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ID 1621 | MULTI-SENSORY APPROACH TO HEALTH-SUPPORTIVE AND AGEING-FRIENDLY HIGH-DENSITY URBAN ENVIRONMENTS

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1 INTRODUCTION

Design and planning actions to improve urban health and well-being are well-recognised as some of the key drivers and indicators of sustainable, inclusive and resilient urban and community development world-wide. Yet, due to rapid growth and transformation, increased densification, hybridisation and intensification, our cities continue to generate problems, stress, harsh conditions and inequality, instead of becoming healing, empathetic, inclusive and safe environments for all.

Our understanding and experience of the built environment are primarily built around multi-sensory, emotional and symbolic modes of exchange with space (Merleau-Ponty, 1962; Pallasmaa, 1996; Pérez-Gómez, 2006). Active multi-sensory and emotional dialogue with all environmental stimuli, including positive distractions, textures, materials, colours, signage, culture-specific clues, way-finding and overall aesthetic atmosphere, profoundly shape our understanding of the built environment and are vital for physical, psychological and social well-being of all ages. However, while architecture has immense potentials to engage the immediacy of people's experiences more effectively than other art forms (Holl et al., 2006), our contemporary cities are more than often either sensory overwhelming or sensory depleting, which results in physical, mental and emotional stress. Stress is the major cause of diseases, pandemic depression and death in the developed world (WHO, 2002), with more than 50% of deaths worldwide stemming from chronic non-communicable diseases that are instigated by the continuous exposure to numerous and intense stress conditions of contemporary cities (OxHA, 2008).

2 SCOPE AND OBJECTIVES

The contemporary shopping environments have long been criticised for manipulating with people's sensory and emotional reactions through employment of sometimes very sophisticated design 'strategies' (such as theming, 'total landscaping', 'mallification' and 'Disneyfication') in order to achieve higher consumption goals (Crawford, 1992; Dovey, 1999, 2010; Mitrasinovic, 2006; Pimlott, 2008-9.). Such strategies are seen as negative as they affect users' behaviour and well-being negatively as well as promote social exclusion. However, consumption represents a dominant part of our everyday practices today, and it is inscribed in almost all types of physical spaces we use. Since consumption is an inherently spatial, political, aesthetic, ethic and economic practice, "spaces of consumption are always produced as a field of forces, exchanges and interactions" (Styhre and Engberg, 2003, p. 120). Shopping malls have become influential model for various urban developments (including healthcare) and are tightly knitted into the everyday environment of many dense Asian cities, such as Singapore, Hong Kong or Tokyo. In these cities, they may arguably be seen as perpetual laboratories of "positive stress" (positive distractions), while blurring the boundaries between the indoor and the outdoor, private and public.

Accordingly, the scope of this paper involves investigation of the role of multi-sensory approach to achieving holistic healing outcomes, while focusing on contemporary shopping spaces, in spite of their manipulative design, quasi-publicness and profit-oriented motifs. Creating health-supportive and ageing-friendly environment goes beyond the bounds of healthcare and eldercare facilities as well as beyond hygiene, universal design and curing. The premise is that in order to trigger suggestive and positive relationships between space and users, all segments of urban developments would need to acquire an active role of healing.

The main objectives of this paper are:

- To review and discuss the role of multi-sensory experience in shaping health-supportive and ageing-friendly built environments; and
- To investigate the capacities of contemporary consumption spaces to overcome the mere consumption motifs and to acquire an active health-supportive role.

3 RESEARCH APPROACH AND METHODOLOGY

Qualitative approach employed in this study involves two main phases:

- Discourse analysis and research instrument development, based on a comprehensive literature review of theories and design practices related to multi-sensorial experience, health-supportive and elderly-friendly environment;
- A comparative case study analysis of four consumption spaces in Singapore and Belgrade, Serbia, which combined combines spatial explorations, first-person observations, participatory photo-journeys, multi-sensory mapping, interviews and on-site questionnaires.

