

Experiential Knowledge and Rigour in Research

Session paper:

Developing Knowledge Through Design Research: Understanding Experiential Knowledge as Tacit

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Abstract

This paper will explore the nature of experiential knowledge uncovered when design researchers investigate how designers create interior spaces for social activity. What is the nature of experiences in interior environments and how might this be documented with rigour in design research? The nature of experiences is understood here to mean two things. First, what do designers do and how they do it? Designers create interiors using design processes that transform the interior into a built reality. Second, design research is done to understand how social experiences occur within spaces and how these spaces become facilitators for activities done by people. Documenting experiential knowledge means studying how designers solving complex design problems requiring both inquiry and creativity (Friedman, 1997; Poldma & Thompson, 2009).

This paper proposes that designers create interior spatial designs for user experiences, and that the knowledge uncovered through design research is tacit when this is based on experiences. Experiences occur when designers and users work together to solve spatial problems with tacit forms of knowing. Evidence-based design research uses both codified and tacit forms of knowledge and these are discussed in the context of design inquiry. Current knowledge forms do not account for the more tacit and dynamic nature of how interior space interacts with user experiences. An example of this type of thinking will be given, and conclusions drawn from the theory put into the context of the example presented.

Key words: design research, experiential knowledge, tacit knowledge, dynamic processes, pragmatic philosophy, interior spaces.

INTRODUCTION

Collective inventiveness, and intelligence: that seems to be the quality most needed in design, a quality without which...design methods are ineffective. The ability to act on intuition, with suspended judgment. To risk, to enjoy, to learn from, the finding out of the extent to which one's picture of reality can change....that's not something one can do on a drawing board, or by computer simulations of behaviour. You have to live it....
John Chris Jones, in Mitchell, 1993).

This paper explores the concept of experiential knowledge as tacit, as this is understood in design research in general and in the designing of interior space in particular. Designing interior space requires a different type of experiential knowledge than, for example, designing an object. When designing interior space, the professional interior designer/interior architect works directly with both clients and users to take an existing (or future virtual) interior space with its existing (or future) contents and transforms its use by developing concepts using a combination of aesthetic and scientific problem – solving methods. The theoretical and technical knowledge that students learn and subsequently employ as designers include the art, craft and science of design processes and technical know-how about materials, systems and interior spaces. (Poldma, 1999; Vaikla-Poldma, 2003; Poldma, 2009). Although the interior designer is a professional who understands user needs, building contexts and project requirements, it is the combination of the experiences and contexts that transform empty spaces into aesthetically functional interior places.

By contrast, when design researchers study the design of interior space, they tend to be concerned with the causal relationship of people and their environment. Environment – behaviour theories form the basis of design inquiry that seeks to understand the relationship of people and their environment using evidence-based codified knowledge (Zeisel, 2006; Dickerson & Marsden, 2009; Poldma & Asher-Thompson, 2009). In this form of design inquiry, design researchers demonstrate how appropriately designed space might add value to

living well in an institution, how safety and security might add to productivity in working environments or how evidence informs design processes through environment behavior inter-relationships (Zeisel, 2006; Dickerson & Marsden, 2009). This research may be quantitative or qualitative in nature, but in essence seeks to understand the behavioral relationships of people in the environment using codified forms.

This paper explores the nature of the dichotomy between design practice and design research in interior design and how the professional act of designing is grounded in processes that use tacit knowledge forms. This tacit knowledge is experiential, in that building interior spaces interact directly with changing user experiences. We will examine what the nature of interior design practice is and how traditional environment-behaviour research methods capture human-environment relationships. Knowledge will be explored as either tacit or codified and design inquiry modes will be discussed in the context of creating spaces both as aesthetic forms and through the notion of the designer and clients working with multiple stakeholders. An example of a design research problem will be presented, and issues of trustworthiness and validity will be explored within this context.

Understanding Concepts about Designing Interior Space

When we design objects or interior space with objects within them, we create various experiences. These experiences that may be virtual or real, with objects or with other people in particular types of environments. Developing designs includes particular thinking and is a rational process that has at its heart both intuition and intention (Nelson & Stolterman, 2003; Mitchell, 1993). As John Chris Jones has suggested, we live and experience how to design as a designer, and as a designer we must also understand the user's lived experience. These experiences may be personal, social, real or imagined (Chris Jones in Mitchell, 1993; Nelson

& Stolterman, 2003). While in industrial design the focus might be the object and its specific context and design qualities, in interior design we are preoccupied with the more virtual realm of occupied space, its volume and its characteristics, and how this forms a backdrop for a complex set of inter-relationships between people and their personal or social lived experiences with other people and with objects in various contexts and situations (Mitchell, 2003; Malnar & Vodvarka, 1992).

