

An Investigation of Spatially Fluid Knowledge within the Retail System

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Abstract

Design, as an activity, produces its own stock of knowledge that is embedded or encoded within design objects. It is through increased interactions with users that this knowledge evolves, generating new levels of meanings to establish significant, personal connections. The design object can be viewed as containing the designer's expertise, which is communicated and made transferrable to the user. This form of knowledge is mediated by the connoisseur, represented here by the physical layout of the retail space. Using the example of a vertical retail complex in Hong Kong, this paper examines the fluid nature of knowledge against the restrictions imposed by the mall's spatial configuration. The retail space is simulated as a system of knowledge transference, exchange and diffusion. Knowledge, specifically design knowledge, is further discussed within the domain of design activities and as an extension of design expertise. User experience is framed against the context of the case-study, suggested as an antecedent to user-object interaction and resulting in experiential knowledge. This conceptual paper identifies the retail structure as assuming the role of the connoisseur and becoming the access point to knowledge, presenting the tension between the fluidity of knowledge and the disruption of its natural flow.

Keywords

Design knowledge, knowledge flow, user experience

Introduction

Knowledge is the natural ability of individuals to organize information and understandings of the world into integrated systems, processes or materialized finished forms (Narvaez, 2000). Designers, as one source for knowledge, create and use knowledge in their respective practices through the designing of products. Users, as individuals engaging in interactions with design objects, acquire design knowledge in their ability to perceive and recognize product attributes and functions. This transactional relationship between the design object and user stimulates the fluidity of knowledge, as it moves across different levels of meanings to facilitate new forms of knowledge production (Csikszentmihalyi & Rochberg-Halton, 1981). Retail outlets serve as the channel through which designers connect to users, therefore, acting as intermediaries of knowledge transfer. They significantly contribute to existing knowledge through direct involvement in user interaction and the retail environment can be defined as a system for receiving, containing and disseminating knowledge. Designers develop tacit knowledge and embed it into the creation of products (Kazmierczak, 2003), whereas retailers articulate the intentional levels of design knowledge through their direct communication with users. Retailers become connoisseurs of design knowledge by mediating the knowledge exchange between

users and products. The retail complex, through its physical and spatial layout, is identified as disrupting the direct flow of design knowledge with its own representational use of space.

The design of vertical malls has significantly changed the physical patterns and behaviors of its patrons, from the freedom of moving horizontally to constricted, upward flows of movement. This paper explores the juxtaposition of physical and simulated space with the example of 'The One', a new shopping mall in Hong Kong, through a knowledge framework discussing the experiential knowledge of users. The transition from freestanding retail shops into a 29-story complex has transformed the notion of space for local users. This movement has not only affected the retail landscape of Hong Kong, but has altered the overall retail experience.

The knowledge framework addresses the following:

- *Expertise* – the knowledge developed, created and used by designers.
- *Connoisseurship* – represented by the physical layout of the vertical retail structure and its role in facilitating the user's access to design knowledge.
- *Experiential knowledge* – the knowledge acquired by users through increased interactions with design products and their experiences within the retail space.

Against the backdrop of the retail space as a system containing the flow of knowledge, the above areas of expert, connoisseur and experiential knowledge are further defined. This conceptual paper examines the restrictions imposed by physical space and its effects on user experience.

Design Knowledge

The activities or processes of design involve the problem-solving, pattern-constructing or code-creating skills of designers, concerning largely tacit knowledge that is often difficult to explicate (Cross, 2006). This knowledge is transferred into design objects which function as a semiotic interface to trigger responses in its users (Kazmierczak, 2003). The user becomes the final interpreter or receiver of knowledge, through increased interactions with the product, to construct the final meaning or significance. Although the design object serves the semiotic function of transmitting meanings, or design knowledge, it is dependent on the retail channels through which it gains direct access to users. The retail outlets allow a common platform for knowledge exchange between designers, the design object and users. This emphasizes the role of space within the retail structure as facilitating user experience and mediating the flow of knowledge. It is proposed that knowledge shifts from tacit understandings to explicit forms as it transfers between the expertise of designers and the experience of users. The area of expertise is reviewed to understand how designers develop individual perception and use human experience toward the creation of their own knowledge. Connoisseurship is explored in relation to the physical space of the retail structure, as setting the boundaries for user experience and facilitating the diffusion of design knowledge. Expertise and connoisseurship are discussed in relation to the use of tacit knowledge within cognitive activities.

