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Trippe, Helena Polati

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A Service and Systems Design Approach to Housing Affordability and Welfare

Helena Polati Trippe

National governments around the world face the pressing problem of how to house an ever-expanding urban population. The question of housing and affordability presents a complex challenge for governments, as the commodification of housing links it inextricably to markets and flows of capital and places it as a cornerstone of national economies (Elsinga and Ronald 2012). Changing models of welfare and citizens' expectations of their governments add further complexity to this scenario. Housing affordability, in particular, access to home ownership, poses a challenge to current models of welfare predicated on asset accumulation. The response of recent policies and practices at the governmental and organisational level seems limited to minor adjustments to a system that many see as broken.

Recently, there has been a growing debate on the role of design in policy, public sector innovation, and social innovation (Cottam and Leadbeater 2004; Parker and Heapy 2006; Juginger 2014) spanning the areas of health, welfare services, and digitising government services. However, little attention has been paid to issues of housing in welfare delivery and housing affordability.

This paper focuses on a design case study of shared ownership, a UK housing product, and a service system designed to leverage an entry point for first-time buyers into the housing market (Monk and Whitehead 2010). The practice case study illustrates the systemic ramifications of this product service system (PSS) and the wider policy infrastructure supporting its delivery.

A "design for services" approach offers insights into how products and services in the housing sector can be better aligned to support the delivery of affordable housing. Designing service systems within a context of scarcity and competing interests calls for a greater understanding of complexity; here, the contribution of systems thinking and theory is particularly relevant. Special focus is given to the analysis of complexity from a multi-minded, purposeful social system.

The analysis that follows the design case study discusses the application of system principles to mapping and exploring complexity and linking service and systems design theory and practice. The

case study explores the practical application of these concepts and how these support design solutions of a more collaborative and diffuse nature for policy delivery.

The Home as an Interface

The function of a home is not simply to provide shelter; it also expresses individual lifestyle and investment choices. Beyond the immediate sphere of individual choice, the home sits at the intersection of complex systems of interaction, value, and exchange (Figure 1). The erosion of European models of social democracy away from ideals of universal access and toward policies of retrospective compensatory distribution is evident (Mangabeira 2005). In the UK, nowhere is this shift more present than in housing, where state-led provision is giving way to the subsidy of home ownership as a preferred form of tenure and welfare provision.



FIGURE 1: Home as a Welfare Interface

Policy debates and practices have come to increasingly rely on the home as a vehicle for public welfare delivery. Models of asset-based welfare expect that individuals will “accept greater responsibility for their own welfare needs by investing in property and assets (Doling and Ronald 2010) to ease the effects of capital flows on individual households. It is difficult to imagine that these trends, facilitated by the commodification of housing, policies, and finance, are reversible or even viable (Doling and Ronald 2010). To enable this shift, governments recalibrate the system of housing

production, which involves subsidies, macroeconomics, fiscal policies, and legal frameworks with varying degrees of success.

If the home is considered from a design perspective, it is an interface from which to draw welfare goods. This interface does not rely solely on the government as its source (Sommerville 1998) but on a range of interdependent institutions, services, and wider economic forces. For governments, delivery through this interface involves more risk, uncertainty, and complexity.

Shared Ownership: A PSS Solution to Housing Welfare and Affordability

Housing affordability—as one’s ability to exercise choice—represents a failure in the system of public welfare delivery. It affects not only low-income families but also working families, with particular ramifications for the younger demographic (Forest 2013; Franklin 2006; Bugeja-Bloch 2013; Hirayama and Ronald 2012).

Shared ownership is a sub-market product offered by many institutional and social landlords and has been in operation in the UK since 1979. Historically, its delivery has been heavily subsidised by national government grants and local planning regulations.

As a PSS, shared ownership was designed as a policy initiative to leverage an entry point into the housing market for those unable to save for a deposit. As a policy tool, it delivers affordable housing by partnering with social landlords who underwrite part of the capital investment of buying a home. It does this by enabling first-time buyers to purchase a share of a property in the open market using a deposit and a mortgage. For the remainder of the shares that are not owned, buyers pay subsidised rent to the social landlord. The intention is that this will allow shared owners to incrementally buy shares of their home through a practice called “staircasing” until they can afford the property outright.

Over the years, shared ownership has been targeted at different groups depending on government welfare and housing priorities at national, city, and local levels. The recent economic crisis has meant a sharp increase in market demand for shared ownership, which is now seen as a “fill in the gap” option for many first-time buyers locked out of the housing market. In 2013, figures from Lloyds Bank suggested that 46% of first-time buyers were considering entering the property market through this option. Partly in response to this increase in demand and high land values, the sector has also seen the emergence of high-value shared ownership properties.