These physical, social and multi-contextual design elements make the learning and applying of interior design processes complex on two fronts. First, critical interior designers design with a regard for, and an awareness of, many underlying values and factors that shape human endeavour (Vaikla-Poldma, 2003; Rengel, 2003). For students, whether it is at the baccalaureate level learning about the design process applied to interior space problems, or at masters' or doctoral level studies where inquiry guides research, designing interior space is about critical thinking and inquiry integrated within the pragmatic design elements and processes learned, pushing the design education to include inquiry as a foundation to learning (Friedman, 1997). Second, designing interior space also requires understanding what happens when the spatial experiences people have are grounded in real, lived experiences that are social and intangible, and that happen simultaneously with changing physical spatial conditions, such as lighting changing dynamically or time-space collapsing when we work at home or live at work through travel globally. These contemporary ways of living and working are both 'lived' experiences as phenomenological (White, 1998) and dynamic in that the physical space is a backdrop of changing activities that are not static and are bounded by particular social, socio-psychological states of being or cultural and gender ways of knowing (Ardener, 1981; Ainley, 1998).

Spaces are designed after investigating multiple contexts including user needs, building contexts and user space requirements, researching and choosing appropriate materials, colour and lighting, furnishings and materials and then combining it all aesthetically to create the interior space. Interior designers take a virtual idea and making it a living and active space, where intangible human endeavour comes together with physical lived experiences, aesthetic responses and functional contexts. The professional interior designer also works with clients or users of the space, using conversation and client-user informed decision-making to generate ideas, making sense of the information gathered from discussions with various stakeholders. This form of ‘making meaning’ happens when aesthetic and functional design decisions are made (Vaikla-Poldma, 2003), wherein there is a service relationship between the client and user as they participate together in both design and production processes (Nelson & Stolterman, 2003).

Theories about space and the aesthetic nature of designed interior space

Interior space has long been documented theoretically in terms of ‘space’ as a physical entity grounded in attributes such as objects, walls and finishes, and other design elements such as lighting, form or colour (Malnar & Vodvarka, 1992). Students learn about interior space, as a primarily architectural entity grounded in physical attributes that are static and exist as separate entities in time and space in the Cartesian sense (Poldma & Wesolkowska, 2005).

This means that too often interior design and its processes are reduced to concepts of decoration, purely visual attributes, or static places where one designs an office as an office, a restaurant as a restaurant, or selects finishes for static walls or plans layouts for work or play but not necessarily both. In fact the opposite is true currently in professional practice, where in real life situations, interior spaces are complex places where designers work with environmental systems, volumes and dynamic changes in space and its activities and do so in

a real time exchange with clients, users and other stakeholders (Vaikla-Poldma, 2003). People have a stake in how spaces is used. Documenting and understanding points of view, subjective responses and affective aspects of experiences in interior space are essential for good and thorough problem-situating and solving. Understanding these processes means developing knowledge through design research and theory, by looking at how design practices might improve on solving problems for better living, working or leisure environments.

Theories of environment-behaviour and power/knowledge relationships

Historically theories about interior space have been grounded in knowledge claims that are at the basis of design inquiry. These theories consider how person-environment relationships are causal in nature (Hall, 1969; Lang, 1974, Malnar & Vodvarka, 1992). Influences include B.F. Skinner, whose theory of modifying behaviour through positive reinforcement, is applied to designing interiors for the ‘improvement of human behaviour’ (Skinner, 1971). Evidence-based design research is recorded to explain causal issues in environments, where primarily the built environment acts upon human relationships with materials, places and objects.

When human and environment relationships are seen as causal in nature, then knowledge claims are built on codified research done using statistics that are published. The knowledge documented becomes ‘just and true’ as it claims to be the knowledge that guides design thinking. Michel Foucault (2001) suggests that this type of dominant discourse, which claims absolute truth, “...lies at the heart of the intersection of power/knowledge”. (Foucault in Rose, 2001). This notion of power and knowledge lies at the heart of broader knowledge issues much too complex for the scope of this paper. However, in essence, the argument here is that current evidence-based design research on interior environments, when based on

essentially codified approaches located within environment-behaviour theories, does two things:

1) Environment –behaviour theory explains human-environment relationships as causal and as situated within essentially static physical interior attributes. In essence, people feel well or poorly due to lighting, environment systems, colour or other physical space attributes such as floors, ceilings, their finishes and related objects in the spaces. These interior attributes ‘act upon the user’ and their appropriation (or not) of the space. Theoretically environment-behaviour concepts support the causal relationships between man and his built environment and this by extension supported by evidence-based (or codified) research approaches (Zeisel, 2006; Dickinson & Marsden, 2009).