4 MULTI-SENSORY EXPERIENCE – LITERATURE REVIEW

Sensory urban experience is not entirely new topic in architectural and urban design discourses, mostly stemming from the phenomenological approach and other disciplines, such as social sciences, human geography, anthropology, cultural theory and environmental psychology. At the beginning of the 20th century, a number of writers, including Georg Simmel (1997) and Walter Benjamin (1999), to name some, emphasised the importance of a multi-sensory approach for understanding rapid changes the modern cities of that time were experiencing. Human geographers, such as Relph (1976) and Tuan (1977), further focused on creation of the sensory and cultural meanings of places.

It has often been argued that people's senses have been considerably impoverished by monotonous environments and through the dominance of vision (Degen 2008; Pallasmaa 1996; Jay, 1993). According to Zardini (2005), due to an increasing preoccupation with the visual and the hygienic, standardisation and sanitisation, the perceptual sphere is under continuous erosion. Such a "trend" can be traced since the Renaissance and the Enlightenment, through rationalist, functionalist and modernist approach to design, in which the space should discourage close physical encounters (Degen and Rose, 2012). The result is either an aggressive and stressful environment or a "homogeneous sensory experience" (Erwine, 2014) of the "decorporealised space described by a fear of touching is a space dominated by the eye, where the body and tactile reality are extinguished by the dominance of visuality" (Diken, 1998, p. 72). According to Gibson (1986), however, the senses are not passive receivers, but rather aggressive seeking mechanisms, even though people are not aware of that most of the time. In this process of active and unconscious seeking, all bodily senses are involved simultaneously, with major effects manifested in space through their irrevocable interdependence. For Zumthor (2006), the main role of design is creating atmospheres to facilitate better and more diverse interactions with space. If understood as an elaborate choreography of theatrical and phenomenal experience, architectural space has the ability to evoke memories and emotions, trigger senses and represent associations; in other words, the sense of being 'here', 'being' and 'becoming' in the world.

In the recent years, there has been an increasing interest in the senses (e.g., Degen, 2008; Low, 2015; Urry, 2000), what Howes (2005) calls "sensory revolution", emphasising that sensory experiences are central to the design of urban built environments. Some of the main focuses of such studies and writings

include: relationship between the sensory and the social dimensions, cultural perception and history of sensibilities (Classen, 1993; Stoller, 1989), the notions of ambiance and atmosphere (Böhme, 1993; Thibaud, 2011) and design for the senses (Holl et al., 2006; Pérez-Gómez, 2006; Pallasmaa 1996, 2009; Zumthor, 2006).

Another valuable group of recent studies focus on mapping, analysing, and measuring sensory dimensions of urban spaces and everyday experiences (e.g., Adams et al., 2007; Degen, 2008; Degen and Rose, 2012; Malnar and Vodvarka 2004; Naghizade and Ostadi, 2014). Study by Lucas and Romice (2008) is one of the rare attempts to systematically employ sensory experience in urban design research and practice, based on notational systems and multi-sensorial multi-modality. Similarly, yet from sensory ethnographic perspective, Palipane (2011) developed a framework of sensory production of urban space based on socio-sensory perception and multimodal mapping technique for documenting diverse multi-cultural place-making practices. She argued that many recent urban regeneration projects failed to create environments that are sensitive to the existing demographic milieu and that promote activity of the neighbourhood, due to a focus on visual and spatial experience and a neglect of understanding the multi-sensory qualities of a neighbourhood as a whole. Research by Pink (2008) and Rogerson and Rice (2009) also link senses to place-making practices.

5 MULTI-SENSORY EXPERIENCE AND HEALTH- AND AGEING-SUPPORTIVE DESIGN

Demographic predictions state that by 2025 population aged over 65 will reach 10% of total global population (United Nations, 2015). It has also been predicted that by 2050 the number of the dementia patients will reach 131.5 million globally (Prince et al., 2015). Such estimates are even more dramatic in Asia, where by 2030 the elderly will reach 18% of total population, and 19% in Singapore. Moreover, the elderly of the future will be more educated and more independent; they will work longer and will thus have different needs and aspirations than the elderly today. It is, thus, important to enrich the understanding of the spatial, perceptual, emotional and support needs of the "new elderly" in order to design better urban settings that would enable more meaningful and joyful "ageing in place" and "active ageing" and enhance the overall well-being of all ages. Passive and isolated (non-integrated) support through provision of healthcare and eldercare facilities and services may not be sufficient for the new generations of the elderly. New paradigm in ageing-friendly design and planning sees non-healthcare environments in general, and housing environments in particular, as supportive and therapeutic devices for the new elderly who are encouraged to build up their physical and mental ability levels at different stage of ageing. While the designing according to universal design principles is already a norm, it should be further challenged to stimulate the elderly both physically and mentally, promote walkability and social interaction, inclusion and care. In this sense, multi-sensorial experience, including textures, materials, colours, signage, culture-specific clues, way-finding and overall aesthetic atmosphere become the agenda for new architecture and urban design that is sensitive and supportive to all ages.

