full of memories (e.g. baby clothes, special gifts). These possessions require a phase of *desacralisation* (McCracken, 1986) or *desymbolisation* (Chevalier, 1998) as the personal meanings they hold begin to fade.

Flows are also influenced by changes in contemporary ways of living and are often driven by technological innovations (e.g. latest appliances), which lead to timesaving devices that help synchronise the activities that take place in the home. Figure 2 shows the results of a desktop study of historical literature, describing how the number of electrical appliances has increased over time whilst the storage capacity of the houses has reduced.

Hand, Shove and Southerton (2007) explore the flows related to technical innovations, where new technological appliances replace other material possessions or need to carve themselves a space in the home in order to accommodate a contemporary way of living. All these objects in themselves become temporal and ever-

changing within the physical domestic space (Shove, 2003) and are supporters of the household activities—they can save time and effort. However, they also require a complex infrastructure to sustain their function, for what is sometimes a very short lifespan with considerable space implications.

Every material possession related to technological innovation is in itself subject to flows of fashion, where the latest trends and the *right* possessions to bring social standing are craved, be they gadgets, appliances, tools or toys (Schor, 1998). Moreover, what is a must have this season may well be out of fashion once the next trend takes hold.

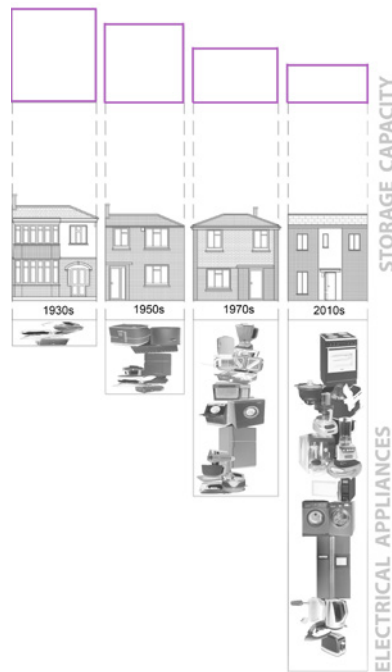


Figure 2
Storage capacity
versus electrical
appliances in
houses (Image by
authors)

Building a conceptual framework for housing design: Cycles and flows

The location of material possessions within the home will depend on the cycles and flows (temporal categories) they undergo. Material possessions that aid either a utilitarian or pleasurable activity will also be specifically related to its associated cycles. Cycles of utilitarian possessions are generally associated with activities that take place within the home, whilst pleasurable possessions can be linked with either internal or external activities. Material possessions related to an activity will be part of the short, medium or long-term cycles (see blue horizontal axis in Figure 3) depending on the frequency of use.

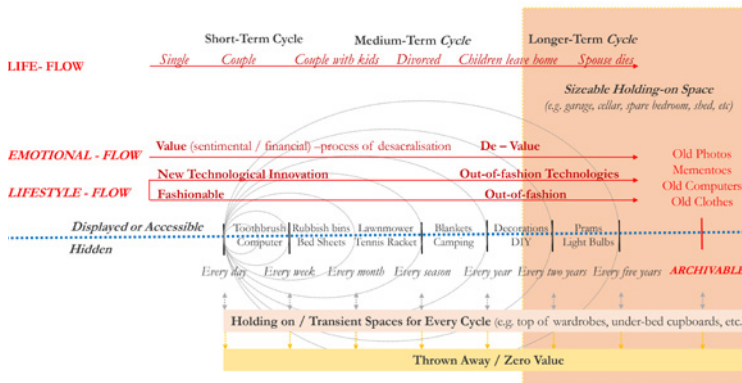


Figure 3
Cycles and
flows related to
activities (Image
by authors)

Material possessions primarily related to the internal and external identity of the inhabitant's self are more sensitive to flows of time (see unidirectional flows in Figure 3). The flows related to those possessions that change due to the changes in the lives of the inhabitants and household compositions are referred to here as *life flows*. Similarly, flows related to personal, sentimental or financial values that change over time and are associated with the inhabitant's internal-identity are referred to as *emotional flows*. Life and emotional flows are influenced by who the inhabitants are and what value they give to a particular possession at a specific time in their lives. Flows related to external identity are driven by fashion or technical innovations that can change over time, referred to here as *lifestyle flow*. Even material possessions associated with cycles will still flow over longer periods as they wear out or go out of fashion. For example, a utilitarian possession like the iron aids a weekly activity of laundry, but over time will lose value as it gets older until finally replaced.

