



Sensory ecology. Designing synergies between micro and macro-scales of experience in public environments.

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Abstract:

This study introduces ways in which designers can contribute to people's ability to develop positive emotional connections with their environment, to design sensory spaces where people can flourish. It is situated in ontological design, drawing on the phenomenological theory of embodiment whilst advocating an ecological perspective to bring together spatial and human dimensions. Placing the sensing body as the primary means of perception, it examines qualitative interrelations between the micro-scale of experience, the scale of the body and its immediate surroundings, and the macro-scale of experience, the wider context of the physical and social environments. These complementary scales are examined through two interrelated principles, privateness and porosity. Privateness is enacted and characterised by people's ability to define personal and group territories in the micro-scale whilst porosity enables them to maintain sensory connections with the macro-scale. This is first examined in a case study of the public interior of the Royal Festival Hall, a major cultural venue in London. This environment, where space and people converge, provides a rich field for exploration. This is followed by design experiments to test the findings from the case study. The outcome of this study feeds into a larger research project to contribute towards a sensori-emotional framework for spatial design.

INTRODUCTION

Bridging the gap between spatial and human dimensions, this practice-led study investigates ways in which spatial design and spatial management practices could cultivate people's ability to develop positive and even deeply felt emotional connections with their environment. This is referred to as intimacy. The study is part of a larger research project investigating emotional attachment in the public interior, drawing on Mallgrave (2018, p. 43) "to consider design from the dual perspective of

how we engage with or enact the built environment, and conversely how the built environment in turn shapes us". The research is rooted in ontological design, a philosophy that considers how, when designing tools (objects, structures, systems, spaces, narratives and discourses), we create ways of being (Escobar, 2018, p. 4), or, in the context of this research, modes of feeling. In this study, the methodology brings aspects of phenomenology and ecology together to examine the qualitative convergence of the micro-scale of the body and the macro-scale of the environment. It draws on Merleau-Ponty's (2012) theory of embodiment to place sensing as the primary means of perception. It is by virtue of our embodied nature, the body's own materiality that we can perceive sounds, smells, colours, textures, movement, etc., the sensory phenomena that constitute qualitative environmental experiences. Bringing an interrelational dimension to the perceptual dimension, this study also draws on Evernden (1985) and Ingold (2011) to introduce an ecological perspective. It recognises the primacy of body and environment interrelations and that certain environmental qualities, in this instance sensory phenomena, are required for people to experience intimacy. Here, sensory phenomena are cultivated to create synergies between micro and macro-scales of experience. In turn, these synergies can cultivate emotional rewards conducive to intimacy. The term cultivate derives from culture and Mallgrave (2018, p. 4) puts forward a biological metaphor to propose that culture is "best imagined in the biological sense of growing something in a prepared medium, the human organism in its built and cultural environment". This research considers the experiential environment as an ecosystem where the interrelationship between body and environment is always in flux and unbounded. Ingold (2011, p. 86) speaks of "a meshwork of relations".

CASE STUDY

The cultivation of intimacy was investigated in the public interior of the Royal Festival Hall (RFH), a major cultural venue in London. This site was selected following a comparative study between five public interiors in London. Like all public spaces, public interiors impact on place experience, social cohesion and the quality of life in cities (Gardner, Marpillero-Colomina, & Begault, 2018; Nikitin, 2009; Whyte, 1980) and the RFH was particularly interesting because it rated the highest in qualities of publicness. On-site data collection methods included observations, a reflexive documentation by the researcher as visitor, and interviews with staff and visitors. Micro and macro-scales were examined across six principles. Two of these, porosity (macro-scale) and privateness (micro-scale), are discussed here. Porosity originates with Sennett's (2019, p. 218) concept of porous space. In the public interior, it relates to the manipulation of boundaries, borders and liminal edges, to cultivate sensory flows. Boundaries are solid elements such as walls with minimal porosity. They can act as barriers to sensory flows. Borders are porous edges defined by three-