Expertise

The body's natural inclination to receive, expect, and perceive utilizes the function of sensory stimuli to transform perceptions into expected regularities of knowledge (Popper, 1994). This illustrates the predisposition of individuals to gain and access knowledge existing in the world. Knowledge creation and usage is a human endeavor that is realized through the interactions and experiences of individuals (Fernie, Green, Weller, & Newcombe, 2003). Design involves a process of articulating tacit knowledge through the experience or professional practice of designing (Friedman, 2000). This implicates design knowledge as relying on human experience and development in order to make tacit knowledge explicit. The value of tacit knowledge is recognized in its scarcity and association with individual "ways of doing" (Weller, 2007) and, as a currency of professional economy and value, tacit knowledge must be codified to be made explicit and shared (Fernie, et al.; 2003). Mareis (2012) identifies a commonality in tacit knowledge that is characterized by its non-verbal activities and attributes. Within the domain of design, knowledge can be found in three main sources: people, processes and products (Cross, 1999). The human ability to take part in the activity of design can be developed into the designer's level of professional expertise, generating knowledge in the tactics and strategies employed within design processes. Products contain the designer's own knowledge, knowledge of the process, and evolve into other knowledge through its interactions with users.

Domains of Design Knowledge		
<i>Resides in People</i>	<i>Resides in Processes</i>	<i>Resides in Products</i>
	Types of Knowledge Produced	
Designerly ways of knowing	Design practices and processes	Form & configuration of artefacts
Human ability	Design methodology	Implicit knowledge
Engaging & reflecting in design	Using & reflecting upon artefacts	Product –context semantics

Table 1. Domains of Design Knowledge (Source: Adapted from Cross, 2000)

Friedman (2000), identifies designers as being analysts, synthesists, leaders, critics and thinkers. These roles support and endorse the designer's own knowledge, and knowledge generated through designing, as being a form of expertise that is cultivated and created from the transformation of experience. The expertise of designers is, therefore, the ability to conceptualize the design problem and solutions in a larger cognitive scope (Cross, 2004). Expertise and knowledge enable designers to frame and reframe situations to perceive problems and determine relevant solutions. This capacity for structuring problems is how designers explicate their tacit understandings of design problems and utilize foresight to initiate ideas into design concepts or design solutions. The expertise of designers is defined here as the ability to transform experience into framing activities which extend beyond the scope of design and into design activities and solutions within specific cultures and societies.

Expertise results from dedicated application of experience to a chosen field, providing the designer with the cognitive capacity for identifying the significance of design solutions within problem spaces (Cross, 2004). This form of knowledge is embedded into the design, particularly within the domain of fashion, where design knowledge is culturally accumulated in order to establish its social significance (Weller, 2007). Cross (2006) identifies a designerly way of knowing, an inner coherence, that is specific to the design area and embodied in codes

translating thoughts or ideas into physical artifacts. The knowledge contained within objects is an example of the designer’s impact on culture, in the skilled ability to assess the cultural world and translate it into concrete objects. This process is the language by which design activities are communicated and its knowledge is transmitted to be made recognizable in the finished form.