Life flows, emotional flows and lifestyle flows all have material possessions associated with them and help communicate aspects of inner-identity, as well as how the inhabitants want to be seen (external identity). Therefore, careful consideration of space and time synchronisation and the sequence of key activities needs to be considered, as well as the impact of life flows, emotional flows and lifestyles flows on space over time.

The visibility of material possessions: Displayed or hidden

The visibility (or not) of material possessions is the final characteristic identified from the literature. The valued or de-valued material possessions that are part of cycles and flows of time, will either be

displayed or hidden away within the physical space of the home, depending on the inhabitants' identity, socio-economic, cultural, demographic and personal values.

Displayed or hidden as visibility categories of material possessions

Contemporary spaces within today's houses have evolved to become multi-functional and versatile, catering for an array of activities (Hand, Shove, & Southerton, 2007) that require space for storage in order to display or hide these possessions away. However, some such spaces, like the living area or the kitchen, still carry historical values and norms related to utility and status (Ozaki, 2003). Laermans and Meulders (1999) identified *front* and *back* spaces within the home, labelled *visible* and *invisible* by Thompson (1979). For example, spaces like the fashionable open-plan living room bring to the forefront of the home (makes visible) activities such as cooking that, in the 19th century, were related to the back (private/hidden) spaces (Ozaki, 2003). Hence, the demarcation of activities carried out in each room has changed. Rooms like the bathroom are associated with very specific activities, but bedrooms, living areas and even kitchens now host a wide array of activities, such as sleeping, working, playing, studying or entertaining (Oseland & Donald, 1993).

Homes contain a host of material possessions that are intrinsically linked to household identities. Some of these possessions are likely to be on display and others hidden away from view. For example, Hecht (2001) carried out an in-depth case study of women's memory and its relation to material possessions. He argued that when possessions are significant and displayed, they are related to one's personal or sentimental attachments and interests in life (Hecht, 2001), and others reinforce this (Dittmar, 1992; Lury, 2011).

Similarly, the way households display their belongings varies in relation to their culture, beliefs, social identity, status or success (Daniels, 2001; Lury, 2011; Richins & Dawson, 1992). In some cases, the domestic space has areas, or even entire rooms, that display possessions related to identity and culture. These spaces can be motionless and unused but become showrooms when visitors come (Daniels, 2001).

The amount and type of value given to possession will determine whether or not it is on display. For example, those who have strong family values will showcase family photos of key moments, whilst those valuing success might display specific artwork as symbols of status (Ozaki, 2003). Therefore, the decision to display or hide a possession in a house will depend on the composition of the household and the values they want to put on show. If a material

possession loses value over time and becomes redundant, be it one that aids an activity or enhances the inhabitant's self-image, it is placed in a *holding* space while its owner reassesses its value and decides if it is to be thrown away or has the potential to regain value to be displayed. In many contemporary homes, such redundant possessions dominate spaces like the spare bedroom, attic, shed or garage because there are insufficient designated spaces in which they can be stored or *held-on* to (see the right side of Figure 1).

Building a conceptual framework for housing design: Space for hidden and visible storage

Within any new house, space for storage of these categorised possessions needs to be provided, to bring order to the cycles of activities within the home, and to the life lifestyle, and emotional flows. This storage will be hidden away or displayed depending on the value given by the inhabitant or household.

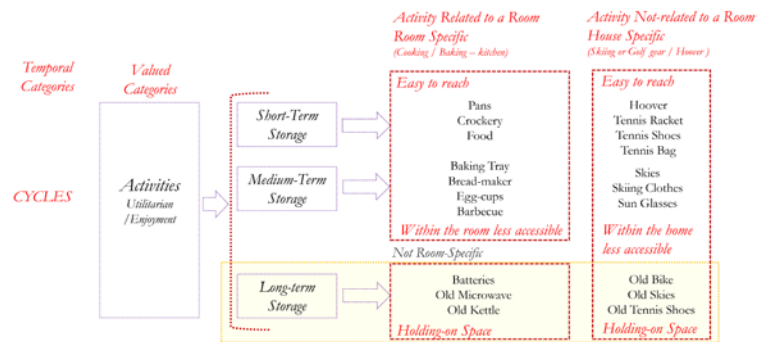
Material possessions supporting activities will require specific space for storage, depending on the frequency they are used. In frequent cycles, there is likely to be a hierarchy of importance that leads the inhabitant to decide as to whether the possessions are displayed or hidden. In less frequent cycles, the possessions will be hidden or stored in *holding on* spaces (Hetherington, 2004), before they are used again or thrown away (see the bottom of Figure 3).