dimensional elements such as windows or railings. Borders allow sensory flows to permeate but their degree of porosity can be adjusted through spatial design. Three-dimensional elements are either boundaries or borders depending on variables such as distance from the body, their degree of transparency or opacity, their size in relation to the body, and their articulation, the ability to open, close or move. Liminal edges are sensory thresholds, transitions from one perceptual state to another (Sennett, 2019, p. 224), for instance, from light to dark or from noisy to quiet. Privatness is a term used by Alexander (1977) when referring to intimacy gradients. In the public interior, privatness is enacted by visitors as they define personal or group territories with special qualities to them, or drawing on Bachelard's (1958, p. 90) metaphor of the nest, to fulfil their need for nested comfort. Concomitantly, sensory flows transmute the territory into a vantage point from which visitors can maintain a degree of connection with the macro-scale of the environment. Hence, privatness is not privacy, and porosity is not merely a functional design principle but a way to expand the field of experience through sensory flows, allowing vistas to emerge, or sounds and smells to permeate. Privatness enables people to fulfil personal needs and desires while at the same time, porosity enables them to be part of the life of the public interior, to be sustained by its environment. For instance, principles of privatness and porosity could inform the design of inclusive environments, with welcoming but also uplifting qualities, to help people feel part of a community and help alleviate issues of loneliness.

Drawing on Damasio (2000), this study considers that environmental qualities experienced through sight, smell, hearing, touch and kinaesthesia can be conceptualised as intimacy (positive and even deeply felt emotional connections) when they are rewarding. The conceptualisation occurs through phenomena that are either communicated, as when we feel pleasure when we see something beautiful, or consequential, as when we experience a feeling of contentment upon sitting on a chair (Thomson, Crocker, & Christopher G. Marketo, 2010). Here, emotional rewards are organised across two categories of environmental qualities, grounding and stimulating (Figure 1). They are two sides of the same coin (Rice, 2007). Grounding environmental qualities are fulfilling and relaxing, associated with experiences that develop over time. They are linked to familiarity and continuity and can contribute to stability. They are associated with the notion of comfort cultivated primarily through boundaries and liminal edges. Stimulating emotional qualities are entertaining and energising. They are dynamic, often impermanent, and associated with the notion of spectacle. They are cultivated through the way borders and liminal edges define vantage points and sensory flows. Together, grounding and stimulating environmental qualities pertaining to porosity and privatness can create synergies between micro and macro-scales of experience by connecting the sensing and emotive body to its spatial and social environments in a positive and meaningful way.

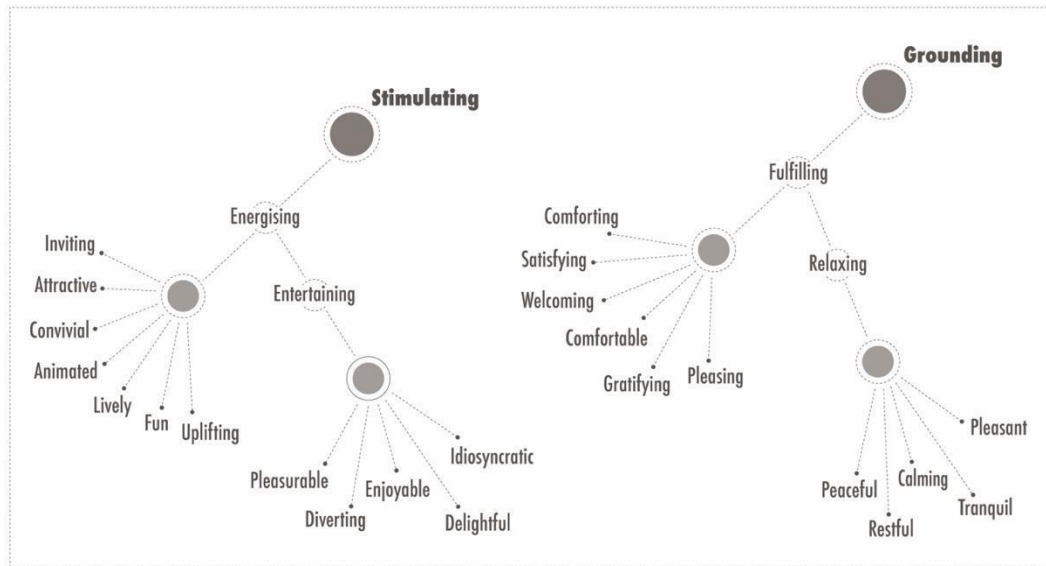


Figure.1: clustering of emotional rewards into two categories, grounding and stimulating, drawing on McQuitty's (1957) elementary linkage analysis method.