Typically, shared owners purchase a small share of around 25% to 30%, meaning the amount of staircasing required to achieve full ownership exceeds 60%. Limited wage increases and high housing prices mean a high proportion of shared owners do not achieve full ownership. In the current market, for a shared owner to achieve full ownership by year 26, his or her income would have to double (UK. L&Q 2013). Although it provides the most affordable entry point into home ownership, long-term affordability and mobility within the sector is very problematic (UK. JRF 2008).

An analysis of shared ownership from a service and systems design perspective highlights the direct impact of policy on the experience of users, in this case, first-time buyers (Bason 2011). It further helps to illustrate the complexity and interdependency involved in the delivery of welfare and affordable housing. This ranges from the often-conflicting visions and delivery objectives as they play out at national, city, and local levels. These are compounded by the impact of financial, real estate, and employment markets on the success of shared ownership as a policy solution and the ability of institutions to respond to these constraints and deliver a viable product with a social focus. Finally, and most importantly, shared ownership is subject to the ability of users to navigate this thick web of interactions with tight resources. Overarching all these interactions are a complex set of social and cultural values and meanings associated with the home and practices of living.

It is first important to explore the contribution of systems thinking and service and systems design approaches to understanding complexity, an underexplored area in housing policy analyses (Rhodes 2012).

Complexity: A Systems and Design for Services Perspective

Systems Thinking and Complexity

Complexity is characterised by the existence of multiple actors and the material, cultural, political, and ideological exchanges in a system of relations. Systems thinking's conceptual tools, used to understand temporal, spatial, and relational dynamics of complexity, are one of its main contributions to designing in a complex world (Ryan 2008). Systems theory and thinking analysis on the whole, as an entity in itself rather than the sum of the parts operating in isolation, offers an alternative epistemological perspective of how to conceive of and understand the organisation of the world and its complexity. It is premised on the view that high degrees of specialisation and the tools for analysis and theoretical structures that characterise modern science are unable to produce knowledge about universal principles general to systems, the nature of their component elements, or the forces between them (von Bertalanffy 1968).

Systems thinking has evolved broadly across three main cycles, which reflect changes to the object of analysis and the way complexity is modelled within systems. The first generation of systems thinking developed approaches to deal with the challenges of interdependency (Gharajedaghi 2011) in the context of closed complex mechanical systems (Morse and Kimball 1951). Operations research (OR), which historically supported military planning in World War II and later in the Vietnam War, sought to develop mathematical models to provide a scientific basis for decision-making to plot integrated and networked solutions (Ryan 2008). Their attempts to manage complexity involved systematically cataloguing problems and solutions, which were often criticised by later generations of systems thinkers (Checkland 1981).

Open systems, the second wave of systems thinking, addressed issues of self-organisation and interdependence (Gharajedaghi 2011). General systems theory, established through von Bertalanffy's seminal 1954 paper, brought attention to the fact that systems in the natural world were not closed entities whose behaviour could be pre-determined. This wave of systems thinking emphasised the flow of matter and information moving into and out of an open system, and therefore, the importance of the environment in defining a system (Ryan 2008). Key to their analysis was the definition of system boundaries, which frame the object of analysis. Concepts of hierarchies and emergence, meaning that a system is more than the sum of its parts, were also key tools they developed to explore complexity in systems (Boulding 1956; Checkland 1981; Simon 1962).

First-order cybernetics also sought to understand the principles of self-organisation, but it typically focused on machines. Key to their understanding of complexity was the dynamics of behaviour. Von Neumann's self-producing automata (1966), Maturana's autopoiesis (1984), and von Foerster's (1992) second-order cybernetics explored positive and negative feedback loops, the flow of information through systems, the circularity of systems, and causation. Constructs such as the black box modelled the hidden behaviour of systems by systematically testing different inputs and observing the outputs they produced. These were applied to understanding complexity and to assist in producing better designs. First-order cybernetics acknowledged the importance of goal-seeking behaviours in machines, which some critics saw as being unable to account for behaviours of a different order.

A third wave of systems theory, which this paper will focus on, was soft systems and its focus on socio-cultural systems of human activity (Ackoff and Emery 1972; Checkland 1981; Gharajedaghi 2011). Soft systems thinking explored the challenges of choice, self-organisation, and interdependence in the context of purposeful social organisations. According to Ackoff and Emery (1972), purpose and the fact that social systems are multi-minded, as members manifest choice of

both means and ends, are determining factors to understanding complexity and designing better systems. For them, “culture is the blueprint for the production of a predefined order; culture as an operating system” (2011, 64). Key to understanding system behaviour are the principles of multi-minded purposeful systems put forward by Ackoff and Gharajedaghi. These will be described in more detail and, as will be discussed later, support the case study analysis described below.