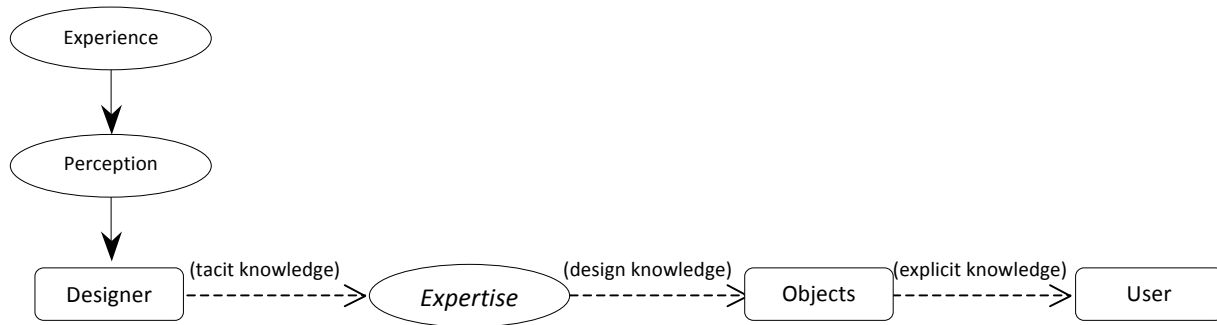


Fig 1. Flow of Knowledge – *tacit, design & explicit*

Cross (2006) recognizes the disparity within the profession of design, where some are “better” than others in their natural ability to design and optimize design solutions. The creativity of designers, in their specific ways of thinking and designing, sets them apart from non-designers as design processes involve innate and tacit understandings of the given situation. This sense of uncertainty and risk emphasizes the need for designers to attain a level of expertise in order to identify and explore the design territory, utilizing perception and intuition to assess design problems (Cross, 2006). The design process becomes less about matching solutions to problems but, rather, a practice leading to the acquisition of tacit knowledge as suggested by Donald Schon’s “reflection-in-action” (Waks, 2001). As a form of dialogue or conversation, tacit knowledge or intuitive knowing accumulates from reflecting on and critically reviewing the repetitive experiences of a specialized practice (Schon, 1983). The practitioner develops tacit norms and appreciations to make judgments in assessing and making sense of uncertainties. This cultivation of experience into expertise allows designers the ability to confront situations or problem spaces by constructing holistic understandings of the sociocultural context.

Connoisseurship

Connoisseurship is the expert judgment for discriminating taste, requiring tacit knowledge to recognize details and characteristics of quality (Mareis, 2012). Similar to expertise, which is accumulated and developed through experience, connoisseurship is the expert eye and authority for identifying significance in a particular field of practice. Connoisseurs utilize self-perception and perceptiveness to appreciate and disclose judgment on specific design characteristics (Dunin-Woyseth & Nilsson, 2012). Experience allows them the ability and skill to distinguish, judge and evaluate objects by forming explicit interpretations to re-educate and influence the perceptions of others. They act as intermediaries between the designer’s expertise and the final audience, using criticism to articulate and communicate their

understandings. Connoisseurs are, therefore, both professional experts and competent critics possessing the ability to transfer and disclose tacit knowledge and judgments in taste.

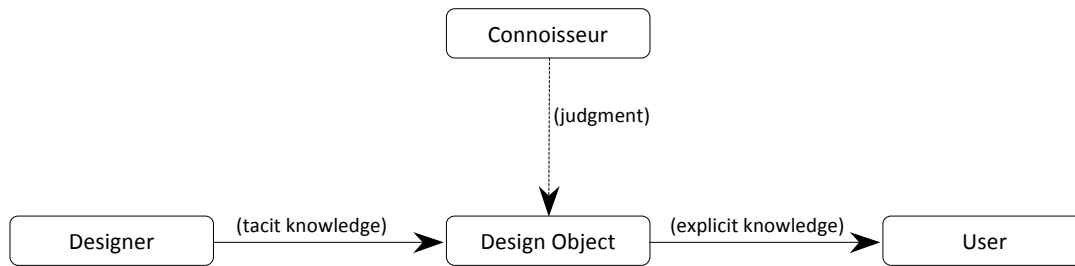


Fig 2. Mediating Role of the Connoisseur

Eisner (1976) defines connoisseurship as the appreciation based on an awareness and understanding of one's experiences leading to the basis for judgment. Connoisseurship involves the awareness of knowing what to look for, of being able to recognize the fine subtleties hidden within complexities (Dunin-Woyseth & Nilsson, 2012). It is an art of perception that relies on appreciation and criticism to explicate tacit knowledge into a communicable form for others. It fosters a sense of community, functioning as the catalyst for evaluating the experiences of the connoisseur and disclosing it in the form of influential descriptions or interpretations. Connoisseurship is based on the perceptual experience of making personal judgments leading toward the development of discriminating taste (Neidderer, 2007). It is a skill requiring cultivation in order to be informed of the qualities of the object or field of study, which are compared and contrasted against other particulars of the present (Eisner, 1976). This form of appreciation is personal and private until it is disclosed and made public, implicating the connoisseur as vital to the transmission of knowledge by linking the user and object of study. It is through the connoisseur that design knowledge, in its tacit form, is intervened and communicated to the user.