2) Causal explanations situated in human-environment behaviour do not take into account broader subjective issues that concern people and their appropriation of interior space. Interior spaces are locations of both aesthetic values and social constructions. Formal aesthetic designs that are imposed with behaviour theories as their primary directive do not account for the more subjective and gendered ways of knowing (Field Belenky et al, 1997; Code, 1991). For example, women navigate spaces differently than men and cultural differences impose different social rules and hierarchies that create social constructions of space and place (Ardener, 1981; Spain, 1992; Ainley, 1998, Rothschild, 1999; Rose, 2001).

Space as a dynamic place

Professional interior designers have tended to reject these inquiry modes, being more concerned with pragmatic aspects of building professional practices, ethical conduct and dealing with problem solving situations of a more pragmatic nature (Abercrombie, 1990; Malnar & Vodvarka, 1992;Hildebrandt, 2000). And yet when professional designers ask clients and the users of the spaces what they need, how they live, and observe their situations,

they work with tacit elements that are involved in the creating of the subsequent spaces where people then engage in social and personal activities and do so in an inquiring way. The spaces that they design are dynamic in that they integrate active, social people within changing and flexible places.

Alternatively, other types of evidence-based inquiry exist that are supportive of the more tacit and dynamic aspects of human spatial experiences, experiences that exist beyond Cartesian ideas of space and time as separate entities. In this fast-paced world, while some people live in the global 24-7 information and technology communication communities, others carve out lives on the fringes just to survive. Different people might experience space as hostile or friendly places, as virtual and physical, or as a place for personal or social needs. It is difficult to reduce these experiences to codified statistical numbers, as different and subjective voices account for different and subjective ways of living, working or playing in different cultures and societies. The experiences are all framed within different forms of knowledge.

ABOUT CODIFIED AND TACIT KNOWLEDGE – HOW DOES EXPERIENTIAL KNOWLEDGE FIT IN?

What is knowledge in design research? Knowledge itself is a term with multiple meanings and people appropriate knowledge in different ways. The role of research in general is to construct knowledge that informs practice, develops theory or create new ideas of the entire range of activities and experiences that create the design considered. The role of academic research in part is to create new forms of knowledge to innovate, move disciplines forward and construct ways of knowing, and in part to lay evidence-based design foundations to inform design practice.

Ways of knowing, types of knowledge and knowledge claims

Dan O'Brien proposes that all knowledge is built upon belief (O'Brien, 2006, p. 11) and that this is based on three suppositions: truth, belief and justification. Examples of knowledge include propositional knowledge, that which we know to be true (Neiderrer, 2007), or apriori knowledge, that which is possessed (Amin & Cohendet, 2004). In terms of apriori knowledge claims, Amin & Cohendet (2004) suggest that four types of knowledge exist in a 'knowledge-reduced -to-information' approach that hamper knowledge seeking, and wherein the actors involved in the process are irrelevant. (Amin & Cohendet, 2004, p. 17). These 4 theoretical obstacles include

'1)...the vision of knowledge resulting from the accumulation of information as a linear process; 2) the hypothesis that any form of knowledge can be made codifiable; 3) the vision that knowledge is limited to individuals; (and that) 4) knowledge is limited to something that people possess' (p. 17).

By contrast, knowledge derived through experience and tacit forms is knowledge of what is experienced in real time and relies on people's broader intuitive and sensory perceptions.

When discussing knowledge, we must understand that all knowledge in a discipline is constructed by people, and by the value systems that underlie what we do and how we do it (Poldma, 2003). In interior design, the design process governs how we construct interior spaces for people to respond to problems and issues both functionally and aesthetically (Vaikla-Poldma, 2003; Poldma 2009), while in the broader world of design science problems are solved using problem-solving methods wherein design researcher seek to understand how '...A good design process must embrace the aesthetic as well as the scientific...'
(Friedman, 1997,p. 5)

However, problems arise when design researchers want to do research on more subjective forms of design process and production and how the end-users actually appropriate spaces either personally or socially. Forms of tacit knowledge such as lived experiences, designing processes or aesthetic/creative responses run up against apriori Cartesian ideas of object and subject as separate entities defined only through evidence-based positivist research norms such as environment-behaviour (Poldma & Wesolkowska, 2005; Storkerson, 2009).

