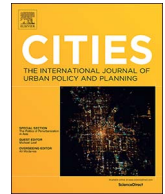


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# A perceptual model of smellscape pleasantness

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## ABSTRACT

Smellscape has increasingly attracted attentions across disciplines. However, little research provides a model to help understand the perceptual qualities of smellscape. This paper, taking pleasantness as a perceptual quality dimension, aimed to explore indicators influencing people's pleasantness of smellscape in a selected case. People's natural speaking language was used as resources to understand their perceptions. Grounded Theory was used as a methodological approach in this study in a selected case. Nineteen participants were recruited for smell walking with semi-structured interviews. Overall, nine indicators emerged from participants' descriptions which contribute to their smellscape pleasantness: cleanliness, preference, appropriateness, naturalness, freshness, familiarity, calmness, intensity and purity. Meanwhile, four types of pleasantness were found according to dominant indicators: preference dominated, healthiness dominated, memories and habituation dominated and context dominated. A perceptual model has been developed based on the indicators which can be used to classify smellscape through their dominant perceptual features and evaluate smellscape qualities based on pleasantness.

## 1. Introduction

### 1.1. Smells in everyday cities

A shift has been seen in urban theories and policies calling for attentions to people's emotions and experiences influenced by different sensory cues such as sounds, smells and colours. Felt qualities through such sensory experiences project relationships between people and places, reflecting how they live and respond to surrounding environment, which should be understood and explored in current urban policies to create quality places (Davidson & Milligan, 2004; Anderson & Smith, 2001). There is a growth of literature on perceptions of places through smells in the last decade. Smells are inevitable in people's everyday experiences in cities, variously sourced from human activities to building materials and landscape, forming an invisible world around us (Zardini, 2005). The daily associations with smells, such as smells of fresh bread from bakery on the way to bus station in the morning and smells of brewery and cigarette from pubs on the way back home after work, enrich our experiences and make us know better of the places we live. As Tolaas (2010: 153) suggested that 'the study of urban smells provides an additional dimension to our understanding of cities, enriches our sensual experience and provides input for urban design and architecture to communicate and understand the invisible city'.

In contemporary urban planning and design, as Rodaway (1994)

argued, we often underestimated the significance of smells in people's everyday experiences of the social and emotional dimensions of cities. In Western cities, there is a trend of de-odourising public spaces as part of maintaining a social orders, reflecting modernist conception of contemporary urban planning. This is inseparable from the situation of industrial pollution in Western cities in history, where smells were mostly associated with poverty, illness and death (Degen, 2014). However, the deprivation of smells makes places placeless and detached from our past. The role of smells in Eastern and Arabic societies are more important for interpersonal relationships and appreciated in many ways (Rodaway, 1994). For example, in China, there has been a history of burning fragrance to scent the indoor space and use aromatherapies. Scents in Arabic culture are embedded in interpersonal relationships. Rodaway (1994:79) stated that Arabic people enjoy and allow one's body odour to greet another as a way showing a close relationship. Compared to Eastern and Arabic societies, the western society has neglected perceptual values of smells for pleasure and identities in everyday cities (Lefebvre, 1991).

Memories of smells link the present and past, interpreting changes of the environment over time or life traditions of the people who live in the place (Reinarz, 2014; Tuan, 1977). As Pallasmaa (2012: 54) described:

*'The most persistent memory of any space is often its smell... a particular smell makes us unknowingly re-enter a space completely forgotten by the*

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*retinal memory; the nostrils awaken a forgotten image... The nose makes the eye remember...the scent sphere of a candy store makes one think of the innocence and curiosity of childhood...'*

The association of smells in a place with one's past experiences offer an intimacy between people and the place (Rodaway, 1994), which creates place attachments by giving personal meanings through perceived smells (Najafi & Shariff, 2011). People's memories of smells are actually found more durable than visual images (Engen & Ross, 1973). The odour memories can also stimulate 'odour imagery' (Herz & Engen, 1996) and evoke emotional responses (Herz, 1998; Schiffman, 1990), which enhance the overall experience in places.

Smells vary geographically, responding to the residence, nature and climate, showing distinct features of places (Porteous, 1985/2006; Duarte, 2017). Smells also reflect social and cultural characteristics of communities and places (Classen, Howes, & Synnott, 1994; el Khoury, 2006). For example, the strong cooking smells in Manchester China Town perceived by its visitors are considered as distinct features of Chinese communities and their food culture, which also give a new and unique identity to the place (Henshaw, 2013: 98). The authentic characteristics of places revealed by smells can contribute to the formation of place identities and demonstrate socio-geographic differences. As (Tuan, 1977:11) argued, 'odours lend character to objects and places, making them distinctive, easier to identify and remember'. Urban designers and planners should therefore understand and consider smells as resources and design elements for place-making (Henshaw, 2013).

