Understanding smellscapes: sense-making of smell-triggered emotions in place

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Abstract

Smells can evoke strong emotions and convey social meanings associated with people and places. This study explored the perceptual process of smellscape perceptions through a case study in Sheffield Railway Station and Bus Interchange. Walk-along interviews were used to collect data on people's perceptions onsite. It aims to understand how people make sense of their emotions triggered by smells in real life context, in relation to the physical space and onsite environment as well as their subjectivities. Nine perceptual patterns emerged in participants' sense-makings of smellscapes : recognising or identifying, associating, locating, evaluating, anticipating, contextualising comparing, generalising and personalising. A perceptual process model has been constructive from the empirical data mapping the interrelationships between smells, spaces and emotions. The findings from this paper contributes to the theoretical understanding of 'perception' in the smellscape concept. The perceptual process model provides a framework to interpret and communicate smellscapes in future design and planning practice.

Keywords: smellscape, place, perception, process, emotions, social-spatial, empirical

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1 Introduction

Supported by the growing literature on emotional geography (see Davidson, Bondi and Smith, 2005; Smith, Davidson, Cameron and Bondi, 2009), the attention of policy and social research has been drawn to the felt qualities of public spaces. Managing emotions and taking an emphatic approach are popularised in debates of public policies (Pykett, Jupp and Fiona, 2017). Historically, emotions have been considered gendered and personal and, as such, are excluded from the public agenda. However, Anderson and Smith (2001) argue that people live through emotions and feelings which cannot be gained through the visual and linguistic domains alone. The emotional reactions in places mediate the social relations between people and space, projecting how they live and respond to the surrounding environment (Davidson and Milligan, 2004). Emotional experiences and emotional behaviours from both positive and negative perspectives are increasingly researched to inform new approaches to manage spaces and create more humanistic and meaningful places (see Barclay, 2020; Liddicoat, 2019). The bodily dimensions of emotions- sensorial experiences- are essential to the understand how we feel of ourselves in the space (Trnka, 2012). Osborne and Jones (2017) have experimented emotional-spatial explorations through a combined approach with three lenses- physiological (through biosensing data), environmental (through video/GPS data) and interpretive (through interviews). Other sensory cues, like sound, are increasingly investigated of impacts of individuals' emotions through environmental research and art practices (see Logan, 2016; Hemsworth, 2016). However, very few has investigated specifically the smell-emotional relations in such empirical explorations of space.

Although smells are invisible and temporary, smellscapes are spatially structured from materials which construct the space. As Zardini and Schivelbusch (2005, p.276) describe '...smells that are now universal and specific smells, produced by particular activities, sources of energy, aromas and spices, plants, flowers, animals and garbage overlay one another, forming landscapes of smell that are invisible, but nonetheless present and real...'. Smells brings distinct identities to places and connects people emotionally. Understanding how people make sense of smell-triggered emotions contributes to the current literature on sensory and emotional geographies.

Coined the smellscape concept, consideration is given to how the perceived smell-environment of a particular place, at a particular time, responds to the context and an individual's background (Authors, 2018). The smellscape concept itself constructs a relationship between with human experiences of smells, the physical space and the context of place. Perception is at the core of the smellscape concept – Henshaw (2013) refers perception to sensation and cognition, which emphasises the mental process of thinking. The perceiving process to detect and classify smells are different from the process to acknowledge individual's smell preferences (Herz, 2006, p.193). However, it is not clear that how the two processes work and whether emotions play role in these processes.

The central concern of this paper is how people make sense of their smell related emotional experiences in places, thus outline the perceptual process. Emotions triggered by smell experiences in places reflect individuals' evaluations of both their living environment and

their existence within society. To begin with, we review literatures to explain the role of smells in mediating individuals' emotions and perceptions of physical space and society. This follows by the case study in Sheffield Railway Station and Bus Interchange using walking along interviews. The results are presented in three parts which include the emotions drawn out from participants' descriptions, the perceptual patterns participants use to make sense of their experiences and the perceptual process revealed from the empirical data. In light of our findings, we go on to discuss the implications of the findings on how to communicate and interpret smellscapes within the debate of representational and non-representational space.

2 Smells, emotions and places

Tuan (1977) argues that emotions are at the centre of all human experiences and give deep meanings to places. Looking further into the spatial emotional relations, Davidson and Milligan (2004) suggest that emotions are understandable and sensible in the spatial structure, through different senses, at different scales and by responding to different contexts. The emotional reactions caused by our sensory experiences not only interpret the environmental impact on our daily routines, but also reflect people's perceptions of the city and its physical environment (Zardini and Schivelbusch, 2005). Referring to Lefebvre (1991), an individual's understanding of spaces, including cities, is constructed through the movements of their sensorial body and their mental reactions. Sensory stimuli, such as sounds, smells and colours, are essential to bring about emotional reactions in places (Mehrabian and Russell, 1974).