Five Principles of Behaviour of Social Systems

According to Gharajedaghi, the five principles (Figure 2) of openness, purposefulness, multidimensionality, emergent property, and counterintuitive behaviour “act together as an interactive whole [and] define the essential characteristics and assumptions about the behaviour of an organisation viewed as a purposeful, multi-minded system” (2011, 29).



FIGURE 2: Principles of Multi-Minded systems

Openness

The principle of openness means that systems can be understood only in the context of their environment and their interaction with it. It suggests that everything is interdependent; however, a distinction can be drawn among elements that can and cannot be controlled. The system relates to those elements that can be controlled by actors who take part in it. The environment in turn relates to the variables that affect the system which cannot be controlled directly by it but which actors have an influence over. What is relevant to this paper

is that influence as action is not sufficient to control the outcomes of interaction but can co-produce them (31).

This distinction sub-divides the environment into two categories. First, a wider context in which an organisation operates, which needs to be appreciated but cannot be controlled or influenced. Then, a transactional environment, whose influence over, through co-production, is key to managing the system (32). The extent to which one can influence the transactional environment lies in the ability to understand internal cultural codes and hidden assumptions that form part of our social collective memory. If these are left to their own devices, they tend, according to Gharajedaghi, to reproduce the existing order (32).

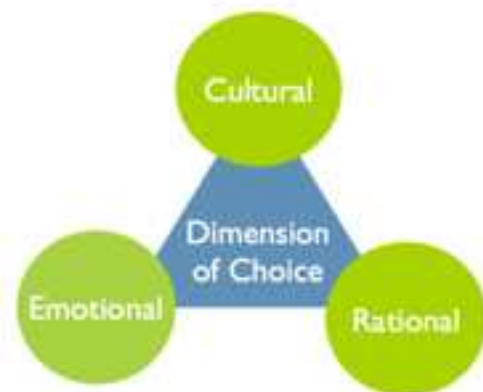


FIGURE 3: Dimensions of Choice

Purposefulness

Purposeful systems are value-guided systems implicit in the culture of the organisation. The concept of purposefulness is expressed through the choices—rational, emotional, and cultural—made by actors operating within a system (Figure 3). Gharajedaghi suggests that rational choices involve not necessarily the best solution but the one that is most compatible to how the system operates and to its cultural codes (2011, 34). Emotional

choices on the other hand are the expression of intrinsic values and involve more risk. Finally, cultural choices are the individual expression of collective choices.

This analysis suggests that actors have the power to choose means and ends, and at different times, will be influenced by different motives, therefore compounding the complexity of understanding system behaviour and the outcomes interactions produce.

Multidimensionality

Choice over means and ends also gives rise to the concept of “[m]ultidimensionality, [which] is probably one of the most potent principles of systems thinking. It is the ability to see complementary relations in opposing tendencies and to create feasible wholes with infeasible parts” (2011, 38). The principle of multidimensionality (Figure 4) means that opposing tendencies can coexist, interact, and also form complementary relationships.



FIGURE 4: Multidimensionality of multiple tendencies

Plurality in function, structure, and process means that organisations have multidimensional tendencies. Plurality of function relates to different implicit and explicit functions. For instance, the function of the home is both for shelter and lifestyle choice. Plurality of structure suggests that parts of a system and the relationships between them are variable and change

according to circumstances. “The result is an interactive network of variable members with multiple

The Design for Services Contribution

Ackoff and Emery (1972) and Gharajedaghi (2011) believe that social systems can be organised by default through replicated social and cultural codes or design. Here, the practice of design and the active engagement of the researcher to make assumptions explicit in order to seek change (Checkland 1981) become key to altering systems. To them, aligning the interest of the purposeful parts with each other and that of the whole is the main challenge to designing systems.

“[I]terative design explicitly recognises that choice is at the heart of human development. Development is the capacity to choose; design is a vehicle for enhancement of choice and holistic thinking. Designers, in this book, seek to choose rather than predict the future. They try to understand rational, emotional, and cultural dimensions of choice and to produce a design that satisfies a multitude of functions” (Gharajedaghi 2011, xx).

If the role of design is first to make explicit the cultural assumptions underlying social systems, then concepts being developed in the field of systems and service design contribute to this debate. Tools such as as GIGA-mapping (Sevaldson 2008; 2011; 2013) or mapping product service ecologies (Forlizzi 2013)—products, contexts, people, and interrelationships—prior to framing the problem provide a good basis from which to start visualising complexity. These visualisation tools tend to move beyond being visual representations toward a more active role in supporting the synthesis of analysis about opportunities for intervention.