Experiential Knowledge

Experiential knowledge is the predicate for expertise and connoisseurship, as designers and connoisseurs rely and depend on personal experiences to develop tacit understandings. The design object communicates knowledge within the consumption process, where users are able to access the ideas and functions intended by the designer (Kazmierczak, 2003). It is through experience that individuals develop perception and the ability to respond or reframe in uncertain situations (Schon, 1983). This fundamental capacity for knowing is reflected in the practice of users, in how they engage with design objects and enter into framing activities contributing to their development and comprehension of design knowledge.

User Experience

Knowledge is the individual's ability to make judgments in assigning meanings for the appreciation and interpretation of information (Ferne, et al.; 2003). It becomes personal in how it guides and directs individual actions, signifying the mobility of knowledge and its need to be transferred or shared between individuals. Knowledge, to an extent, can be codified and personalized in order to engage individuals into knowledge sharing, a transactional process that

makes known the knowledge of designers to users. The designer's knowledge is communicated to the user through the design object, which materializes design knowledge into a perceivable interpretation of social reality (Narvaez, 2000). It is through the design object that the user gains access to the designer's knowledge, suggestive of the need to increase interactions between the user and object. Following Cross' (2006) position that design knowledge is embodied in people, design processes and design products, the design object represents the language or code for communicating knowledge. The designer, immersed in material culture, embeds knowledge into the object as a type of language (Dunin-Woyseth & Nilsson, 2012). The user receives and reads these informal levels of knowledge by drawing from their own experiences to establish an understanding of the communicated meaning.

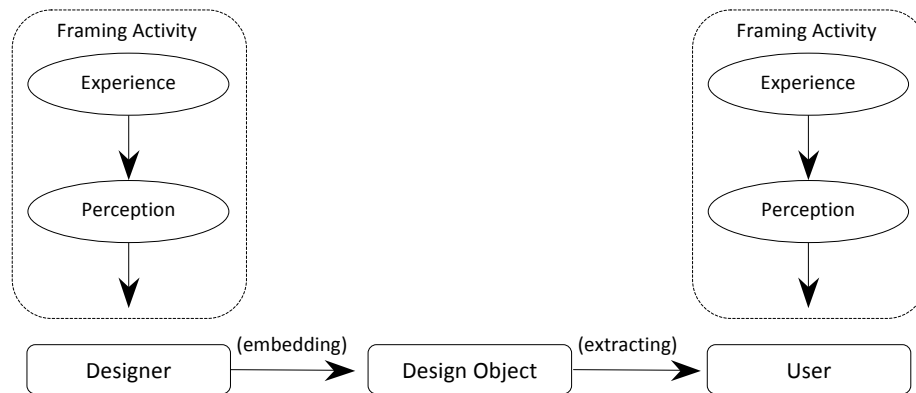


Fig 3. Framing Activities in Embedding and Extracting Knowledge

The designer, when initiating the design process, produces a design representation that fulfills two roles: a means for communication and a vehicle for exploration (Galle, 1999). As a means of communication, the design representation becomes an extension of the designer's own knowledge. Galle (1999) discusses the designer's process of self-communication through the design representation, initiating exploratory thinking and hypothetical questions to obtain further knowledge of the intended design artifact. Following this logic and pattern for seeking out knowledge, the user can be seen as engaging in similar forms of communication and exploration when interacting with the design object. The experience of the designer in embedding knowledge into an object is reciprocated by the user's own experience of extracting knowledge. It is through this experience that the user gains knowledge of the design, entering into the conversation-like activity of relating previous experiences to understand and make sense of the object. The nature of design depends on an ability to holistically recognize and process the discovered world, therefore requiring its users to experience and interact with the design to better understand its relevance and significance (Waks, 2001). Schon (1983) states that all professions are design-like in the use of framing activities and practice of reflecting upon actions. This suggests that users of design objects undergo a similar process when confronted by the introduction of new design solutions within a complex situation. The practice of reflection-in-action is not contained within design activities but applicable to user experience as a guide for interpreting knowledge.