About paradigms as much as knowledge forms

Traditionally, knowledge is situated in the physical form in design and is codified in its nature (Storkerson, 2009) and as discussed earlier in interior design where environment-behaviour theories are traditionally used (Zeisel, 2006). Codified knowledge is knowledge that we possess prior to gaining new knowledge, and does not require experience to play a central role. Alternatively, knowledge gained through experience is aposteriori knowledge (O'Brien, 2006). O'Brien posits that this delineation is problematic as experience may also at times add to apriori knowledge claims (O'Brien, 2006, p. 26).

If we consider experiences as essential to framing knowledge, then studying contemporary design questions in interior spaces means understanding the role of aposteriori knowledge. In other words, we have to explore designing in the process of the experience, and also how users actually use the space both before and after design interventions. Experiential knowledge research must study the real-time, lived experiences of both designer and user 'in situ', meaning, in the situations where the designing and experiencing actually occurs. In this type of knowledge acquisition, space is studied and understood as the dynamic backdrop of human activity, and change is accounted for through the recording of conversations, perceptions and experiences that all add to the design created. The conditions for design

research now become situated in activities that both designers and users/stakeholders engage in together, where change has subjective and tacit characteristics, and where change is a consequence of intention (Nelson & Stolterman, 2003). One changing idea is the concept of Cartesian Space and Time. New theories and constructions of space and place include how space concepts are changing with the new and emerging paradigms. We will consider this idea next.

Shifting paradigms and ‘spatialized time’ versus ‘temporal spaces’

We are in an era of shifting paradigms, and these are shifting faster than we are even able to document. People live and work very differently than even 5-10 years ago, as information and communication technologies change how people live their lives. Objects are transitory, spaces might be virtual or physical, while communication and interactions are varied and changing constantly, all affecting social and political norms. (Abrahamson et al, 1997; Dent, 1998; Margolin & Buchanan, 2000; Dholakia & Zwick, 2003; Poldma & Wesolkowska, 2005).

Spaces are no longer designed for specific uses or as the determinant of interior space concepts. This concept has become obsolete in the advent of new technologies, as Poldma & Wesolkowska (2005) state

‘ ...the subject perceives place as a primary mode of identification against ‘others’ such as the environment, people or work processes. People worked in the office, lived at home and enjoyed leisure time in the movie theatre. In the new paradigms of living and working, both experiences and tasks overlap one another constantly...
...lived experiences overlap and intersect the boundaries of space and place/time. Realities are defined in practice and practice is defined in space, one that can be local of global, imagined or actual, and which often cuts across boundaries physical/virtual.(p. 56)

These experiences are real, lived in real-time experiences that are essentially phenomenological in their essence, and where different and new flexible spatial forms surround experiences. Designing interior spaces changes in this type of paradigm, where ‘...critical interior design approaches consider all the senses, and how these simultaneously experience visual space and respond to sensory cues while engaged in social human contact.’ (Poldma & Wesolkowska, 2005, p. 57). The user becomes an integral and central component of a more subjective sensory approach that integrates function and aesthetic within the subjective human experiences for whom the spaces are created.

In these spatial approaches, *spatialized time* no longer is what drives interior space designs, but rather the idea of *temporalized space* has taken root. Dholakia & Zwick (2003) define these concepts:

In the age of new media and mobile communication, we have thus moved from spatialized time, where the nature of activities was predominantly governed by the structuring logic of space (one reads in a library, one studies in a classroom, one eats in a restaurant, etc.) to temporalized space, where the nature of the activities of the inhabitants define the place (a restaurant becomes a playground, a coffee house becomes an electronic mall, a train becomes a workstation, etc.).

People’s activities and experience thus define spaces that mould and change to new needs not bound by time or even space. Researchers need to know their subjective experiences to be able to create new spatial forms, and they do so by recording story-telling and narrative forms of the various users and stakeholders to express their perceptions about the spaces that they experience. Designers can use this knowledge to inform their design decision-making, while design researchers can capture design knowledge through multiple empirical research forms that document and account for the more tacit expressions they discover. The design process in action accounts for a richer and fuller range of experiences that work to transform the interior space.

Design as service, process and relationships beyond the physical

When the design process becomes a process of inquiry and action and a critical and philosophical process it encompasses the conversations that designers have with stakeholders. The role of the designer and stakeholders/users is no longer informed by a hierarchical causal relationship, but rather by the idea of design as a service relationship between a designer and the receiver of the product, service, concept or idea (Nelson & Stolterman, 2003). Harold Nelson & Eric Stolterman (2003), in their seminal book *The Design Way*, explore how design as a service uses the heightened ability to “listen”, with empathy and the ability to bring into focus details that require attention. In the pursuit of designing interior space, the design process thus consists of two inter-related concepts, including

- 1) A dynamic inter-relationship between the designer and the social reality of the designed space for objects and people that is not static, existing temporarily in space and time, but that also perpetuates dynamic political and social relationships through social construction of spaces for people’s activities; and
- 2) The fundamental relationship between the designer and the user where the designer problem-finds in the social construction of space with another person or persons – the users of the space and the stakeholders that construct the spaces through relationships that are experiential in nature. The designer ‘listens’ professionally and in the research realm, using experiences and actual project situations to change intentionally the conditions, as for example in the transformation of interior space.