In the area of service design, the concept of “design for” services is particularly relevant to purposeful, multi-minded social systems (Meroni and Sangiorgi 2011; Kimbell 2009, Manzini; 2011). Manzini defines services as “complex hybrid artefacts. They are made up of things - places and systems of communication and interaction - but also of human beings and their organisation” (2011, 1). As such, they are unpredictable and therefore un-designable “entities in the making, whose final characteristics will emerge only in the complex dynamics of the real world” (Manzini, 2011, 3). However, the idea of “design for” suggests an approach to designing “action platforms” (Manzini, 2011).

Sangiorgi and Meroni (2011) discuss design’s contribution and ability to bring tangibility and materiality to services and systems. The concept of the interface is a useful tool to explore the physical manifestation of points of service interaction (Panceti 1998; Secomandi and Snelders 2011). Design analyses on public service innovation have also highlighted the inseparability of services and how outcomes are co-produced through service interaction. Co-production is not only a reality of

service delivery but also a tool for co-designing future services (Cottam and Leadbeater 2004; Parker and Heapy 2006; Mulgan and Tucker 2007).

Heterogeneity is another service characteristic being considered by design for services. It accentuates the importance of contexts and environments to the outcome of service interactions as situated actions (Sangiorgi 2011). Morelli (2002) suggests the need for designers to enter into new areas of knowledge, describing a multidimensional approach to designing for services, including the technological, organisational, and cultural spheres of activity. Design for service seeks to align and synchronise goals, practices, perspectives, and values (Meroni and Sangiorgi, 2011). The perishability of services produced in real time reflects a struggle with scale and replication. The concern is that interaction can be compromised, sacrificing distinctiveness and authenticity, relational qualities belonging to people's dialogical capabilities, and intimacy from spontaneity (Cipolla 2006).

A renewed idea of value, put forward by marketing scholars, links ideas of heterogeneity, perishability, and the materiality of the interface to the co-productive nature of services. Weiland et al. (2012) argue that the outcome of the interconnected, collaborative, and systemic nature of service exchange is value co-creation. Martinez and Turner (2011) have called this "value in use." All social and economic actors, including the user, are "creating value for themselves and others through reciprocal resource integration and service provision" (12). In addition, Weiland et al. (2012) argue that services are unlike goods, as they rely on the application of skills and knowledge, making services a dynamic, fluid, and collaborative activity.

Weiland et al. also suggest that "service exchanges enables actors not only to access resources for their own benefits but, through integration, to create new and exchangeable resources in the process" (2012, 14). The creation of new resources therefore generates new opportunities for value creation at each instance of service provision. For resource integration, service provision, and value creation, the nature of the system is open to change, and they therefore argue that service design requires a systemic view of value and value creation at a granular level, further adding to the complexity of designing for services.

The implication of the co-productive nature of value co-creation and design for diffuse service networks compounds the dimension of complexity (Manzini 2011; Mont 2002; Stahel 2006). There is a need to both understand complexity and determine how to design with it. Here, the contribution of the principles of purposeful systems provides a useful framework for the case study analysis.

Design Case Study

The case study involved an in-depth design project for one of London's largest social landlords. The organisation was chosen since it is historically and currently the market leader for providing shared ownership homes, with a portfolio of around 6,000 units. The methodology for the case study mixed action research (Checkland 1981) approaches and Findeli's (2008) model of design research to help explore the entire breadth of the service system from both the materiality of service experience to the network of actors and institutions involved in producing those outcomes. For this reason, it was important for the researcher to also play the role of designer, actively and reflexively interacting with both the object of research and design outputs.



FIGURE 7: Research Methods

The research methods chosen for the project sought to generate rich qualitative insights to inform design practice and development. This began with understanding the complexity of the home in all its social, political, individual, and economic dimensions.

Methods were split into four main research strands (Figure 7), adopting a range of tools to explore from an organisational viewpoint strategic, operational, and market constraints and opportunities. It adopted a user-centred focus to explore the user experience in detail.

In particular, it sought to examine user expectations, motivations, and needs. It explored in detail the end-to-end user experience, users' motivation in relation to their homes, shared ownership, and how these changed over time. Three sets of tools were designed to observe peoples' relationships to their homes, their assets, and their landlords. Participants were divided into three distinct groups according to the length of their tenure: 1–3 years, 5–7 years, and 11 plus years. This was to help track changes in product perception over time. A control group of staff members who were shared owners was also established to examine if there were differences in their perceptions and expectations. Co-creation sessions developed idea concepts, producing a range of options and solutions.