Smells in Low's work (2005) are suggested as social medium employed towards one's understanding and reading of social others in everyday life. However, smells in this paper are positioned in the centre of the triangular interrelationship between places, emotions and the society, as a spatial-emotional medium or intermediary to interlink and make sense of smell triggered emotions in relation to the physical and social structure of place in everyday living, as shown in Figure 1.
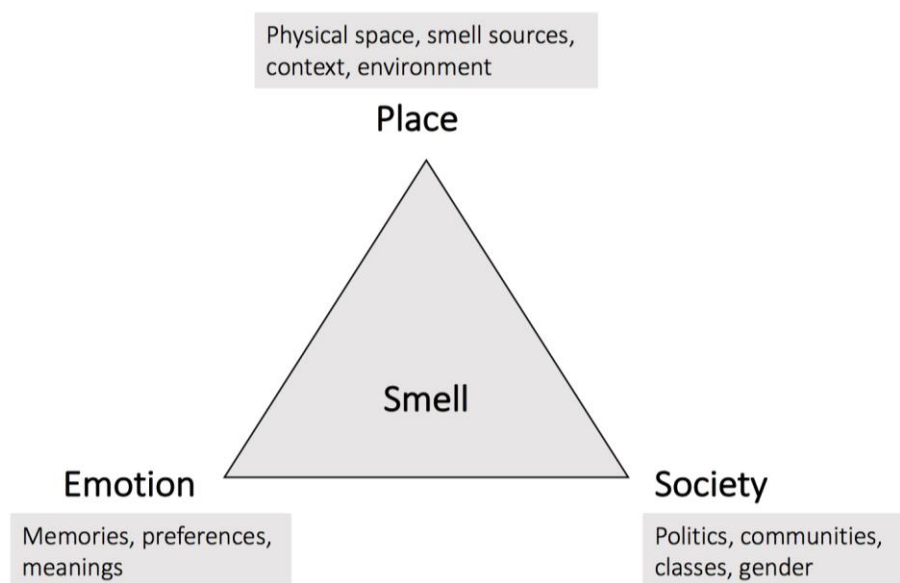

Figure 1 Smell as a spatial-emotional intermediary that links society, emotions and place

Smells play in an important role in triggering emotions in places. Rodaway (1994, p.73) writes, 'olfaction gives us not just a sensuous geography of places and spatial relationships, but also an emotional one of love and hate, pain and joy, attachment and alienation'. The sense of smell as emotional, arousing and cognitive (Porteous, 1985); and the recollective feature of smell experiences triggers 'emotional attachments and associations' (Henshaw,2013, p.31). Classen, et al. (1994, p.2) write, 'A scent associated with a good experience can bring a rush of joy. A foul odour or once associated with a bad memory may make us grimace with disgust'. The action of smelling or sensing smells links the past and present, internal and outside world. As Hvastja and Zanuttini (1991, p.883) suggest, 'the main function of olfaction is not to recall odours for cognitive reasons but to respond to the odours encountered'.

Positive effects of aromas on mediating moods and relaxation have also been observed in clinical practice of aromatherapy (Buckle, 2014; Diego, et al., 1998). In marketing research, scented products and shopping environments are found to enhance people's buying behaviours and their evaluation of a service (Spangenberg, et al., 1996); smells are essential in creating pleasant retail atmospheres (Grewal, et al., 2014). In line with such findings, Henshaw, et al. (2016) suggest cities as servicescapes and smells resulted by or applied to market various types of business can be strategically planned and managed to provide explicit communications of a city's culture and identity. Positive smellscapes can bring restorative effects to cities, making inhabitants feel healthier and happier (Henshaw, 2013). Conversely, the negative impacts of sewage, traffic and tobacco smells can also significantly decrease people's experiences in such spaces. These positive and negative experiences are important cues of emotional embodiment of individuals.

Odourless public spaces are iconic in western modern urban planning and city management practice – clean, impersonal and ordered. There are debates around public scenting, yet these do not include the ethics of using smells in the commercial discourse (see Damian and Damian, 2006; Henshaw, 2013). The power of smells and their relation to place perceptions has been undervalued and neglected (Classen, et al., 1994). Scenting has been widely used as a strategy in marketing and tourism to attract customers, stimulate consumer behaviours and send out branding messages (Berry, et al., 2006). For example, in 2012, the food company McCain implemented an interactive advertisement at bus stops in British cities in the cold month of February, targeting potential buyers with the smell of freshly baked potatoes (JCDecaux, 2012). Notably, such decisions, of where commercial smells are released in public spaces, are excluded from the dialogue of humanity and equal rights in cities. In a study of smoking in public spaces in Singapore, physical and social segregations were found between smokers and non-smokers caused by the perceived nuisance of cigarette smoke (Tan, 2012). As Śliwa and Riach (2012) suggest, noticing different smells triggers a sense-making justification about one's own social status as well as others'. The historical view of perfumes used by women 'for the pleasure and enticement of men' also projects a discrimination on the enjoyment of smells and gender division (Classen, et al., 1994, p.189); this view is somehow still true in the messages conveyed in most current perfume advertisements – with sexually appealing women as the main figures.

The emotional reactions towards smells in particular places are often aroused from the recalled memories of a particular moment in the past when people experienced a certain smell. Engen and Engen (1997, p.126) suggest 'the feeling about an odour becomes attached

to a certain stimulus or situation'. Odour-evoked memories and imagination play an important role in smell-initiated emotional reactions. Also, Engen and Rose (1973) compared the decline of memory accuracy between visual and olfactory senses with a group of students in a laboratory experiment. The results show that the degree of visual memory accuracy faded to zero after a few weeks, whilst the degree of olfactory memory accuracy stayed the same, at twenty percent of the first day, even one year later. The durable nature of odour memories has more potential to initiate a process of memory retrieval on perceiving a smell; odour-evoked memories also contribute to the hedonic properties of experiences and are found to be more emotionally potent (Herz and Engen, 1996). The emotion-memory bond in smell experiences are critical to one's perceptions of themselves and the environment.