Generative Knowledge

The user's consumption of the product signifies the simultaneous consumption of its meaning and knowledge (Baudrillard, 1988). The interaction between the user and design object becomes the actualization of self by establishing and fulfilling personal meanings. According to Nowotny (2000), the nature of knowledge is transgressive and fluid in its role of linking its producers to users through socially integrated and distributed processes. This type of socially robust knowledge emphasizes participatory aspects in how it shapes and generates cultural meanings. The recontextualization of knowledge, extracting knowledge from one context and adapting it to another, propels a change mechanism that initiates new representational forms (Fernie, et al.; 2003). Users, as receivers in the exchange of knowledge, create and generate new meanings when interacting with design objects. The knowledge embedded or contained within the object is mobilized and disrupted by the user's existing stock of knowledge, indicating that knowledge is not unidirectional or strictly accumulative but is interpretive in how it regenerates through each stage of knowledge transfer.

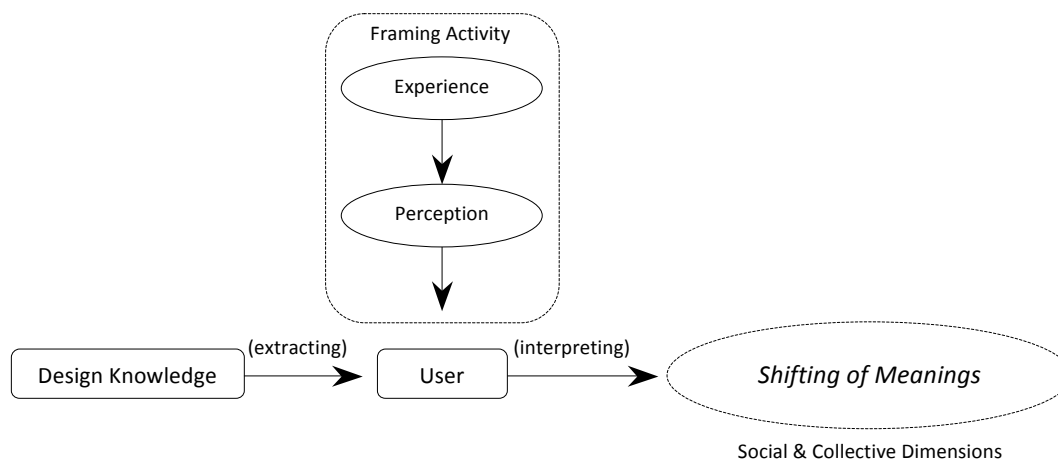


Fig 4. User Experience as Knowledge Regeneration

The design object operates symbolically through its semiotic function to generate meaning, which can only be fully realized when actively received by a participant or receiver (Kazmierczak, 2003). User experience becomes a meaning-making process that allows the user to reconstruct the object's significance towards new types of knowledge to modify its representational forms. The knowledge afforded and communicated by the designer is redirected into a neutral space when transferred into the design object. Through increased interaction with the product, its meaning or utility is transformed and reinterpreted by the user. Design objects, as cultural artifacts, initiate a socialization process in order to foster the sharing of knowledge between individuals. The transaction between the user and design object negotiates the significant symbols of meaning through affordances embedded by designers (Almquist & Lupton, 2010). User interaction allows meanings to shift into social and collective dimensions aiding and supporting the fluidity and regeneration of knowledge.

Expertise and connoisseurship depend on tacit knowledge as the basis for forming judgment and discerning taste. Experiential knowledge relies on the recognition of explicit forms that communicate a designer's specific ideas or conceptual intent through the design object

(Kazmierczak, 2003). The object connects the designer to the user when meanings are sent, transmitted and received. Knowledge that cannot be explicitly known or shared enters into a negotiation with users, who assign new meanings as a means to establish personal or social significance. Therefore, the experiential process of accessing, interpreting and reinterpreting design knowledge indicates the competence of users and their natural intuition to perceive and reframe meanings.