From the outset, the project sought to explore how the social landlord could encourage and support more of its users to buy more shares of their homes through the process of staircasing. As the research progressed, it became clear that the project would need to address the disconnect between the original product offering, the current economic context it was operating in, and the service system designed to implement it.

The main issue for shared owners was not about an enhanced staircasing service experience. The current economic climate and the diminishing prospect of shared owners achieving full ownership meant that mobility into and out of the system was the main issue that needed to be addressed. The design practice sought to develop solutions to enhance users' housing mobility, providing greater transparency about the offer, enabling housing mobility, and designing housing pathways. Three sets of solutions were designed, with the assumption that the starting point was a shared owner with a 25% share.

The first set of solutions used simple visual tools to enable customers to engage with complex information about their assets. The second set of solutions involved the design of a number of idea concepts to provide users with clearer pathways, greater choice, and housing mobility. The central premise underpinning these solutions was the idea of a secondary market for low-cost home ownership products. The final option suggested an idea where shared ownership was not linked to a property but instead to a membership plan that could be applied to different built units and would involve a more diffuse network of stakeholders participating in delivery (Figure 8).



FIGURE 8: Example of the research project solution and ideation

Further research is underway that considers the viability and the legal and financial implications for implementation; it has recently attracted pilot funding from London's city authority.

Appreciating Complexity in Policy Service Systems

The last section of this paper applies the five principles of purposeful, multi-minded social systems (Gharajedaghi 2011) to case study findings and how they can support the design for service systems.

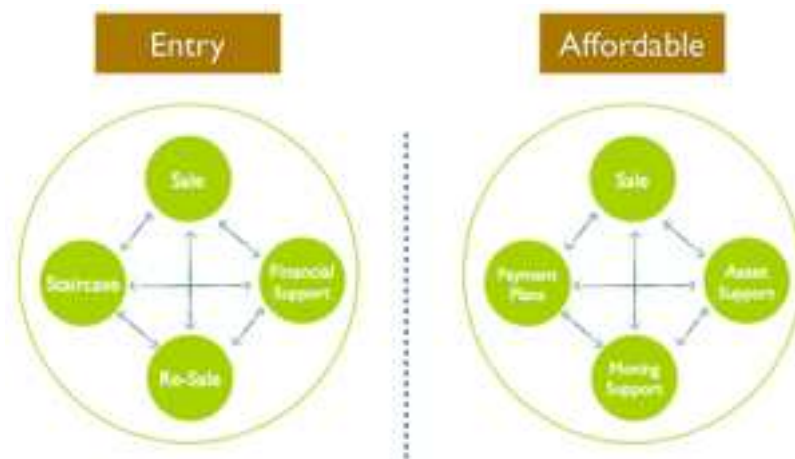


FIGURE 9: Illustration of difference in service proposition for entry as oppose to affordable housing PSS

From the outset, the case study work revealed that shared ownership is treated both as an entry and as an affordable product, displaying the problem of counterintuitive behaviour within systems. A service system design for enabling entry into the housing market is potentially very different to one that will sustain long-term, affordable, low-cost home ownership (Figure 9). The organisation's lack of clarity around its users' behaviours and motivations and how these are changing were reflected in the unclear vision, offer, and business plan assumptions about the purpose of the shared ownership.

This lack of clarity directly impacts the benefits users derive from shared ownership and the system of services designed to support it and is not specific to the case of this organisation. It is reflected in policy approaches and decisions made at local, city, and national levels. The users for which shared ownership was originally designed—tenants in social rented housing and key workers who could not save large enough deposits to buy a home—are no longer the only ones who are able to access shared ownership and drive its demand. The high cost of housing means it attracts a wider and significantly different socio-economic group of users, who are in turn encouraged by government policies and subsidies.

Figures published by the organisation reveal that the majority of shared owners retain their original purchased share and are unable to staircase effectively. Yearly rent and service charge increases means the likelihood of staircasing diminishes as tenure is prolonged. Unable to move, as their shares could not buy them a larger home outright, many face returning to the private rental market as family circumstances change.

Shared ownership is targeted at first-time buyers whose combined household income cannot exceed £67,000 (for a one- or two-bedroom property), and depending on the location of schemes, prices can be further reduced by local government. In principle, this reduction appears to be beneficial; however, the high cost of land/building coupled with the reduction of income thresholds means shares bought at the point of entry are very low. If the assumption of full staircasing is to be achieved, this would require at least a doubling of income levels (UK. L&Q 2013). However, income levels have not been accompanying house price growth, and perhaps for this socio-economic group, a doubling of income is an unlikely scenario.