This is further emphasised by a number of recent studies that acknowledged the associated declines in sensory and cognitive functions with ageing (e.g., Crews and Campbell, 2004; Humes et al., 2013). For instance, by the age of 80, almost 50% of the older adults have some elements of motor impairment (Buchman and Bennett, 2011), about 40–45% of adults older than 65, and 83% over the age of 70 report some degree of hearing impairment (Cruickshanks et al., 1998) and 60% of people aged above 80 show problems with odour identification (Murphy et al., 2002). Sensory impairments, particularly in vision, hearing and motor functions, not only increase the risks of developing various diseases, such as Alzheimer's or Parkinson's disease (e.g., Mesholam et al., 1998), but also have an immense impacts on almost all aspects of daily living of the older adults. Some of these include problems with physical activity and mobility, navigation and spatial orientation, challenging the elderly in performing basic daily life activities (Haanes et al., 2014), increasing risks of falls and accidents (Lopez et al., 2011), communication difficulties (Heine and Browning, 2004), social withdrawal, lower levels of independence and autonomy (Andressen and Puggaard, 2008; Heine et al. 2013), depression (Capella-McDonnall, 2011; Chou, 2008) and poor quality of life (Chia et al., 2006; Fischer et al., 2009).

Various non-verbal methods are now used in (some) dementia care and nursing homes to stimulate the senses, increase alertness, reduce agitation and re-establish the sense of self-hood, namely sensory

stimulation, multisensory stimulation (MSS), multisensory environment (MSE), and 'snoezelen' (Lykkeslet et al., 2014; Riley-Doucet, 2009; Vozzella, 2007). However, many of such methods still remain in the realm of "decoration", "special rooms" and "treatment strategies", neglecting the capacities of spatial design (of both indoor and outdoor environment) to embed carefully orchestrated multi-sensory stimuli and in such a way become integral and active component of care and provide continuous healing benefits, in terms of both treating sensory impaired conditions and slowing down sensory and cognitive decline of the elderly adults.

A qualitative study of nursing homes by Bengtsson and Carlsson (2005) emphasised the importance of the outdoor environment for the older adults, with key design aspects related to users' comfort (sensitivity to weather, familiarity, security and calmness) and to access to surrounding life (capacity for outdoor activity, sensual pleasures, surroundings as a way to keep up to date and social potential). Many studies pointed out various elements of senior housing design that enhance residents' social well-being, including green outdoor spaces to facilitate senior residents' social integration in the inner-city (Sugihara and Evans, 2000). Sensory and aesthetic ambiental qualities surrounding nursing home may alleviate stigma and negative public's perception of nursing homes and the elderly and contribute to their better physical and social integration with the surrounding communities.

Stress has been widely understood in its negative connotation – as distress. However, research in environmental psychology suggests that human well-being is fostered when physical surroundings provide a moderate degree of positive stimulation (Berlyne, 1971). Hans Selye (1978) first introduced the term 'eustress' which refers to good or positive responses to external stressors. A person's state of health is determined by the degree to which an individual's (positive) supporters respond successfully to various (negative) stressors. Roger Ulrich's (1991a, 1991b) 'Theory of Supportive Healthcare Design' involves 'positive distraction' in healthcare spaces, an environmental feature or element that incites positive feelings and holds attention without taxing or distressing the individual and in such a way blocks or reduces worrisome thoughts. Apart from psychological effects positive distractions also have positive physiological effects manifested in lower blood pressure and/or the lower production of stress hormones. According to psycho-neuro-immunology (PNI), negative emotions, particularly those that are chronically suppressed (such as depression, rage, fear, frustration, etc.) can have negative physical impact and in fact manifest as a physical disease. In other words, the illness originates in the misbalance of the immune system triggered by the psyche – the state of mind. On the other hand, positive emotions have positive impact on overall state of body and mind. Finally, Ulrich (1991a) recognises nature (waterscapes containing calm water, trees with broad canopy, deep landscapes and fresh flowers), smiling or caring human faces, pet animals, music and positive cultural artefacts as the most effective positive distractions. Similarly, in their "Attention Restoration Theory" Kaplan and Kaplan (1989) argue that the viewing of wild nature has a restorative effect in engendering physical and emotional relief from mental fatigue. As a result, patients exposed to views of nature have averaged a shorter postoperative stay (Ulrich, 1991a).