3 Case study: Smell-walking in Sheffield Railway Station and Bus Interchange

In order to understand how people make sense of their smell experiences in real contexts, this study took an inductive qualitative inquiry. The Grounded Theory (Glaser and Strauss, 2009) provides a method to explore smellscape systematically and formulate a hypothesis, or theory, to explain how people make sense of their smell experiences and the perceptual process of smellscapes. It enables this study to stay open to emerging patterns from the data (Authors, 2018). This study is not limited to the existing discourse about 'individual and group dynamics of smell in the presentation of self and social interaction, constructed olfactory configurations of social others based on gender and race' (Low, 2005, p.409). People's natural language descriptions are taken as an interpretation of feelings and emotions, and ways of describing are taken as how people make sense of their feelings and emotions generated and associated with smells, personal background and places.

In order to conduct detailed investigations on the relationships between people's experiences, the smell-environment, the physical space and the context, this investigation was carried out through a case study in Sheffield Railway Station and Bus Interchange, between July 2014 and February 2015. As a 'node' and 'place' (Bertolini, 2006), public transit spaces provide a rich everyday social and physical context in which to explore the complexity of smellscapes; their inclusive and neutral identity also provides a purposeless smell-environment in which to explore people's perceptions of smellscapes.

Smellwalking is used as a primary method to collect data about people's in-situ experiences of smells in the studied case. Smellwalking is a form of sensory walks that the researcher walks with individuals or groups to explore smells people detect and their perceptions of smells in the environment through conversations along a guided or designed route (Henshaw, 2013). McLean (2012) finds that smellwalks can evoke individuals' memories, emotions and stories of places. As shown in Figure 2, a guided walk was designed to navigate participants through the case site in order to experience various functions and spatial forms. Walking as a transport means is practiced as part of everyday life as well as a social-technical assemblage exploring the social and physical environment at the same plane (Middleton, 2010). Sensory walks have been frequently used in empirical studies of sensory experiences in the urban environment (Degen and Rose, 2012).
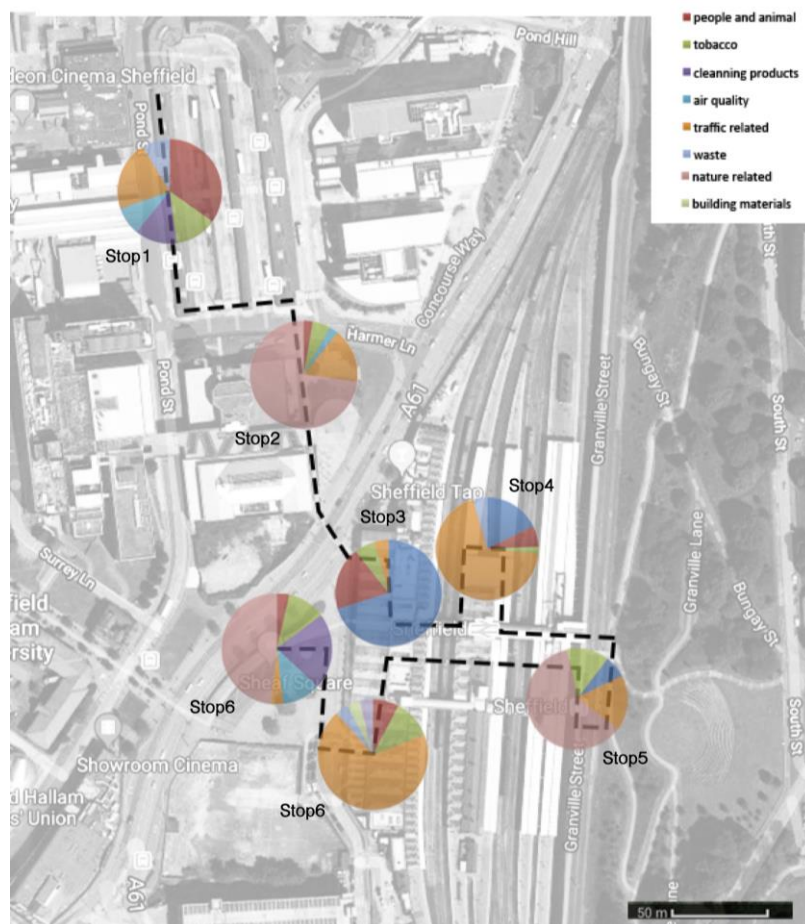
Figure 2. Route of the smell walking through the case study site in Sheffield with proportions of different smells detected along the route. The stops are: 1, Bus Interchange Stand A; 2, Station Pathway Greenery; 3, Railway Station Concourse; 4, Railway Station Platform; 5, Railway Station Tram Stop7, Sheaf Square; 6, Railway Station Taxi Rank; 7, Sheaf Square.

Repeated interview questions are asked as the walk progressed at each stop on smells people detected and their experiences of smells in the environment. Nineteen participants (English speaking resident in the UK, aged between twenty-two and fifty-seven, including nine females and ten males) with a good sense of smell are interviewed for an average of 45 minutes. The ethics approval has been gained through the Research Ethics Committee from the Social Science Faculty at University of Sheffield. Consent is gained from all participants prior to the walk, agreeing that the data collected would be used for academic research and publications. Participants are approached randomly onsite at the beginning of the data collection process and then through a snowballing strategy. Data analysis are conducted along with the data collection process to help identify participants needed to saturate the data. This sampling process is 'a strategy to narrow the focus on emerging categories and a technique to develop and define them' (Charmaz, 2006, p.107).

Each interview is recorded through a handheld voice recorder. Interview recordings are transcribed and analysed after each smell-walk to allow initial themes to emerge and to provide a guide for the follow-up sample recruitment. The transcribed interviews are analysed through line-by-line coding to capture detailed information and the meanings of words given by participants. Memo writing is used to categorise, reflect and synthesise information to derive meaningful themes from the data. Such a coding and memo-writing process is an iterative process until the themes are consolidated with new theoretical concepts and frameworks (see Authors, 2018).