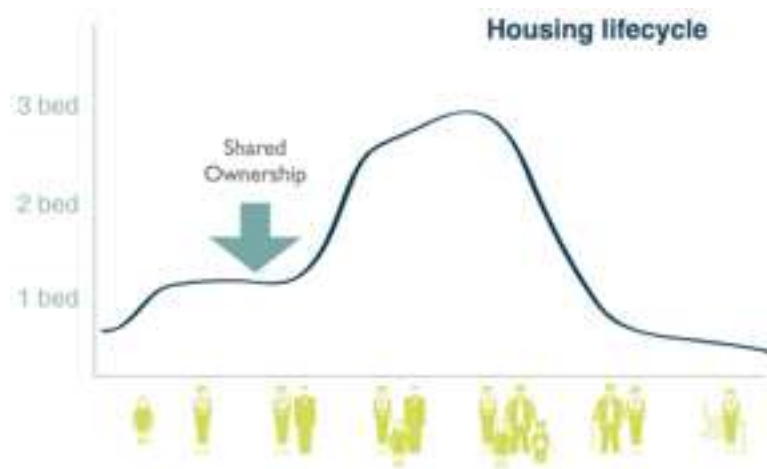


Chart 1: Housing lifecycle and changes to housing need following entry into home ownership point through shared ownership

A key insight generated from the research captured the effect of critical time lags and emergence in the system. Shared ownership is targeted at first-time buyers and young professionals whose family circumstances and space requirements are more than likely going to change over a short period of time. Through this research, it became evident that shared ownership is, effectively, building a problem (Chart 1). Although shared ownership is able to leverage an entry point into the housing market, it creates a situation where owners are stuck once they have access to it. The lack of alternatives and support available to those who find themselves in these circumstances highlighted

the need to design much clearer routes into and out of shared ownership and a system of services to support transitions and pathways.

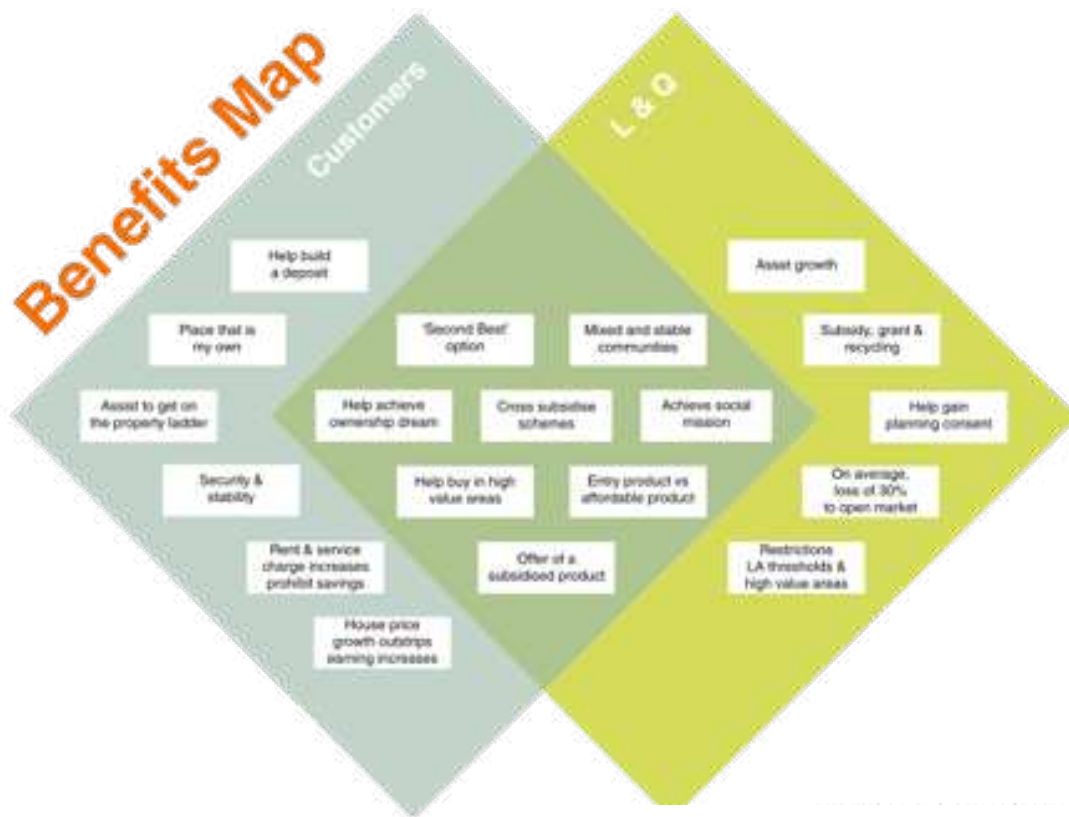


FIGURE 10: Dimensions of Choice and Benefit

The case study also traced changes in user aspirations and dimensions of choice—rational, emotional, and cultural decision-making—over time (Figure 10). Shared owners recognised that the product allowed them to enter the housing market and build a deposit. Those who had a more established financial situation and who were more financially savvy saw it as an opportunity to purchase in a high-value area, which they otherwise would not be able to afford. In trying to understand barriers to staircasing activity, a simple visualisation of the long-term cumulative costs associated with shared ownership was developed and drew attention to the emotional disincentive of investing in something they did not own (Figure 11).