There is a growing agreement between researchers from various disciplines that well-designed and aesthetically pleasant spaces make people happy and satisfied, give them high self-esteem and, thus, positively affect their mood and health (Kolstad, 2001; Parker, 1990). As a result, happiness and positive emotions (stemming from an appreciation of the built environment) have received more prominent attention in more recent architectural design research. Finally, various medical studies have shown that "the psychological state of happiness" was a better predictor of coronary risks than any other clinical variable (Linton, 1995). The 'Total Healing Environment' is a concept emerged in healthcare and in response to the holistic understanding of health and well-being. It refers to therapeutic design that supports and contributes to the state of complete bodily, mental and spiritual health and well-being of a person. The 'Total healing environment model', developed by Patrick E. Linton (1995), also relies on the assumption that positive emotions have positive impacts on human health and that the most powerful healing potentials can be found in each human being. The model consists of two overlapping and interdependent continuums – between the external and internal environment, and between physical and psycho-spiritual environmental elements, and as such is essentially phenomenological. Birgit Cold (2001) states that we all intuitively know, consciously and subconsciously, what well-being is and how it feels, although this intuitive feeling is usually suppressed or overcome by cultural norms and social conventions.

The concept of therapeutic landscapes (sometimes inappropriately equated with therapeutic gardens) broadly refers to places that have capability of enhancing physical, mental and spiritual healing of their users (Gesler, 1992). While the core strategy include the creation of health supportive environments, the

concept also extends beyond the physical spaces to include every day and personalized place-related memories and promote healing benefits (Gastaldo et al., 2004). In other words, a combination of 'hard' and 'soft' design elements is required in order to boost a holistic sense of physical and social wellbeing through meaningful dialogue with spaces and among space users (Landry, 2000). Elderly and dementia-friendly environments, therefore, should not only seek to preserve safety and physical well-being, but also to empower communication and everyday activities (Prince et al., 2015).

6 CASE STUDY ANALYSIS: MULTI-SENSORY EXPERIENCE AND SHOPPING ENVIRONMENTS

This paper looks at 4 case studies of shopping malls in Singapore and Belgrade, Serbia. namely: VivoCity (shopping mall) and CityLink (underground pass-way and mall) in Singapore, and DeltaCity (shopping mall) and New Millennium (shopping centre) in Belgrade, Serbia, each representing different spatial configuration and the level of complexity, as well as specific relationship with its surroundings (Figure 1). The analysis consisted of spatial explorations and first-person observations, participatory photo-journeys, multi-sensory mapping, interviews and short on-site surveys.

7 PARTICIPATORY PHOTO-JOURNEYS

In each selected space, 10 participants were asked to pursue two photo-journeys followed by two in-depth interviews and a survey. The time of the walk given was limited to 30-45 minutes. All participants took their walks individually.

First – 'Seductive' Journey: During this walk, the participants took 10 photographs of whatever they wanted (except that they were not allowed to take photos inside any of the retail stores). In this journey, the participants were not informed of the purpose of the investigation in order to avoid possible biased outcomes. For the same reason, the route of the walk was not controlled. The intention was to indirectly explore the participants' first affective, emotional and sensory reading of the specific place, and thus uncover which elements of space attracted them most.

First Interview: After the first walk, all participants in their own words described their subjective experience and the overall atmosphere of space, without any interference of the investigator, after which they described each photograph using five keywords, and further elaborated on what exactly attracted their attention.