Case-Study – “The One”

This case-study has been included to serve as an example of how physical space impacts user experience by disrupting the natural fluidity of knowledge. Completed in 2011, ‘The One’ is Hong Kong’s tallest retail complex located along the shopping district of Tsim Sha Tsui. It is a 29-story vertical retail structure with retail space covering over 400,000 square feet and more than 200 tenants that were previously located in free-standing retail outlets along the local shopping district (The One, 2012). The case-study is presented within a cognitive context to explore how users interact with and within the structure to access its knowledge. Three main clusters of Schon’s (1983) design domains have been adapted to provide descriptions of the case-study.

<i>‘The One’ – Design Domains</i>		
Domains	Definitions	Descriptions
Elements	Components of the Building	Glass doors Escalators Lifts Walls Ceilings Shops
Organization of Space	Types of Spaces Relations of Spaces	Double entrances separated by barrier General pass-through (levels UG1 & above) Upward vertical flow
Form	Shape of Building Geometry Markings of Space Experienced Felt-Path of Movement through Spaces	Hard edged exterior Curved interior lines Level differences indicated by upward flow Utilization of space is apprehended by experience of space and movement across different levels

Table 2. Domains of Design (Source: Adapted from Schon, 1983: p 96)

The mall occupies a block of space between two parallel streets, which creates and emphasizes its key design characteristic. Although customers can enter the mall from either side of the building, the ground level entrances are physically separated by a central barrier. Therefore, it is only by moving upward to the next level that users can move freely across the space from one side to another. The design of the ground level affects and alters the overall experience of all users, who are physically forced upward in order to fully access the intended layout of space. Furthermore, the initial impression of users is influenced and determined by the specific street entrance they enter from. The shops located on the main entrance carry luxury watches and

jewelry, while the back entrance opens up to standard high street apparel and footwear brands. It is only after moving upward, past the ground level entrance that the spaces merge and users begin to share in a common experience. This illustrates the mall's mediation of user experience, constricting the flow of users with its physical elements. The retail structure represents a centralized location and source for knowledge, through its various design products and brands, yet access to this knowledge requires active participation and experience with and within the physical layout of space.