4 Results
4.1 Multimodality of emotions aroused by smells

Language descriptions of experiences in specific places indicate people's perceptions of the physical environmental settings (Bradley and Lang, 2000). In particular, modifiers in such descriptions often can be used to measure individuals' emotions, feelings and evaluations of the environment. As Classen, et al. (1994, p.3) argue, smell is 'a highly elusive phenomenon' and cannot be documented or named in western languages; however, we express our olfactory experiences through 'means of metaphors'. Narratives have the power to connect people and place; language delivers information about people's emotional experiences describing how they think and feel (Tuan, 1991). A cluster of modifiers associated with smell-related feelings and evaluations which emerged from the conversations during the smellwalks has been summarised in Table 1.

Table 1. Modifiers participants used to describe their feelings and evaluations of smellscapes in the case study

Modifier	Frequency (n.)	Modifier	Frequency (n.)
Happy	2	Strange	1
Familiar	3	Pleasing	1
Relaxing	5	Bothered	3
Annoying	5	Free	1
Good	1	Negative	2
Calming	2	Unhealthy	3
Soothing	2	Artificial	1
Pleasant	3	Normal	3
Unpleasant	4	Clean	3
Appropriate	2	Fresh	6
Inappropriate	1	Stale	2
Nice	2	Neutral	1

These modifiers, taken directly from participants' own verbal descriptions, have shown more qualities than the three dimensions – evaluation, potency and activity – suggested by Dalton, et al. (2008); they also respond to the physical settings of space, personal factors and other sensory stimuli. For example, 'clean' as a feeling is different to 'good', indicating specific physical features of the environment such as good air quality, clean floors, etc. 'Good' as a feeling has a more focus on personal preference and physiological status. In many cases, modifiers of emotions and feelings were used in participants' descriptions, interweaved with perceptions of other sensory stimuli. For example:

> 'A bit watery smell and less fumes. I can smell the chlorine in the water. Nice, good. It makes me feel clean and reminds me of the smell of the swimming pool. It is a nice chemical smell... It makes me feel happy. I love water features. Actually, I like the sound of running water. It makes me feel free. Well, the smell of course plays a part of it.' (Interview with participant S05, 10 July 2014)

Here, the interaction of auditory experiences of the water is emphasised in a conversation about smellscapes. The feeling of 'happy' and 'free' is an emotional reaction across perceived sounds and smells in the scenario. Modifiers given by participants in such cases are also

affected by the multimodality of language and emotions. In fact, both the language and sensory-motor systems share the same structure in the human brain, with the result that language descriptions and sensory experiences are interrelated (Gallese and Lakoff, 2005).

Through semantic analysis of 50 pairs of bipolar descriptors – based on the non-olfactory stimuli developed by Osgood (1962) – Dalton, et al. (2008) find nine pairs of bipolar descriptors people most frequently associate with smells: fresh-stale, good-bad, happy-sad, harmonious-unharmonious, healthy-unhealthy, beautiful-ugly, smooth-rough, clean-dirty and safe-dangerous. However, these laboratory results have not been examined in empirical studies to show whether they match people's natural descriptions of smells and smell-associated emotions and feelings in places. From the results shown in Table 1, the most frequently naturally used modifiers in the studied case are: happy, familiar, annoying, relaxing, pleasant, unpleasant, bothered, fresh, normal, clean – they are not necessarily bi-polar pairs. Given the limitation of sample scale, the frequencies are only used here to see which emotional responses are dominant in the studied context whilst not attempting to produce generalisations of smell descriptors.

4.2 Perceptual patterns in sense-making smell-aroused emotions

People have habits of sensing and these are often reflected in their ways of identifying and describing sensory experiences (Cain, et al., 1998). Figure 3 shows patterns emerged from this case study reflecting people's habits of sensing smells in relation to space, objects and people.
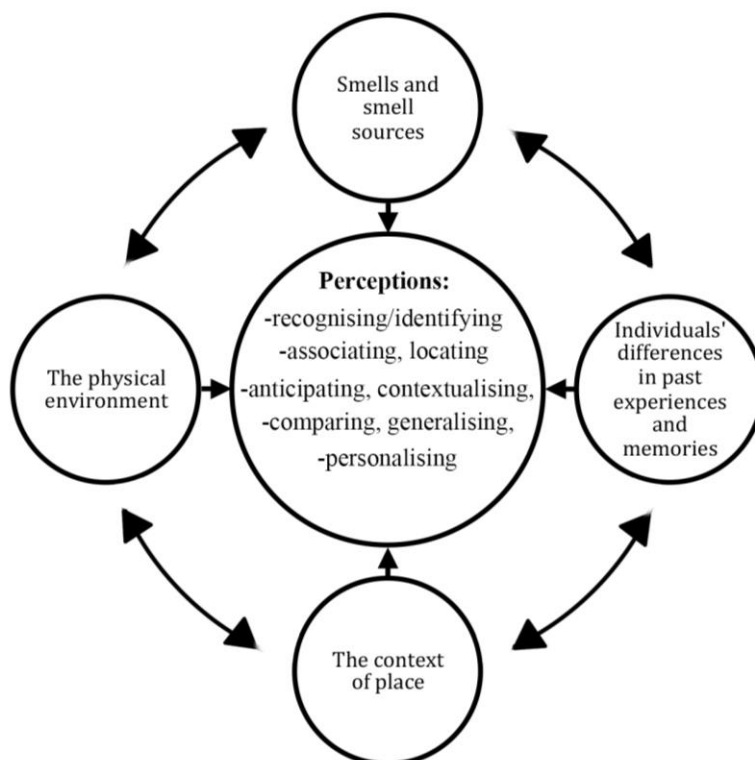