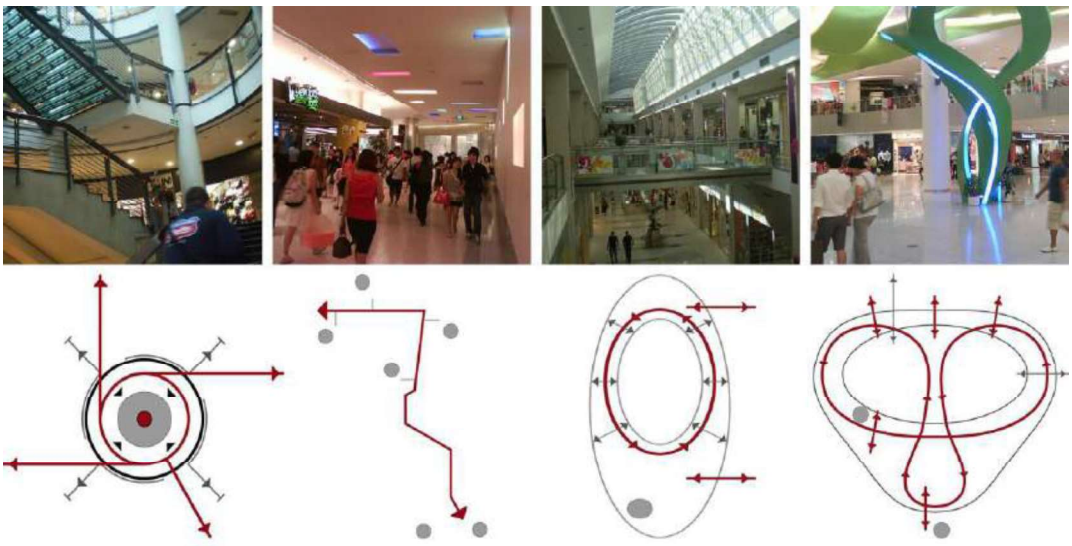

Figure 1 - Case studies [arranged according to the level of spatial complexity, from left to right]: New Millennium – 'centralised' type; CityLink – 'linear' type; DeltaCity – 'ring' type; VivoCity – 'infinite' type (Source: by author)

Second – 'Sensory' Journey: After the first interview, the researcher explained to the participants the purpose of his work. With that in mind, the respondents pursued the second journey and took another 10 photos, this time focusing on positive and negative multi-sensory stimuli available in space. They were allowed to take photos of the same spaces and elements again. In this more focused walk, the participants were asked to take a similar route, so that the outcomes from the two walks are more comparable. After the second walk, each participant explained the dominant sensorial stimulations and moods in each photographed space, and evaluated how pleasant or comfortable the detected stimulations were.

Survey: The final phase involved completion of a short questionnaire, based on environmental psychologists' research on atmospherics and the approach-avoidance behaviour method (Mehrabian and Russell, 1974; Donovan and Rossiter, 1982), as well as on 'sensory slider' and 'sensory radar' techniques proposed by Malnar and Vodvarka (2004) and Lucas and Romice (2008), respectively.

Multi-sensory Mapping: All the photographs taken by the participants were carefully mapped out, providing important information on spatial allocation and rhythm of sensory clues identified during the walks.

8 COMPARATIVE ANALYSIS AND KEY FINDINGS

The analysis of all the information gathered consists of photo-analysis, 'quasi-statistical' analysis of survey data and mapping and spatial analysis.

Photo-Analysis. The photo-analysis included photo-motifs and keywords assigned to photographs by the participants. Overall, interestingly, the most frequently captured motifs in both walks relate to social activities and shopping, followed by the space atmosphere (Figure 2). Natural elements and people, as parts of social space, are recognised as the most positive attractions in space, which lines with research findings on positive distractions in hospital settings (see, e.g., Kaplan and Kaplan, 1989; Ulrich, 1991a, 1991b). No significant difference between the motifs taken in the two journeys was noticed.