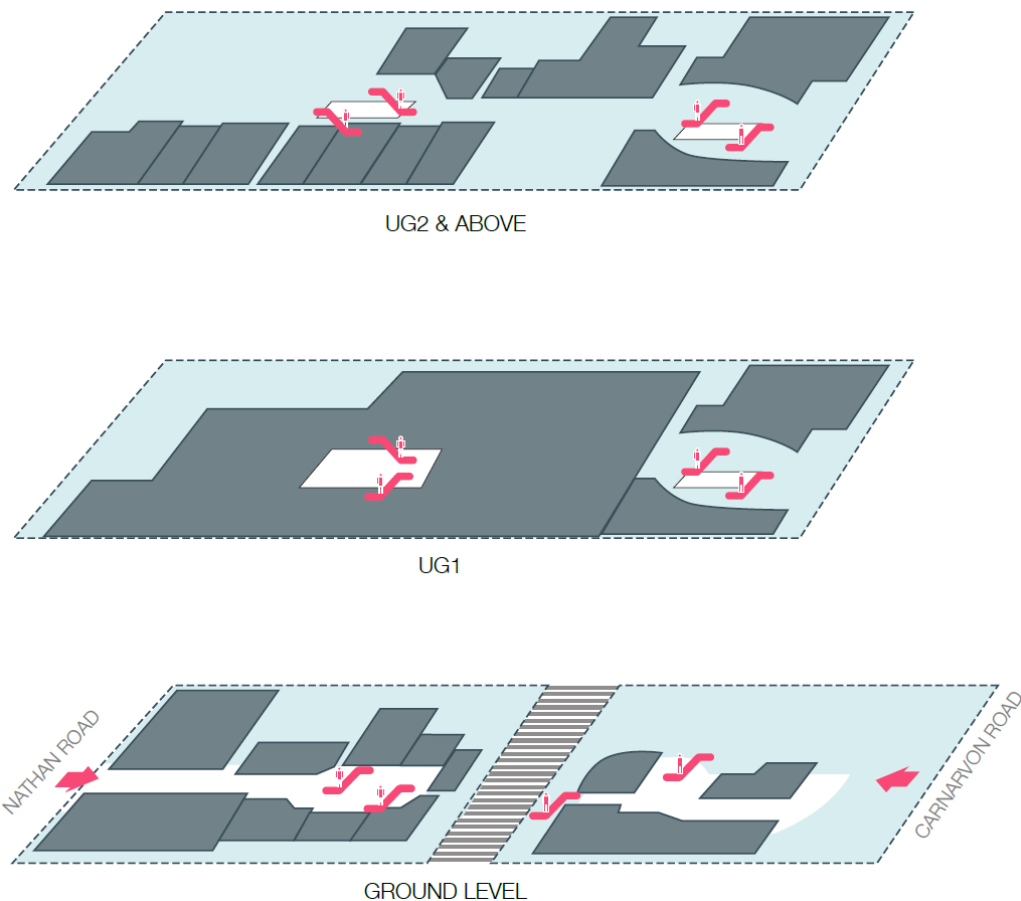


Fig 5. 'The One' Interior Layout – *Ground Level, UG1, UG2*

The transition of the retailers and brands from the high street into this vertical structure has significantly changed the business scope in terms of clientele, patronage and overall perception. This new spatial landscape, shifting from its previous existence on a horizontal level, forces users to physically experience the upward flow of movement in order to gain access to products. Although serving as connoisseur, by assuming authority in determining the products and brands made available to users, the mall represents the mediation between design and experiential knowledge. The product selection is contained within the mall, signifying the stock of accessible knowledge, yet it requires users to engage with and experience the spatial flow before any possibility of user-object interactions can occur. Therefore, the mall's physical properties create a barrier to user experience by limiting the potential and quality of interactions with products.

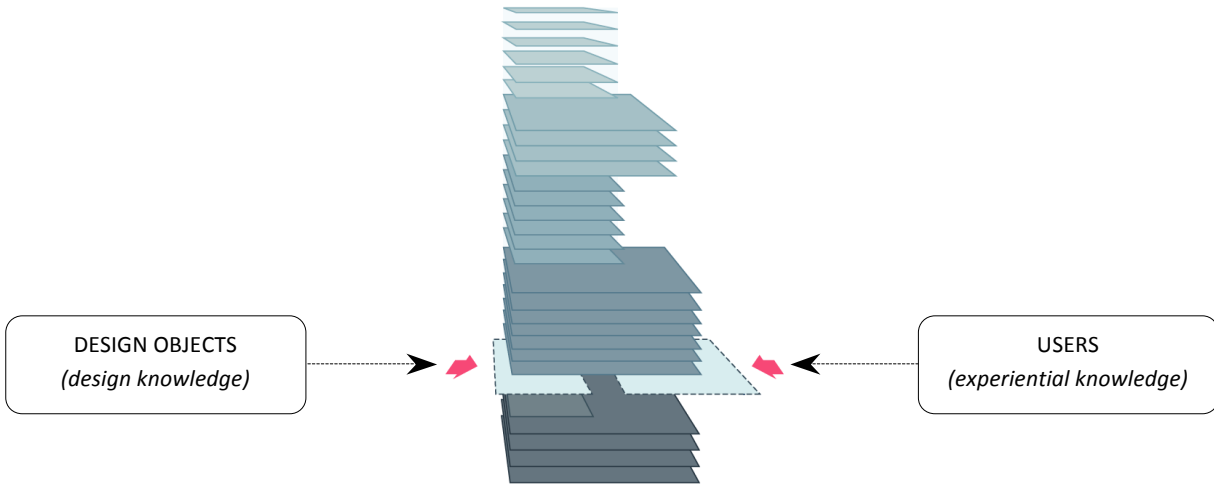


Fig 6. Retail Structure as Connoisseur – *Interface for Design Objects & Users*

Spatially Fluid Knowledge

The retail complex controls the experience of users with its intentional design and use of space. It is proposed that the upward movement of shoppers' traffic opposes the natural downward diffusion of knowledge, warranting a discussion on the juxtaposition of knowledge flow against the physical and spatial constraints presented by the mall. The mall is introduced here as representing the role of connoisseur, by strategically procuring design products and brands, and providing an interface for shifting design knowledge into experiential knowledge. However, the prospects for acquiring this form of experiential knowledge are deterred by the spatial layout.