Another important finding highlighted that in a situation of scarcity and constrained resources, which a high number of shared owners found themselves in, being a shared owner for life was not an issue. To them, the primary benefit of owning a home was the safety and security of tenure that it provided and the ability it might give them to move and exercise choices about where they lived as their circumstances change. This sits in opposition to the commonly held assumption, which can also be found in policy, that only outright home ownership can satisfy this need.

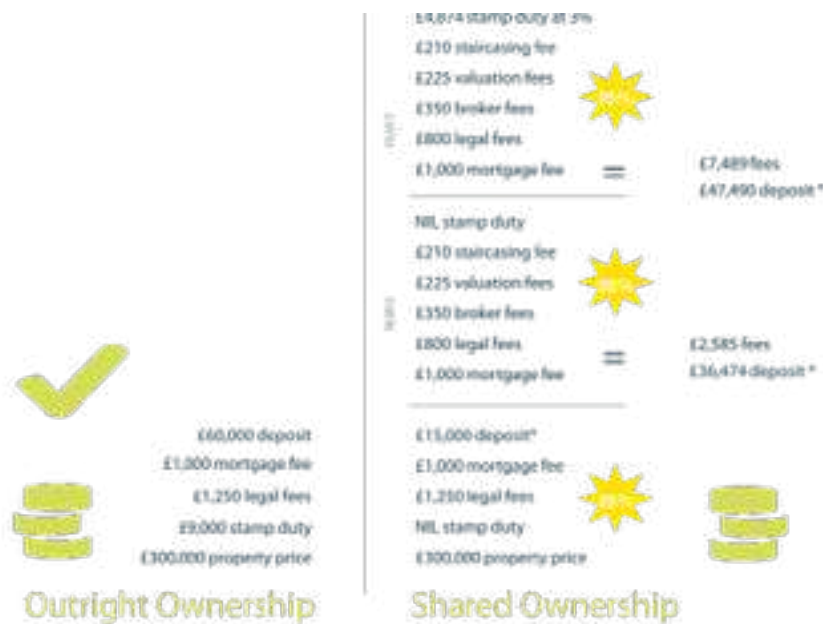


FIGURE 11: Dimensions of Choice and Cost

From the perspective of the multidimensionality of function, the case study reveals that for users, shared ownership serves a number of functions, from security of tenure to an investment opportunity to an entry point into the housing market. In the case of the landlord, shared ownership and

other low-cost home ownership products helped the landlord meet local government requirements for the delivery of affordable housing. It was also critical for the landlord in gaining planning permission for development, effectively acting as a tax on new developments. For the government, shared ownership supports welfare delivery, increasing its tax revenue base and supporting the building industry, driving economic growth.

Aspects of multidimensionality can also be observed in the structure of the organisation and its transactional environment. From a public subsidy perspective, minimal government subsidy forces organisations to cross-subsidise development, meaning they need to build in higher-value areas, which has an impact on the immediate and long-term affordability to users. Conflicting local and national policy priorities around income thresholds for accessing shared ownership also impact the levels of debt shared owners take on and the distrust financial institutions have in lending to this market.

Finally, the multidimensionality of process was evident in the user experience. The sales to exiting the product revealed a “distributed nature of service experiences, over time channels, media and people” (Holmid, 2011, 93). The organisation invested heavily, supporting the sales element in a very commercial way. Conversely, the support for staircasing and re-sales was less resourced and was more institutional even though the social landlord is handling commercial transactions. The organisation and the sector as a whole referred to shared ownership homes for re-sale as second-

hand homes; this is not a practice experienced in the private sector and could diminish the value of these assets to both the user and the landlord.

What became clear from the case study was that both the organisation, if viewed as a system, and its wider transaction environment were designed to support the sale of new homes, not affordability. This is symptomatic of a developer model heavily tilted toward increasing supply and satisfying volume builders and social landlords to sell newly built units and not long-term housing affordability. It reveals a state that is maintaining the behaviour of the organisation and its transactional environment.