Figure 3. Emerging patterns of sense-making from the analysis of interviews with participants during smell-walks

On detecting a smell, participants can often recognise whether they have encountered it before. Familiarity has a significant impact on people's abilities to recognise smells (Cain, et al., 1991; Ayabe-Kanamura, et al., 1998). Waskul and Vannini (2008) suggest that people's immediate interpretations of smells are often related to smell sources and their connotative meanings. However, in many cases, participants cannot identify or use accurate descriptions to define smells or smell-sources. For example, when been asked what smells they detected in the bus interchange, one participant described the smell as an 'old smell':

> 'It has an old smell. How can I explain this… You know modern buildings? They always associate with the clean smell. But, here, it has a bit dusty smell. It not that dusty, but, for now, it is kind of humid and dusty feeling.' (Interview with Participant S09, 22 July 2014)

In this case, the concept of smell starts with an abstract form and then moves on to more specific ideas; this involves a recognising action in their response but without accuracy. Laboratory experiments have identified most people find it much more difficult to identify exactly what the smells are without visual aids (words or images) in a de-contextualised condition (Cain, et al., 1991). This echoes Rose's (2001) longstanding perspective about multimodality in visual perceptions. In this study, the method participants used to recognise or identify smells is either by associating with everyday experiences and memories, or by referring to objects and people's behaviours visually perceived in order to stimulate the experience imaginary. For example, many participants associate traffic fumes with poor air quality and crowded environments, which has made negative impacts on their overall perceptions. Herz (2006) argued that people's knowledge of smells is learnt through day-to-day experiences and practice whether positive or negative, which are also powerful in forming preconceptions.

When detecting a smell, participants often attempted to make correlations between the smells and the physical environment, in addition to orientating themselves to trace the sources of the smells detected. For example:

> 'Now we are in the concourse, I smelt someone's perfume in front of us. I can smell cigarette [smoke] from the door where people are smoking by the door. Uh, I can also smell some food here from the pasty shop and a little bit smell of coffee from the café in the middle. But it is not overpowering.' (Interview with Participant S09, 22 July 2014)

The perceiver-centred notion is identical when participants located themselves in relation to distances and orientations of smell-sources in the environment to justify their recognition or identification of smells. This echoes Marr's (1982) suggestion that people always locate themselves in relation to objects in places. However, the action of locating is based on direct observations of the surrounding environment onsite without connotative interpretation.

Herz (2006) suggests that people know immediately upon detecting a smell whether they like it or not, and this pleasure or pain experience determines their interpretation and evaluation of the associated objects, people and places as good or bad. Evaluating smellscapes is a rationalising process where people use logic to explain their personal feelings and

evaluations, taking into account factors such as appropriate, dislike and unfamiliar. An analytical process is always involved in evaluations, drawing references from one's expectations and preconceptions of smells and places. For example:

> 'It is just the train smells over the platform. I thought I will be able to smell the coffee, but I can't at all. It is just the trains. Quite strong smell.' (Interview with participant S05, 10 July 2014)

The preconceptions of objects and physical settings of a place are often the initiatives for anticipating smellscapes. The anticipation of smellscapes sets out a standard of an acceptable smell-environment for those perceiving it; their justifications are based on the familiarity of similar physical environments, smells and smell-sources. When the actual smellscape differs from what they anticipated, people notice the difference immediately and make a response. For example, when detecting the smell of chlorine from the water feature in front of the station, a participant said:

> 'I don't expect chlorine, it usually associates with swimming pool, it is an indoor environment, obviously, outside tends to be more natural water smell. It is now I can smell chlorine, I don't expect that, I'd wish to smell more natural water, maybe not sea water, but just not artificial smell.' (Interview with participant S07, 11 July 2014)

Contextualising smells is argued as a negotiated structure of context and detected smells (Waskul and Vannini, 2008). Context – which can be a set of background conditions or facts about the place or a particular event within it – plays a decisive role on the quality of smellscapes in a place (Authors 2018). When contextualising, participants most value the congruency of perceived smells within their contexts. For example, one participant commented on the smell of trains at the platform:

> 'Well, it is a train station, I expected to smell the smells of trains. So, it is not that unpleasant to me, because I know what it will smell like.' (Interview with participant S17, 04 February 2015)

Comparing with a contrasting or similar smell experience provides perceivers with references for evaluating smellscapes. As Fine (1995, p.256) argued, in a comparison people are likely to use their past experiences as basis for judgement and evaluation. Such comparisons are based on memories of a similar or contrasting experiences in similar contexts. Often, there will be a certain level of associations involved, however, comparisons may lead to an evaluation from a critical point of view. Participants also compared experiences along the route, these comparisons are more vivid and detailed. For example:

> 'I feel refreshed, more comfortable, because we were inside the bus station. It is an enclosed space that you don't smell fresh air in it. But here, it's more open area. I can easily sense the difference. It was too warm inside the bus station and there is no airflow. And you smell people inside it. But, outside there, I can feel the breeze. And it doesn't smell like people. I prefer the outdoor smell.' (Interview with S04, 08 July 2014)

Participants sometimes tried to conclude and summarise smellscape features according to common experiences or ideologies shared by the public; such generalisations often influenced their expectations and acceptance of smellscapes. For example:

> 'Obviously, with the clean smells, you associate with clean things. I think it is just everybody likes clean things. If you cleaned your room, it would be a fresh smell and quite nice.' (Interview with participant S07, 11 July 2014)

In this example, the participant generalised two things based on her own observations: a clean smell is associated with clean things, and everyone likes clean smells. Such generalised rules might be true to people from the same social and cultural backgrounds, yet they are not objective enough to apply in other contexts.