DESIGN EXPERIMENTS

Following the case study, the principles of privateness and porosity and related findings were then put to the test through design experiments with undergraduate students, the primary audience for this research. Participants were selected across different interior and spatial design programmes and nationalities to contribute a spectrum of perspectives. The brief was to design a temporary public space or pavilion where people could define personal and group territories while still maintaining positive connections with the collective environment. With students working in groups of four to five, a total of nine experiments evidenced the usability, transferability and value of the principles of porosity and privateness to spatial design. Usability was evidenced as participants successfully utilised the findings from the study to respond to the design brief. Transferability was evidenced as participants were able to apply principles from this study to a variety of environments beyond the context of the public interior of the RFH. Designs included a co-working/study space, a floating meditation pavilion, a café, an immersive public installation, a community book sharing pavilion, a civic pop up for political and social discussions, an airport lounge, and an indoor playground. Although this was only a short two-week activity, a process emerged from the experiments. Participants first identified specific needs (the role of the space) and desired emotional rewards across micro and macro-scales. They then mapped sensory phenomena in the environment to cultivate the desired emotional rewards. Here, sensing and emotions initiate the design process for participants to articulate how people could develop intimate connections with their environment. The design experiments also highlighted the flexibility of the process. By adjusting sensory phenomena to modulate grounding and stimulating

environmental qualities across micro and macro-scales, participants were able to design for a wide range of spatial and social environments. Key principles in each project were subsequently synthesised by the researcher using a sensori-emotional matrix, a tool originally prototyped to synthesise findings from the case study (Table 1). Doing this illustrated the mechanisms underpinning qualitative environmental experiences. Finally, participants were prompted to discuss the value of the activity, overwhelmingly stating that it had been a valuable learning experience. While previously they would privilege the design of the physical space, form and function, the ability to design for sensory and emotional needs opens new possibilities.

Sensori-emotional matrix		Primary environment		Conceptualisation		Primary emotional rewards	
Sensory Modality	Primary sensory Phenomena	Physical environment	Social environment	Communicated	Consequential	Grounding (comfort)	Stimulating (spectacle)
Sight	Visual	●		●		●	●
	Haptic	●		●		●	
	Kinaesthetic		●	●		●	●
Touch	Passive skin contact	●		●		●	
	Active skin contact	●			●	●	
Kinaesthesia	Body motion/position	●			●	●	●
Hearing	Auditory		●	●		●	●
	Kinaesthetic		●	●		●	●
Smell	Olfactory	●		●		●	●

Table.1: Sensori-emotional matrix prototype.

CONCLUSION

This study presents a mode of designing centred on qualitative interrelations between body and environment to cultivate synergies between micro and macro-scales of experience. It promotes a sensory ecology for spatial practices, bringing together phenomenological and ecological perspectives, sensory phenomena and emotional rewards. The study of privateness and porosity shows that boundaries enable visitors to define personal or group territories and experience nested comfort in the micro-scale of the body. It also shows that porous and liminal edges regulate sensory flows, to define vantage points for the body to maintain sensory connections with the macro-scale of the physical and social environments. The design experiments substantiate the findings from the case study while they also evidence their relevance to spatial design and their application to a wide range of environmental contexts. Together, the case study and design experiments foreground a multiplicity of benefits in this approach to designing spaces. As noted in the introduction, this study is part of a larger research project. The intention is for the findings from this study, and those of

other studies in the research, to contribute towards a sensori-emotional framework for spatial design.

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