When an activity that is associated with a specific room occurs as part of a cycle, the frequency of that cycle will be crucial in determining how and where the associated objects should be stored. It is helpful if the material possessions that are used in short or medium-term cycles are stored within the room that the activity takes place in. The mix of short and medium-term cycles that will take place in each room can then be supported by the necessary level of storage specific to each type of cycle. Material possessions associated with short-term activities can be stored in easily accessible places, and those associated with medium-term cycles can be stored in less accessible spaces. Some material possessions associated with long-term cycles are still associated with a specific room. However, the infrequent nature of their use means that they could be stored elsewhere; for example, storing Christmas decorations in the attic (Figure 4).

There are also activities that are not associated with a specific space within the home, such as vacuum cleaning, or are associated with a space outside the home, like sports equipment. Material possessions associated with these types of activities do not need to be stored in a specific room, but the frequency of their use could

still dictate how easily accessible they are and will require a house-specific storage solution (see the right column in Figure 4). The vacuum cleaner could be stored in any room but would need to be able to be accessed in a hurry when something is spilt, whereas a pair of skis could be hidden away anywhere until winter. A range of specific storage solutions for these types of activities throughout the house needs to be carefully considered. Therefore, when considering the storage for material possessions related to the activities, a hierarchy of room- and house-specific solutions could be considered (see two right hand columns in Figure 4).

Figure 4
Storage strategies
related to cycles
of activity (Image
by authors)



Material possessions that become critical in helping define the inhabitants' self (internal self) and how they want to be seen by others (external self) are associated with flows. The flows will influence when these possessions are used, stored away or displayed and will need a different approach to storage, again, depending on whether or not they are associated with a specific room in the house. As with cycles, the possessions related to these flows have a duration over which they will de-value and become obsolete and need dedicated spaces accordingly (hidden away).

Material possessions that reflect the inhabitant's inner identity are more likely to be influenced by the life flows and emotional flows. These possessions, such as a personal photo of a loved one, could well be kept in a specific but private place (privately displayed), or displayed on the mantelpiece in a public part of the house to share the object with visitors (publicly displayed). Material possessions that have high sentimental value, such as old photo albums, are not related to a specific place and can be stored anywhere in the home, in the same way as objects related to long-term cycles of activity (see the top half of Figure 5).

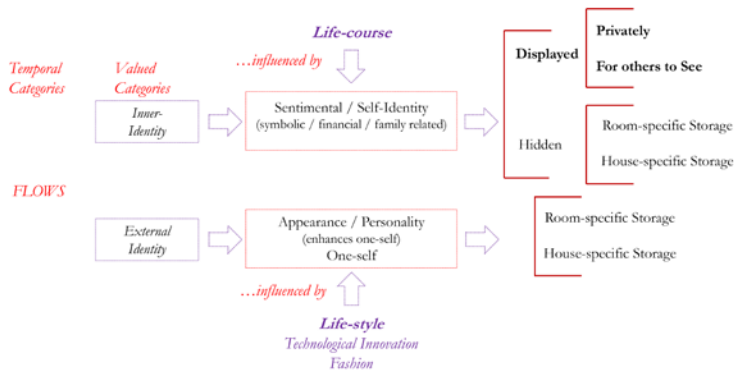


Figure 5
Storage strategies
related to cycles
of activity (Image
by authors)

If a material possession loses value over time and becomes redundant, be it one that aids an activity or enhances the inhabitant's self-image, it can be placed in a holding space while its owner reassesses its value and decides if it is to be thrown away or has the potential to regain value. Financial value has a small additional influence on how material possessions are stored. Some expensive objects, like jewellery, will need to be stored in a secure place like a safe, whilst other such possessions, like original artwork, might be exhibited within the house as symbols of status, despite a potential security risk. Some material possessions, such as inherited antiques, are identified as increasing in financial value over time, despite not necessarily being valuable at present (perhaps they are not yet very old, or are not to the inhabitants' taste), and so are stored away out of sight until their value increases to the point where they are sold or put on display.