When evaluating smellscapes, participants often drew upon their personal preferences and habits. Smell preferences and habituations are essential to smellscape perceptions (Henshaw, 2013) and personalised smellscapes may produce emotional responses, expressed in terms like 'familiar', 'homely' and 'annoying'. When personalising, participants were often aware that they gave personal opinions that might not be like those of other people. Śliwa and Riach (2012) consider smell as a process of 'othering' to differentiate and associate. Past experiences and memories are often the source of smell-information to which people can refer (Schiffman, 1990), and given that odour memories are long-lasting, people are likely to experience personalising, recalling happy or unhappy memories of themselves. Personalising makes one's perception of the smell-environment unique with personal meanings. As Synnott (1993, p.187) argued, smells are integrated with people's personal lives, imbued with memories and meanings. For example:

> 'I don't mind the train smell because it reminds me of going away. I don't use trains for business or work. Mine would be for pleasure. All I remember is pleasurable journeys. So, I quite like the smell of the train, it is not something that I experience everyday either, for me, I'd be going for a trip on a train, which is a pleasurable experience anyway, so, I don't mind smelling the train.' (Interview with participant S06, 10 July 2014)

All these perceptual patterns contribute to the sense-making of emotions aroused by the smells in places and work differently in different situations in combination. The smellscape components – the context of place, individuals' backgrounds, the smell-environment, and the physical space – may work at different levels responding to different situations. For example, in the case above, attention is given to the individual's background, associating a personalised meaning to the grassy smell suggestive of a park and home. Such perceptual patterns show the momentary interrelationships between the four smellscape components.

4.3 Attention-driven perceptual process

In the interview, participants conducted a process: from acquiring knowledge of the smell-environment, understanding the perceived smell-environment, and interpreting the overall experience to the interviewer specific to the interview questions. Although this followed theoretical assumptions, the interview questions were open-ended which left space to understand the actual process of perceiving smellscapes. Figure 4 shows a perceptual process

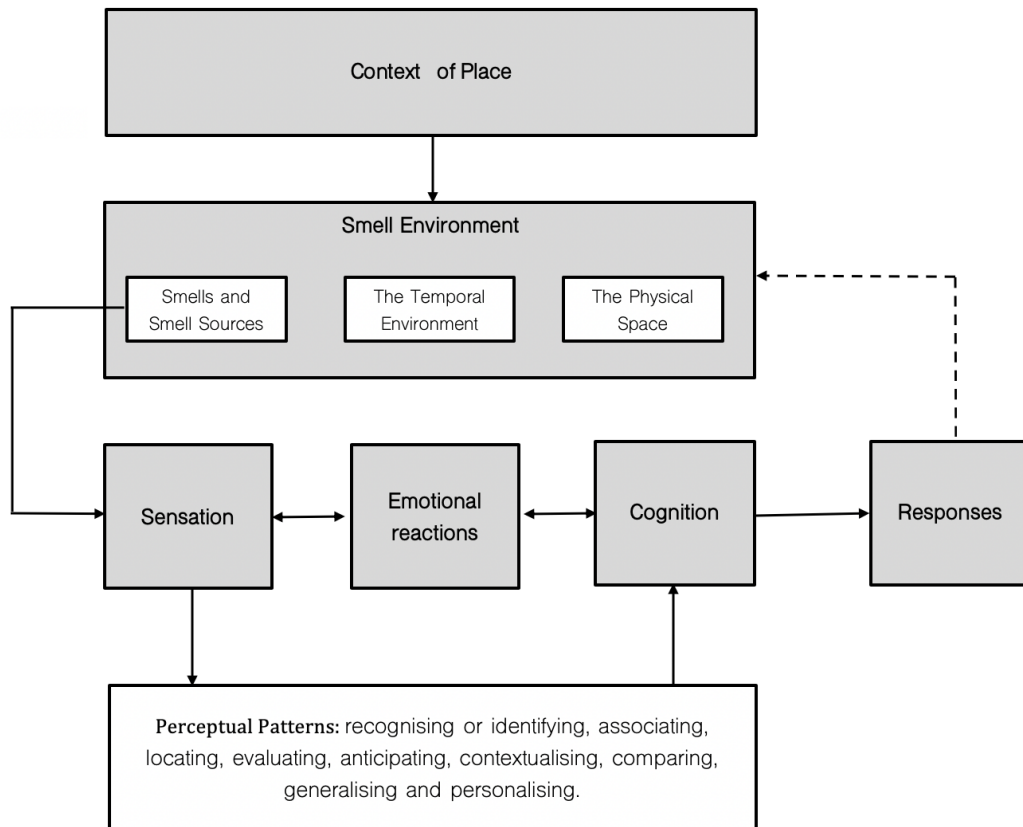constructed from the participants' descriptions.

Figure 4. Perceptual process of smellscapes constructed from participants' descriptions of their experiences during the smell-walks in the case study

The conscious detection of smells plays an important role in the perceptual process to activate the cognitive process. When a smell catches an individual's attention, they will immediately notice the smell-environment and make efforts to recognise or identify the smell, which might even proceed to evaluation of the smell-environment. However, there is also an unconscious detection of smells that contributes to the overall perception. Jacquot, et al. (2004, p.51) defines this unconscious detection as 'an activation of the autonomic nervous system in response to an external stimulus without subjects' awareness of the present stimulus', including the detections from the trigeminal component of the nasal stimuli. Given the methods used in this study, it is hard to tell whether unconscious detections of smells occurred along the walks or not; however, the responses of 'not noticing' and 'ignoring' extracted from the conversations leads to the question of attention in the perceptual process.