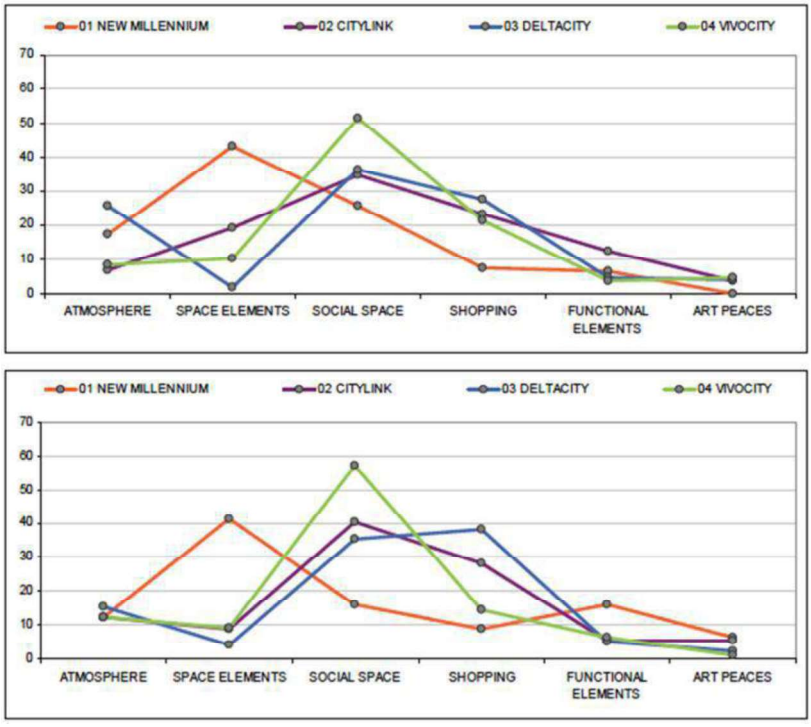

Figure 2 – Photo-motifs (Source: by author)

The keywords analysis shows that the participants predominantly tend to seek for positive stimulations in space (Figure 3). Moreover, they tend to perceive and describe the space more favourably after the second walk, which may be related to increased familiarity with space and so-called 'forgiveness factor',

which is defined as the voluntary "process that involves a change in emotion and attitude regarding an offender" (APA, 2006, p. 5). Once the user gets to know the space better, understands its logic and articulates his/her reactions towards it, his/her appreciation of space tends to grow in spite of the initial negative attitude. Such a finding may be particularly useful for the design of often stigmatised healthcare environments.

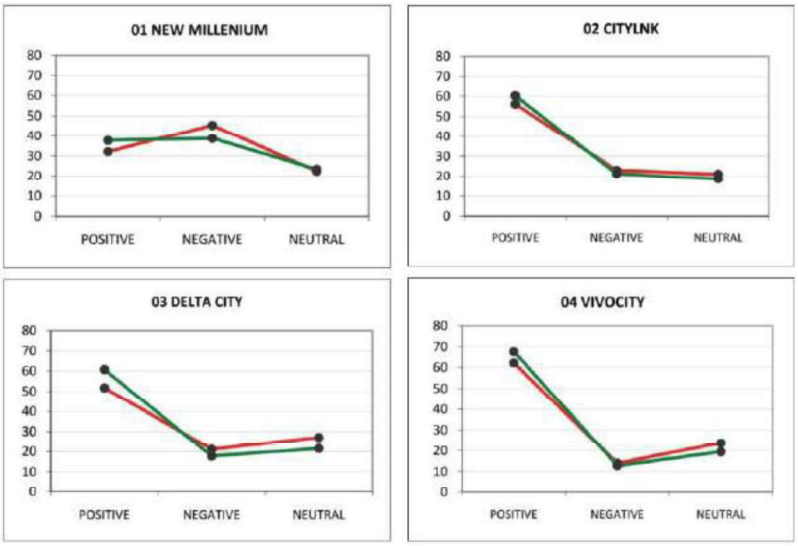

Figure 3 – Keywords (Source: by author)

Quasi-statistical Analysis. Key survey findings show that consumption space users tend to seek positive stimulation. The richness and arrangement of overall sensory information available in space considerably shape users' subjective perception of and emotional response to shopping environments. Spaces with higher intensity and diversity of positive sensorial stimuli possess higher level of attraction (seductive value) and trigger higher sense of pleasure and happiness (Figure 4). Similarly, more complex, hybrid and organic typologies are perceived as more attractive and pleasant.