Sentimentally valued collections (with or without financial value) that are part of a householders' identity, need to have space to be displayed. There are usually areas within the home that are more accessible by visitors, where some of these collections can be publicly displayed, whilst other more private collections can be displayed in areas solely for personal enjoyment (see the top right of Figure 5). Such collections can put notable pressure on space and need to be considered beyond the minimums suggested by design guides, with perhaps a mix of premium storage for the most valuable items and less visible storage for possessions that have lost some value through desacralisation.

Lastly, there are material possessions related to inhabitants' external identity. These are more likely to be influenced by the lifestyle flows, such as technological or fashion trends (see the central column in Figure 5). These possessions reflect the external identity of the inhabitant and could be kept in a specific room or be part of a house-

specific storage space. These possessions differ from person to person and will always relate to how inhabitants want to be seen by others at specific points in their lives.

When possessions become de-valued, spaces such as the attic, garage and spare bedroom become holding spaces for transitional material possessions, instead of maintaining the original use for which they were designed. Therefore, storage spaces could be provided in each room (room-specific storage), and in the house (house-specific storage) for those de-valued possessions, as well as a clearly identifiable and sizable holding-space for the de-valued possessions (long-term storage). By having carefully designed storage at room and house level, as well as having identified clear long-term storage, spaces can be ordered, sorted and tidied ensuring the space is not inundated by stuff and the household activities can be carried out. This brings physical order to the space and mental order to the inhabitant, therefore aiding the physical and mental wellbeing of the inhabitant.

Figure 6 brings together the universal characteristics and categories of material possessions identified from the literature. The diagram also articulates strategies for the design of storage, at room level and house level, in the home.

Conclusions

This study has brought together, for the first time, the sociological, anthropological and consumer research literature (Csikszentmihalyi & Rochberg-Halton, 1981; Dittmar, 1991; Hand, Shove, & Southerton, 2007; Richins, 1994) to develop a conceptualisation of material possessions in the form of a new conceptual framework for housing design thinking. By identifying key characteristics (qualities) and categories (set of shared qualities) of material possessions, the paper explores a new approach to housing design, where the impact of material possessions on the physical space of the home is considered.

By using this framework, architects, policymakers and even housebuilders, can evaluate and adopt a new approach to housing design that considers the implications for storage in homes, especially when space is at a premium. Therefore, the impact of material possessions on the physical space of the home, as well as the location of storage for these material possessions, is presented as a new perspective for consideration in the housing debate. Considering space for storage in the design of new houses could help householders avoid cluttering the space and therefore impact positively in their wellbeing.

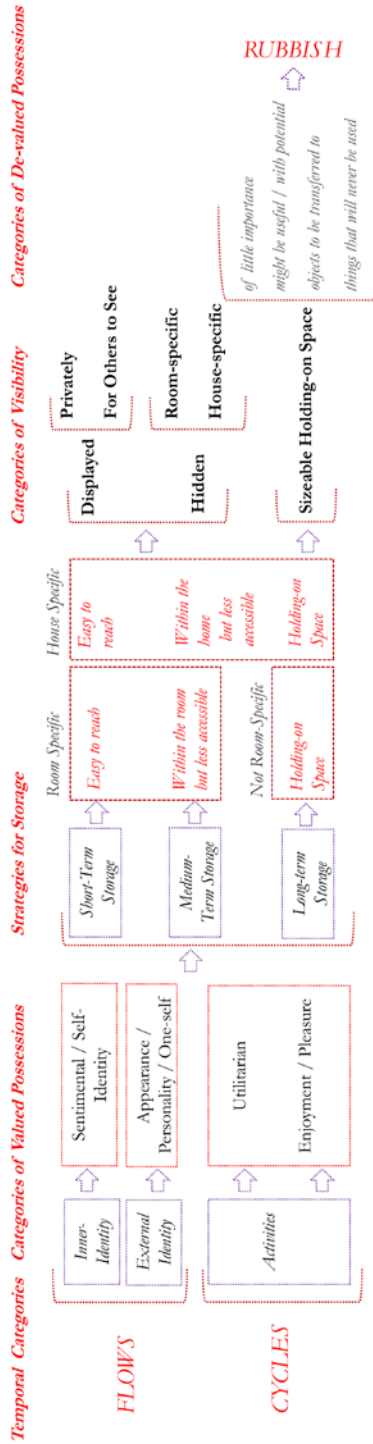


Figure 6 Overall conceptual framework of material possessions (Image by authors)