In the inquiry, some participants' immediate responses to what the smells and sources are in the space were 'not really…' or 'I can smell…'. Generally, participants would not give a definite 'no', but are more likely to say, 'not really' or 'nothing particular' instead. Most of the time, when saying such phrases, they were surrounded by 'background smells' of low intensities and are neutral to their preferences. For example:

> 'Nothing particular, there is nothing like or dislike of this space in my head. It is very neutral. I think the weather is also a contributing aspect to the smell-environment,

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because if it is in summer, it is easier for you to detect more smells. But now, it is winter, it is just neutral.' (Interview with participant S16, 16 January 2015)

This 'not noticing' response is also commonly found in smell-walks conducted by Henshaw (2013). Whether noticing or not noticing is based on the subjective evaluation of detection threshold of smells in the space, experiences of smells are not necessarily consciously directed by our attention (Hvastja and Zanuttini, 1991). The status of the body and mind in a situation mostly determines the level of attention given to smells in the environment; people may not notice smells when they are active, i.e. running and walking fast. It is likely that people have lower sensory detections during vigorous activity compared to passive movements (sitting and standing) –because their attention is diverted to bodily movement or the surrounding environment (Chapman, et al., 1987). For example, one participant commented:

'You know when I am walking, I don't really take notice of smells. I just take care about the surroundings, what I see, you know. So now, when you tell me to smell something, it's more different. I begin to take notice of smells.' (Interview with participant S08, 21 July 2014)

Attention plays an important role in activating the cognitive process. Individuals' emotional relationships to places are dynamic processes of consciousness and unconsciousness to attach or detach themselves to the environment (Manzo, 2003). Debner and Jacoby (1994) have examined the role of attention in conscious and unconscious perceptions and confirmed that attention can activate the autonomy of mental processes to achieve a goal even without awareness. In this study, when being asked to identify a smell, participants automatically activated the subconscious perceptions of the smell-environment. However, it is worth pointing out that sensation in the process is not a one-off; the repeated action of breathing along the walk has continued to enrich information about the smells in the space. As Riach and Warren (2015, p.795) suggests, 'inhaling also involves a continual exchange and enmeshment of experience that challenges and confuses ideas of interiority and exteriority'. Breathing brings unconscious detection of smells which produces a secondary layer of information of the smell-environment. The movement of the body also enables the changes of the microenvironment around the nose and the air taken in, responding to the distance and orientations to different smell sources.

The normalness and abnormal-ness are frequently mentioned in participants' responses, which indicated whether perceived smells in places are different from their expectations. For example:

'Not really, it is just a hot day, I can just smell a bit of cars. But it is really mixed with the hot weather and I feel it is normal. I can't really tell. It is nothing bad really. Yeah, nothing else.' (Interview with participant S05, 10 July 2014)

In the example above, the participant explained detecting 'only a bit of cars' after saying 'not really (detecting any smells)'. The immediate response of 'not really' lies behind her familiarity with the smell of cars mixed with other environmental background odours in the hot weather. The conclusion the participant made of perceiving car fumes in the station being normal is the reason for her not paying immediate attention to the smell environment at the

beginning. This would bring up the ethical issue of taking a participant onsite to make them aware of the smell-environment and their subconscious reactions to it – in contrast, this 'a bit car smell' would probably not be noticed in her normal daily routine. People experience a process that involves adaptation, fatigue and habituation when encountering repeated smells (Naus, 1984; Schiffman, 1990), which may result in less sensitivity to such smells. In the case where people are exposed to background smells similar to their daily living environment, if there is no significant change in smells from one space to another, they will rarely pay attention to these background odours. Normalness is an intermediate form which can either lead to evaluation or end the perception at the initial stage; this will depend on the intensities of smells in the space and whether it catches the attention of the perceiver. This 'normalness' response is not dissimilar from Low's (2005, p.408) finding on 'the sense of normalcy' in everyday experiences of smells.

An 'ignoring' response occurred frequently when participants thought the perceived smell-environment does not have a significant influence on what they were doing in the space. For example, the smell of diesel on platforms was frequently commented as unpleasant by participants, whilst it would not stop them waiting for trains on the platform. Here, participants contextualised the smellscape for the transit environment and took into consideration the purpose of visit to decide their responses. As such, 'ignoring' is a way of controlling emotional reactions towards the smell-environment – when a decision is made to ignore, lower attention will be given to the smells in the space.

Existing research suggest that smells can cause different behavioural responses in the space, such as approaching and avoiding behaviours (Largey and Watson, 1972). The behavioural responses may lead to changes to the general context or the positions of perceivers in the environment. For example, empty or covered trash bins may result in a change of walking routes. However, in this investigation, behavioural responses were not purposely studied and considered in the research design. Participants did not behaviourally respond to smellscapes during interviews whilst their descriptions did indicate their potential behavioural responses. For example:

> 'It is very unpleasant. Every time when I smell it, I feel like I have to protect my lungs. Because it is something I believe is unhealthy for my respiration system.' (Interview with participant S14, 05 December 2014)

The perceptual process revealed is a process of reasoning and justification, with different levels of attention-giving and controlling. Although it is debatable whether unconscious detection of smells proceeds cognitive responses, attention in this empirical study activates the cognitive process. Thrift (2004, p.152) argues that body practices in spaces shaped by emotions are an 'important part of the body's anticipation of the moment'. Emotions are conscious and expressible whilst feelings are not. In his discussions of 'real' experiences, the instantaneous experience in fact does not truly exist since there is a time structure applied to the bodily responses or processes of any sensory perceptions. Preconscious awareness of objects, spaces and people produce anticipations which are intuitional, whilst conscious awareness can be considered a means of focussing and sanctioning action. This preconscious awareness might come from habituations of everyday living and the common sense. Thrift also suggests 'emotion is corporeal rather than discursive reasoning' (ibid). In between sensations and cognitions, the aroused emotions and physiological responses mediate the

iterative process. Responses, as contrast to the natural bodily involvement, are the result of discursive reasoning, like 'ignoring' found in the case study. Purposeful responses to the smell-environment perceived might interfere with future expectations of such spaces or uses. Both intuitive and discursive reasoning are involved in the perceptual process, and responses to the smell-environment depend on people's evaluations and purposes for using the space. However, either response stimulates an iterative process of perceiving the changing smell-environment through the movements of the human body.