Sensory mapping. Similar findings are depicted through comparison of photos taken in two walks. A considerable number of photographs have been repeated in two journeys (Figure 5), which indicates the significant relationship between the initial reaction to space (seductive response) and the intensity of positive sensory stimulation. While showing the rhythm of most dominant seductive (red) and sensory (green) clusters (Figure 6), these complex yet quite consistent patterns show that complexity of space does not refer solely to its layout and interior-exterior relationship, but also to the arrangement and diversity of sensory ambiences.

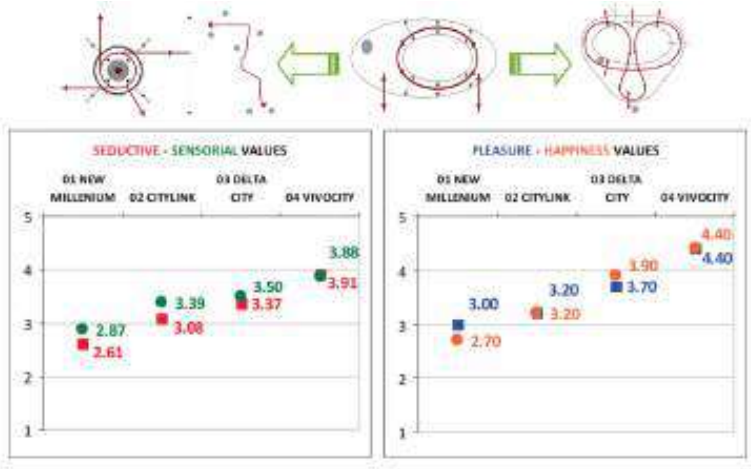

Figure 4 – Relationship between the seduction and sensorial richness levels (left);

Relationship between the pleasure and happiness levels (right) (Source: by author)

Figure 5 – Repeated photographs taken during seductive [top] and sensory [bottom] walks in DeltaCity, Belgrade, Serbia (Source: by author)

Figure 6 – Multi-sensory map of DeltaCity, Belgrade, Serbia – seductive walk (red) and sensory walk (green) (Source: by author)

Additional findings. Apart from the central guided themes that have been addressed by the participants during the interviews and that generally confirmed the ideas already advocated or explored in existing theory and research, a number of themes spontaneously occurred, without any guidance or intervening of a researcher. The themes are organised into three main categories, namely: bodily and mental self-awareness (ego), micro-events (surreal/hyper-real/phatasmagoric experience of space), and perception of health.

Bodily and Mental Self-Awareness (Ego). Bodily and mental self-awareness was addressed by participants in various ways, namely: narcissistic and intimate associations (self-reflection, memories, professional self), in relation to other people (familiar and unfamiliar), and in relation to space appeal (camouflage and mimicry, sense of being in place, performing conventionally less appropriate activities). Interestingly, the participants who showed greater self-awareness generally appreciated overall space more positively. Some of the responses are illustrated below.

NARCISSISTIC MOTIFS AND PERSONAL MEMORIES

CityLink06: This is a narcissistic shot. My name is Karthik and then you have “K” up there. This is actually BreadTalk sign. I also liked the lighting. (Figure 7 left)

VivoCity09: This is obviously a pillar. This is where I first met Fiona. She was waiting for me there and I couldn't find her. It is a place to wait and take a break from walking. (Figure 7 middle)

SELF-AWARENESS IN RELATION TO SPACE

VivoCity05: That's my foot on the warm wood. […] I like walking on wood, it stimulates your feet. You wear shoes every day and shoes are what you're supposed to wear in public. Usually when you take your shoes off, it's very private, it's your house, it's when you're on vacation. You don't take your shoes off in the office usually. (Figure 7 right)

Micro-events and Phantasmagoric Experience. During both journeys, the participants took a considerable number of photographs that may belong to the realm of phantasmagoric and surreal experiences, charged with temporality, irrational and subconscious aspects. These experiences include various non-programmed micro-events, often instigated by the juxtaposition of unexpected spatial elements and the subjective mind-mood states of the perceivers.

Figure 7 – Narcissistic Motifs, Personal Memories and Performing less appropriate activities (Source: by author)

An attempt at simulating the outdoor café areas and street atmosphere in CityLink underground mall or triggering illusionary cooling sensations in VivoCity (by providing an oversized statue of a snowman or a hanging figure moving in the air) are some of the examples (Figure 8). This is particularly interesting, since, due to the tropical climate, outdoor areas in Singapore are not very intensively used. People prefer air-conditioned space.