Using these two processes, the interior designer uncovers the existing social and political framing the problem, observes and discusses needs and desires with different users and stakeholders, and through aesthetic design proposals proposes new and alternative solutions that socially and politically democratize and empower those who have experiences in the

spaces. As Storkerson suggests, ‘...’ experience’... refers to the interactions that humans have with their environments as humans perceive or understand them, as they represent settings and events to themselves ’. (Storkerson, 2009, p.1)

Changing gears: The example of institutional design for the aging population

I will now tell the story of the design research problem that typifies the discussions here to this point. An elder care institution was designed for a particular ageing population, and the design was created using the best practices and knowledge sources available, having been renovated about two years previously. The head nurse of the dementia unit told me about how the residents were rejecting space in their unit and they were perplexed. While the spaces were beautiful and clean and well designed, something was not working. When the staff tried to bring them for specific activities to the designated room, they promptly began to leave. I set out to create a research program to see why the users were rejecting the seemingly beautiful and functional space designed for them. Using evidence-based procedures that were theoretically supported by a constructivist paradigm, the team of researchers recorded the existing physical conditions and interviewed staff and volunteers. Particular attention was paid to the user, elderly residents with dementia, and both conversations and observations were conducted. The unit programs, activities and family social situations were also assessed, and the responses of all stakeholders and users were considered. The analysis led to changes that were implemented in the unit and then the space was reassessed. The changes improved responses and social activities that both satisfied the residents and the nursing staff and families (Poldma, 2006).

Discussion: Putting the Theory into Practice

In the example of the elder long term care institution, tacit forms of knowledge accounted for and supported through evidence-based design research forms that value the voice of the people occupying the space. The changing activities and space needs are documented and the adjusted space provides the flexible requirements necessary for activities to unfold. The data collection and analysis is controlled and independent of the proposed changes, and throughout the process all stakeholders are included. Evaluation of the space and its issues are done before and after interventions are suggested. Using a combination of data collection types, the issues are verified and minor design revisions are proposed, to rectify the problems leading to the rejection of spaces within the unit and based on pragmatic design knowledge.

The data is analyzed using interpretive analytic methods that provide trustworthiness through triangulation to account for the experiences observed (Clandinin & Connelly, 2000; Creswell, 1998; Rose, 2001). These include an analysis of the responses, of observations of the physical space and of the activities within the spaces analyzed. Epistemologically both the research and design processes are considered to be constructivist in essence (Vaikla-Poldma, 2003; Creswell, 1998). The design researcher seeks to understand user perceptions, dynamic social activities and the spatial capacity to support these different activities, and constructs the research in light of the multiple contexts that are revealed (Poldma, 2006).

Conclusion

When designers and users construct their experiences together, then tacit forms of knowledge emerge through the experiences that are considered during various stages of the design process. This tacit nature of the design process becomes part of the experiential knowledge that is vital to understand how people appropriate and use interior spaces for their daily lives.

Experiential knowledge as tacit has a place in evidence-based research when the research is supported by a paradigm that philosophically allows for aesthetic experience, as these are grounded in real time experiences of space and time as dynamic and changing place. In the example of the long-term care residence, it was necessary to tease out the experiences of the users to understand why they were rejecting the space. The space is seen as active and dynamic, as a place where social activities occur and where the space becomes supportive of the needs. New temporal spaces are created for changing activities and needs and are enjoyed by staff and residents in the long-term care institutional example.

When these more pragmatic experiences can be documented and analyzed and results provided as these relate to the design of spaces, then this type of best practices data can become useful for practice. Design researchers undertake research as the process of inquiry that forges relationships between theory and practice and in doing so, create the foundations for knowledge that can inform designing.

Possible ways to put the theory into practice is to situate the design research directly within the tacit forms of knowledge where knowledge-making occurs. These approaches require rethinking the ways that we understand truth and knowledge, and how we construct meanings in design research within existing paradigms. Tacit forms of experiential knowledge allow for new ways of thinking, using paradigms that situate the user in the real time experiences and within the processes where designers and users work together to create environments for the betterment of life.

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