5 Reflections on findings

Tolaas (2010, p.153) argues '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'. Smells play important roles in the learning process of places (Henshaw, 2017). In the discussion of smellscapes here, smells are taken as an agency, as the physical space, to facilitate or activate the thought resident in the human body. The thought or perception is as the medium to reconstruct the social-spatial relationships between smells, individuals and emotions. This leads to the discussion of the nature of smellscapes as non-representational and the paradoxical needs of representational interpretations.

Referring to Thrift (1996, p.4), the nonrepresentational space emphasises the 'precedence over lived experiences and materiality' which is beyond the representational dimensions given by physical structure and order. The production of space is with the embodiment of human bodies through a dynamic process of interactions between tangible and intangible elements. Canniford and Riach (2018) suggest smell encodes spaces with meaning and power which link people and punctuate their movements within the space. The perceptual process revealed in the study is not static – the interactions between the body, space and smells continuously form 'new' thinking and actions. Although pre-consciousness of smells was not measured in the case study, the 'not noticing' and 'normalness' reactions are indications of habituations and preconceptions which form the pre-consciousness of smells. Henshaw, et al. (2016) suggest that incorporating unintentional and ambient smells synonymous with the contextual place can create unique place identities and emotional resonance. The perceptual process constructed from this study can help future explorations of smell to examine the conditions or smells that activate emotions, or not, as the case may be.

The intangibility and ephemerality of smells make it difficult to represent and communicate in all design processes. Limitation on interpretations and describing smellscapes in English culture and language has been acknowledged in previous studies (Classen, et al., 1994; Majid and Burenhult, 2014). The subjective features and various factors also bring difficulties in understanding, characterising and interpreting smellscapes (Henshaw, 2017). Contemporary urban and architectural practice still relies greatly on representational tools and visual language to communicate and design spaces: it remains a challenge to design or plan for the non-representational qualities of spaces. Lefebvre (1991) argues that spaces are socially constructed through the triangular relationship between representational spaces, representations of space, and spatial practices over time. Smellscapes are representations of individuals' imaginations of places, triggered by smells in a space-time structure. Spatial

practices, through the body's movements within spaces, are constrained and shaped by the materiality of the space (meaning the physical forms, materials and design). The self-conceptualisation or sense-making of smellscapes needs to be better understood in order to be articulated by different stakeholders into place-making with smell. The concept of self is important in perceptions of environment, and the interpretation of the environment is a special and meaningful process in relation to the sense of self. People choose environments that are congruent with their self-concept, modifying settings to better represent themselves, or moving to find places which are more congruent with their sense of self (Twigger-Ross and Uzzell, 1996). Such perceptual patterns have mapped out different 'rules' participants use to rationalise the emotional reactions and responses which can be used to predict or reconstruct the social-emotional space associated with smells.

Visual cues are vital, in everyday contexts, concerning smell perception. As revealed in participants' descriptions, there was a multimodality (Rose, 2001) involved in smell-aroused emotional reactions. Ehrlichman and Bastone (1992) have examined the role of smells in arousing emotional reactions with and without visually present objects (smell sources) and suggest that the ability of smells to arouse emotions is much decreased without visual presence. Visual information, but with an absence of smells, might also recall odour-related memories (Engen and Rose, 1973). The congruency of smellscapes is often based on the visual perceptions of the environment and the expectations of smells inside the space. The emotional and imaginative feature of smells can empower spaces to set boundaries and engineer people's impressions of cities (Synnott, 1991). Koch and Latham (2012) suggests cities are as assemblages of objects and representations which produce imaginaries of the city's past and future through the perceived and lived spaces: it suggests the possibility of the representation of the non-representational space of smells.

The perceptual process constructed from this paper can potentially give a framework for practitioners to refer to as a way to link the representational and non-representational space. Smellwalks are essential tools to investigate the existing smellscapes. Verbal or diagrammatical information can be constructed referring to the perceptual process model addressing individual components. Curated smellwalks with purposeful scents and visual cues can be explored in the future as a way to evaluate and modify design schemes.

The theoretical contribution of this work is the perceptual process in smellscape based on empirical data which takes in the impact of the physical space and the context of place. It considers smell as a spatial-emotional intermediary bridging interpersonal experiences of smells and the social-spatial structure of place. The smellscape perception model constructed from this study provides new insights into understanding the smellscape concept and has practical contributions to the interpretation and communication of smellscapes at different stages in the spatial planning and design process.

Future research would empirically examine how the perceptual patterns and process model can be used to understand and interpret people's responses to the smellscape in certain contextual places. In particular, further investigative studies – from the perspectives of both the designers and the public – could be conducted on how to apply the process model to best communicate their ideas and experiences of smellscapes in a design process. In addition, more empirical work should be conducted through walkalong interviews in different

contextual spaces to gather the emotional descriptions elicited by smells in order to build a vocabulary library which can be used for future semantic analysis.

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