### 1.2. Smellscape: The concept

Smellscape was first introduced by Porteous (1985/2006) in parallel with the Shafer's (1977) soundscape concept. In soundscape, a recent definition has been given as 'the acoustic environment perceived, and/or understood by a person (through acoustic sensation) in a place (influenced by its context)' (ISO, 2014: 1). Porteous, (1985/2006) describes the fragmented and space-time bounded human experience of places through smells, where the power of memory in perceiving smells was emphasised. Porteous (1985/2006: 91) said: 'the concept of smellscape suggests that, like visual impressions, smells may be spatially ordered or place-related', which should be 'non-continuous, fragmentary in space and episodic in time and limited by the height of our noses from the ground, where smells tend to linger.' Rather than odour, smell was used for the purpose of projecting a neutral attitude. Smellscape in this preliminary study was used in various scales from continents, countries and regions to neighbourhoods and houses.

In the later study by Rodaway (1994: 62), the term olfactory geography was used in preference to describe the link between smells, smell sources, spaces and people in the space. The term olfactory compared to smell is used to emphasise the action to smell and the physiological and neurological mechanism of the sense. In the discussion, olfactory geography seems to be more focusing on the regional scale. Recently, Hoover (2009) used the term 'geography of smell', where 'odour', 'olfactory' and 'smell' all appeared in the description. However, Hoover (2009) didn't explain why the term 'smell' was used in preference. In the discussion, smellscape was also mentioned whilst in line with smell maps, which limited the meaning of smellscape originally given by Porteous (1985/2006). There is a need to standardise the term to describe the interrelationship between humans' perceptions, smells and smell sources, places and context.

In a more recent study, Henshaw (2013:5) adopted the term smellscape, and 'referring to the overall smell environment, but with the acknowledgement that as human beings, we are only capable of detecting this partially at any one point of time, although we may carry a mental image or memory of the smellscape in its totality.' Human's perceptions (the sensational and mental process) in the description are at the centre of the smellscape concept, which need to be explored and understood. Smellscape in Henshaw's work is suggested to explore at

different spatial scales: macro (city), midi (district) and micro (street). Compared to the other two terms, smellscape has a focus on the human experiences and considers smell as both an action (to perceive) and substance (constitute the environment). The term smellscape can also across disciplines, i.e. architecture, urban planning and design, landscape and geography.

The term smellscape, thus, is chosen purposely in this paper and can be described as the smell environment perceived and understood by a person (through olfactory sensation, influenced by ones' memories and past experiences) in a place (specific to its context).

### 1.3. Need for a smellscape perceptual model

Understanding and evaluating the perceptual quality of smellscape are prior to guide future planning and design of smellscape. However, most smellscape studies focused on outlining elements composing the smell environment (Tolaas, 2010; Henshaw, 2013; Mclean, 2013) or cultural and historical features of smellscape in different cities (Classen et al., 1994; Reinartz, 2014). Very few of them have attempted to identify indicators influencing perceptual qualities of smellscape. Smell preferences and intensities have been frequently studied as main features of smell perceptions in laboratories (e.g. Moncrieff, 1966; Wrzesniewski, McCauley, & Rozin, 1999) and empirical studies (Henshaw, 2013). They are also used as parameters in odour guidance for onsite assessment to produce odour control strategies (DEFRA, 2010; IAQM, 2014). Smells in these guidance are mainly considered as chemicals and waste, which failed to recognise the importance of human perceptions of smells in places. Henshaw (2013) suggested smellscape as an approach to place-making, creating place identities and attachments with smells. The emotional bonds or response to smellscape can be very different from the perspective of odour controls, considering other parameters such as familiarity (e.g. Ayabe-Kanamura et al., 1998).

In the related field of soundscape research, a perceptual model was developed based on perceptual attributes have been identified through quantitative surveys of a list of descriptors representing two emotional dimensions (Axelsson, Nilsson, & Berglund, 2010). The identified perceptual attributes have been applied in later studies to understand soundscape characteristics and evaluate perceptual qualities of soundscapes (e.g. Aletta, Kang, & Axelsson, 2016; Axelsson, 2015; Jeon, Hwang, & Hong, 2014). A similar perceptual model of smellscape, therefore, can also be developed through identifying indicators contributing to emotional dimensions of smellscape perceptions.

Pleasantness is a key emotional dimension which can be used to measure perceptual qualities of places, representing the hedonic feelings (Mehrabian & Russell, 1974; Russell & Mehrabian, 1977). In soundscape, pleasantness and unpleasantness has been used to measure people's positive and negative feelings as well their satisfaction and dissatisfaction of perceived environment to identify wanted and unwanted features to provide further improvement strategies (e.g. Jennings & Cain, 2013). Henshaw (2013) also suggests, smells in places should be considered as both waste (unwanted) and resources (wanted) to be managed and designed for minimising their negative impacts and enriching/enhancing people's experiences in cities. Understanding the perceptual attributes of smellscape pleasantness helps to identify positive (wanted) and negative (unwanted) elements in the environment, which contributes to future planning and design strategies to achieve a more pleasant smellscape.

### 1.4. Aim and objectives

This study, thus, aims to investigate indicators influencing smellscape pleasantness and develop a perceptual model to understand perceptual qualities of smellscape accordingly. It took the grounded theory as a methodological and analytical approach to structure the study and analyse data. People's language was used as a source of

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