Value, temporality and visibility have been identified as influential in the characterisation of material possessions. This conceptualisation is driven by the values attached to different possessions, be they given by the owner or by others (society). Material possessions can be categorised as such for design when valued as aiding utilitarian or pleasurable activities, or when shaping our inner and/or external self. These possessions will be displayed or hidden away, depending on the inhabitants' culture, beliefs, social identity, and status. The utilitarian or pleasurable activities that take place in or out of the home are part of short, medium or long-term cycles (frequency), are intrinsically linked to specific material possessions that aid the activity, and which consequently move from one space to another at specific synchronized times. On the other hand, material possessions primarily related to the internal or external identity of the inhabitants'-self are more sensitive to the flows of time, be they life flows, emotional flows or lifestyle flows. Whilst material possessions have previously been associated by others as being part of cycles in time, this paper has also identified material possessions as being part of unidirectional flows in time.

Material possessions need relevant and carefully designed space for storage. However, this space is not a priority addressed in the most recently published design guides, regardless of the importance placed on such spaces in the more historic guides (Building Research Establishment, 1993; MHLG, 1961) and in the cross-disciplinary literature presented in this study. In addition, material possessions that help build inhabitants' inner or external identities have been overlooked in both historical and current design guides, whilst in sociological, anthropological and consumer research fields they take the centre stage.

For valued possessions, the conceptual framework provides room-specific and house-specific storage strategies, both for material possessions linked to activities that take place in that room/house and for objects of sentimental or financial value that shape our inner and external self. Storage for material possessions driven by activities associated with short- or medium-term cycles needs to be appropriately accessible. Storage for objects of sentimental value needs to have varied visibility, depending on the room itself (be it public or private), and the nature of the object (internal or external status). Sufficient room-agnostic storage space must also be provided for material possessions associated with activities that occur over long-term cycles as well as those not associated with a specific room.

The conceptual framework was developed from a wide-ranging literature review. The majority of relevant studies were from

developed countries and dealt with lifestyle and consumption cultures in largely capitalist societies. The purpose of the paper is to develop a framework that could provide insight and, perhaps, be useful in advancing design thinking in related housing models. Further investigations of the usefulness of the model in different geographical, cultural and socio-economic contexts are suggested.

Finally, the model suggests that sufficient storage needs to be provided for *redundant* material possessions, which have lost value but cannot yet be thrown away, some of which should be within a specific room linked with the object. This would free-up spaces like the garage, shed, or utility room to be returned to their original function. These redundant possessions are the ones that are overwhelming the spaces in the home (clutter) and will most affect the inhabitant's wellbeing, and therefore their consideration during design becomes critical.

The study places value on the design of storage within the limited space of today's houses, especially that in standardised house types, in order to propose an alternative approach to housing design thinking that provides adequate spaces for the inhabitants and their associated material possessions. These possessions define the inhabitants' values and self-identity and affect their well-being, comfort and happiness, and therefore it can be argued that storage practices should be brought to the forefront of housing design thinking. By including storage in the designers' agenda, architects can begin to consider material possessions related to the inner- and external-self, so the design of houses can truly facilitate the inhabitant's lives and lifestyles: a perspective that until now has not been considered in published design guides.

Older design guides have to some extent addressed the importance of the activities that take place in the home, and the need for sufficient space to be able to carry them out, by focusing on the type and frequency of activities that take place in the home (Building Research Establishment, 1993; MHLG, 1961). However, more recently, they have neither articulated the types of material possessions and their effect on the physical space, nor the flows that might influence their location at specific points in time. Similarly, they hardly ever consider the space required by those material possessions that improve the social status of an individual or family unit, nor those related to identity. In addition, the guides do not reference the importance of flows (fashion, technical innovation or lifestyles). Providing enough space for storage to enable the activities carried out by the inhabitants is not a priority addressed in the most recently published design guides (DCLG, 2015; HATC, 2006; Mayor of London, 2010) or housing policy

(Disability Discrimination Act, 1995), regardless of the importance that extensive cross-disciplinary literature examined above and historic design guides places on the activities.

Modern guidance considers basic everyday activities but does not yet provide sufficient space to carry out the activities nor to store the possessions that aid those activities. Even less consideration is given to those material possessions that help build inhabitants' inner or external identities. The conceptual framework presented here begins to address this design gap, and brings forward a design perspective to inform architects, policymakers and housebuilders how to address the weakening functionality of the new houses that are currently being built, and at a time when the delivery of new housing is a priority.

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