The principle of openness and its distinction between the context and a transactional environment, which an organisation has influence over and can co-produce outcomes from, provides a useful lens with which to frame the areas and actors within a system of interaction for the purpose of intervention. Stakeholder analysis highlighted the linearity in the model for producing affordable homes and for welfare delivery. The organisation operates as if it were a slot machine; it inputs its own resources, secures some subsidy, gets the land, obtains planning permission, and produces affordable units as an output. This developer model is replicated across the sector for the benefit of housing providers and volume builders where policy, grant infrastructure, and organisational structures are designed to reduce risk.

The policy aim is to deliver new units; it is premised on the unchallenged assumption that full home ownership, at any cost, is the only way to fulfil user aspirations for the security of having a home. It ignores the contribution of the user in taking on the largest amount of risk and the user's key role in generating value.



The solutions developed as part of the case study set out to tilt the prism of development away from the goal of full ownership and toward mobility and the liquidity of assets (Figure 12). They sought opportunities to distribute value chains and encourage a more co-productive aspect of asset base growth. In designing for diffuse service networks, they hoped that by producing more effective alignments they could

FIGURE 12: Design for Housing Welfare and Affordability

bring transparency to the input from users, the government, and organisations in generating value and co-delivering the outcome of housing affordability. The concept of a transactional space of influence and co-production meant that while organisations or governments might not be able to prevent the effects of global flows of capital, the high cost of materials for building, interest rate levels, etc., they can enable a net of actors and organisations that they have influence over and that will impact the outcome of their input. The options require a more purposeful approach toward the transactional environment by building service ecosystems capable of support and value generation through diffuse and collaborative networks of delivery (Manzini 2011).

Design for Policy: The Case of Welfare & Housing Affordability

A number of implications can be drawn from the analysis of multi-minded, purposeful systems, design for services, and the case study material. Service co-production, value co-creation, and value networks' influence on transactional environments all reinforce the dynamic of exchange and interaction within social and technical systems. Complexity is a key variable that service and systems design increasingly needs to address.

The prominence of the user and the social construction of the interface in design debates raise the question of entry into a system and the different scales of analysis. Principles of purposefulness and cultural codes in perpetuating systems enrich analysis by contextualising human-centred approaches. Design for services and systems in a policy context inevitably steps into a space where ideological views that shape policy; models of welfare; rights and responsibilities; and the boundaries between the state, the market, and civil society cannot be ignored. The output of design activity and the emergent properties from systems need to be understood in the context of how they manifest in the world. As the issue of housing mobility in the case study demonstrates, the heterogeneity and perishability of services have very real material manifestations.

The idea of organisational and systemic multidimensionality where opposing tendencies coexist, interact, and form complementary relationships is addressed in both the systems and design for service literature by aligning and synchronising the goals, practices, perspectives, and values of the services system and its environment. These alignments are sought at the level of products and services. Design for policy, in the case of housing, requires more than just better alignment of products and services designed to improve housing market affordability. Taking the concept of multidimensionality into consideration, design for policy requires the design of the function of a system to be served by several structures. In the case of housing, the function and structure of the system attempts to address affordability by increasing housing supply. However increasing supply is a

means to achieve affordability and should not be an end in itself. It poses the challenge that designing for affordability is the function policy instruments seek to provide through a number of complementary structures and processes that afford citizens with the power of choice. This suggests that designing for policy needs to move beyond producing alignment within services and toward alignment among systems and networks. It raises questions about who determines the priority of these functions and complexity in number and conflicting priorities.

Conclusion

This paper introduces service and system design approaches to debates on welfare, housing policy, and affordability. The case study of an affordable product service system entry into homeownership shows how these are failing to adequately support access to welfare based on asset accumulation. The case study solutions sought to find new opportunities to generate value by enabling the social landlord to design alternatives and combine user input to recalibrate how the outcome of affordable housing can be delivered differently.

Complexity is somewhat recognised as a feature in debates around design and its contribution to public service innovation and policy. Little attention, however, is paid to areas with larger, more complex structural challenges such as housing. In housing analysis, the study of complexity and systems thinking are also underdeveloped, let alone design for services. The paper therefore brings systems thinking into housing analysis and explores how design for services, more importantly, design for public services, can contribute to the debate.

The complexity of social systems is compounded if understood through concepts of co-created value, emergence, and the multidimensionality of services and systems. Significantly, these concepts contextualise social, cultural, and structural codes that are produced and re-reproduced but that can also be redesigned. Appreciating the user- and human-centred approaches from design give granularity to the scale and scope of the analysis and the ability to link outcomes to direct material manifestations. Reframing design for policy as moving beyond producing alignments within services to among systems seeks to initiate critical reflection of the role of design in debates on policy and political visions for the future.

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