Design knowledge has been identified as being created by designers and transforming experience into skills that aid the processes or activities of design. Relying on largely tacit knowledge, designers explicate their knowledge through the creation of design artifacts or objects. The user, as a receiver of its embedded meanings, enters into a transactional relationship with design objects to extract the perceivable and cognizable knowledge of the designer (Kazmierczak, 2003). Access to this knowledge is afforded through user experience, leading to the regeneration of knowledge in the user's final interpretation of the design's meaning and utility. However, the mall's physical space complicates the potential of user experience and future interactions with the design object, disrupting the flow of knowledge.

Knowledge is characterized by fluidity, in its ability to regenerate within social networks where it is transferred, received, changed and reinterpreted (Weller, 2007). Weller defines fashion knowledge as particularly mobile as it constitutes social interactions and aesthetic considerations leading towards the rapid adoption of stylistic trends. This knowledge is spatially fluid as it moves across different levels of knowing, from expertise to connoisseurs and finally to its users. 'The One' represents a symbolic vessel for receiving, containing and disseminating knowledge. Knowledge enters the retail system, embedded within the products and brands, and moves across different channels and networks to be made accessible to users. It is within

this simulated space that the designer's knowledge, the design product and user are directly connected. The flow of knowledge, passing from designers through the process into the object, is received by users who finalize its meaning and significance. This knowledge moves from tacit "know-how" to design knowledge and transforms into explicit knowledge when materialized into its finished form. It is immobilized within the context of the retail structure, where it will regenerate when confronted by the user's existing stock of knowledge and interaction with the product. However, access to this form of knowledge is only by physically experiencing the upward flow of the retail space which reiterates the mall's mediation of user experience.

Discussion

Knowledge has been defined in terms of expertise (designers), connoisseurship (retailers) and experiential (users). The activity of designing allows designers to use their expertise to translate tacit knowledge into a final materialized form. Acting as connoisseur, the retail complex selects the brands and products made available to users. This mediation determines the specific knowledge that can be accessed and made known to users, signifying the authority of the retail structure as a critic of taste. Experience within the retail environment impacts the extent to which users increase their knowledge. The interaction between users and products is challenged by the physical layout of the vertical shopping mall, as the physical limitations constrain the spatial fluidity of knowledge.

The diffusion of knowledge follows a downward flow from the creators or owners to the users and consumers. According to Weller (2007) knowledge dilutes in value when it moves down the hierarchy and is increasingly imitated and translated. This emphasizes the need for knowledge to regenerate through interactions and be reinterpreted into new levels of meanings. Within the spatial context of 'The One', knowledge is accessible but requires the active participation of users to physically seek it out. In contrast to the dissemination of knowledge which reaches users in a top-down flow, the physical layout of the mall forces users into the experience of a bottom-up movement to attain this knowledge. The ambiguity of this flow opposes the user's access to products, further limiting the opportunity to exchange and interact with its knowledge.

This conceptual paper reviews product interaction as a means for increasing knowledge of the design. Users, representing the final audience and recipients of design solutions, have the task of reinterpreting embedded knowledge by actively engaging in the meaning-making process. However, the physical restrictions limiting user access to this knowledge affects the experiential quality of the interaction. Knowledge, which relies on contact with other knowledge in order to reinvent and regenerate, is immobilized by the vertical layout of the retail structure. This is suggested in the case-study, which was introduced to illustrate the tension between the fluid nature of knowledge and the physical space disrupting its flow. The retail space has been suggested as significantly influencing user experience by affecting the quality and potential of experiential knowledge. Knowledge has been examined in relation to the retail system, producing a conceptual scenario and discussion of user experience.

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