CityLink02: This one [photo] is a continuation from the food spaces. You walk on and you see the restaurants that are not behind glasses, but they are totally open. So you can sit anywhere inside; there is no mystery about it and it feels quite outdoor in a very indoor environment. It was a dinner time and it was pretty crowded so the sound coming from them [people] actually felt pretty good. You could staff in the restaurants and the waitresses talking to each other. It felt like you're really outside in the street. (Figure 8 left)

VivoCity02: What attracted my attention in this particular place is more of the snowman statue, I think, because it is huge, makes the mall feels friendlier and opposes to the heat. It doesn't really make me feel cooler, but with the fountain next to it, it actually brings freshness of to body and thoughts. (Figure 8 middle)

VivoCity08: This is quite funny. From far away I thought it was a real person hanging. It stands out. I think it's cute. It actually can move when the wind blows. That's when I realised that the wind was actually blowing. It's so hot out there. Sometimes you think there is no wind at all. (Figure 8 right)

VivoCity05: That was actually for the doll which swings in the wind. I like the wind, and then I found the doll. It was just windy atmosphere up there, fresh. (Figure 8 right)

Figure 8 – Street atmosphere in indoor environment, snowman in the tropics, wind-swinging sculpture (Source: by author)

Perception of Health. Through photographs and their explanations, the participants expressed common understanding of health and well-being, linking them to: natural elements, social activities (children, people relaxing and chatting) and hygiene. However, while the direct and visual access to nature has been highly appreciated by the participants, in certain cases it was somewhat counterproductive. A window may symbolise freedom, but bad views can alter the attention towards the more appealing interior of the mall. Other examples are related to restricted access to available outdoor space, even though the exit exists. As a result, the first positive impression turns into a disappointing one.

A small number of photographs also showed limited understanding or misunderstanding of health, such that smoking or fast-food were perceived as 'healthy'. Another set depicted negative associations towards health, referring to and using terms such as: the clinical and sterile environment, states of negative physical and mental conditions or illness (headache, distress, depression, claustrophobia, and even tombs and death) and the lack of safety coming from the subjective perception of certain materials and spatial elements.

9 CONCLUSION

Multi-sensory and emotional experience of space and active dialogue with all environmental stimuli, including positive distractions, textures, materials, colours, signage, culture-specific clues, way-finding and overall aesthetic atmosphere, profoundly shape our understanding of the built environment and are vital for physical, psychological and social wellbeing of all ages. Most health and space related theories and research concerned with multi-sensory experience predominantly focus on the design of (indoor) healthcare environments, demonstrating the various difficulties in their implementation and application (Goh et al., 2009). However, healing is no longer (as if it ever was) limited to the process of curing, neither only to healthcare institutions. Public space has traditionally been at the core of everyday life in cities, and its roles and capacities in (re)establishing itself as a focal point for the community and in supporting successful ageing-in-place and healthy active living need to be revisited.

Key findings in this study show that consumption space users tend to seek positive stimulations. To a certain extent, the consumption spaces are seen as laboratories of positive distractions, in which the richness and careful arrangement of overall sensory information considerably shape users' subjective experience and good mood. The presence of nature, micro-climate, wayfinding, access, safety and hygiene, but also subjective bodily and mental self-awareness, crowd and shared identity, social activities and phantasmagorical experiences, are perceived as important ingredients of "healing places" and as "stress fighters". While the findings indicate some capacities of contemporary shopping spaces to overcome the mere consumption motifs, trigger positive sensory, mental and emotional reactions in users, as well as boost their self-esteem, and, thus, positively affect their sense of subjective well-being, this does not mean that these environments are considered 'healthy'. These positive effects are clearly only the by-products of consumption experience.

Multi-sensory approach to consumption space design, however, may provide fruitful means for uncovering the capacities of all city spaces to become therapeutic and healing 'tools', prevent sensory and cognitive decline, alleviate stigma and negative public's perception of healthcare and eldercare environments, and contribute to their better physical and social integration with the surrounding neighbourhood communities.

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