Multisensory research output: Ingesting smell into real and imagined smellscapes

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With research outputs, the results are primarily conveyed through text and imagery. While an academic can push the boundaries of academic writing conventions, methods, and visual representations, the nature of a paper limits the output to merely being visual. Of course, more senses make up human perception such as touch, hearing, taste, and smell. The latter sense has formed an inspiration for stretching the traditions of academic output. With our project, we translated the graphic representations presented in the paper *Real and Imagined Smellscapes (2021)* to a small interactive exhibition that incorporates real-life scent samples. In doing so, we aim to sidestep the reliance on purely visual representations and create a multisensory experience of academic output.

Study results

In the paper by Lindborg and Liew (2021), the notion of a ''smellscape'' is discussed. The term was derived from the concept of a ''soundscape''. In their words, a smellscape is the perception of an environment in terms of scent originating from multiple sources (2021: 1). The quality of the so-called ''olfactory'' environment people inhabit greatly impacts their psychological and physical well-being. In the paper, Lindborg and Liew utilise smellscapes as windows to research and understand these modes of well-being. With all the senses shaping the human experience of everyday life, our memories should also be considered as multi-sensory containers of information. Scent thus plays an essential role in the subjective experience of our environment. With that in mind, Lindborg and Liew state that when confronted with either audio or visual information, a sense of smell can be imagined to accompany these modes. In their paper, they perform a smellscape investigation using data from two different test groups. The first group (N=15) was made to complete a sensory walk through locations in an open-air market. The second group (N=53) engaged in a virtual counterpart mimicking the sensory walk with audio-visual materials. Results were produced in the form of a ''smell wheel'', ratings along a semantic scale, and verbal annotations. A canonical correlation analysis captured the degree of association between the real and imagined smellscapes of the two groups.

Findings

The characteristics of a scent are generally categorised through semantic terminology, examples of which are ''floral'' or ''earthy''. Additionally, smells are often described based on their effect, such as ''nauseating'' or ''pleasant''. The perceptual ''acceptability'', in other words, whether a smell is perceived as pleasant or unpleasant, is referred to as the hedonic tone. The findings of the paper show that there is a statistically significant relation present between the hedonic tone of the onsite and online groups of participants. This suggests that the online group could successfully translate scent perceptions based on audio-visual information into imagined experiences.

Creative output

Coming back to our creative output, we aimed to go beyond the sensory limitations of an academic paper. We explored options for expressing the papers' output not in terms of text, graphs, or images, but in terms of smell. The paper includes various visual elements, among which is a map of the Bahru Market sketching out the seven locations of the sensory walk (figure 1). Using the smell wheel (figure 2), the participants were handed the vocabulary to talk and describe various smells. Figure 3 visually represents how the different groups named and categorised the olfactory sensations experienced during the physical or online tours. With our project, we attempted to ingest a supplemental layer of information, that being real-life smell samples. Briefly, we recreated one of the visual outputs, namely the map (figure 1), and produced smell samples that could be placed on the map to connect geographical locations with certain scents (figure 4). The map has a modular quality that allows it to be reused. The outcomes presented in Figure 3 could be roughly recreated using the map.

Sections

The map is designed so that the on-site picture of the space is shown alongside the names of the locations. The real-life smell samples consist of eight different containers. These containers were based on the smell sources provided in the smell wheel (figure 2). With the map, it is possible to translate the imagined smellscapes of the participants into a real-life olfactory experience. Starting with the car park, the participants described it as smelling like oil, fryer exhaust, and deep-fried fish cakes. Here, an offensive and chemical sample can be ingested into the map to recreate the smell sensation. At the ''Flowers and Meat'' section of the market, participants described a prevailing smell of flowers and fruit, while others considered the meat smells as more dominant. Based on these two different perceptions, the smellscape can be adjusted to each experience. Floral, fruity, and offensive samples can be combined to recreate similar experiences. The Food Court naturally housed food-like smells, which can be enacted by implementing vegetable, earthy, and fishy samples. The hedonic tone used to describe the garbage area was negative. The area was described as ''unpleasant'' smelling, referring to the sour smells, rubbish, and rotten food. Offensive and fish samples could be implemented here. The park ''The Green Core'' was defined based on what it lacked in smell. The expected ''freshness'' and smell of grass were absent. This was mainly part due to the park being located next to the food court. With smells of food, fried oil, and meat, the fish, chemical, and vegetable samples should produce the best representation. The ''Stores'' section on the map refers to a street with smaller shops. The participants described the pleasant flowery and medical sensation originating from the incense shop located in the street. Naturally, the floral and medical samples would be fitting. Lastly, the ''Wet Market'' -the location where fish and seafood are prepared- is considered ''unpleasant'' smelling. Offensive and fishy samples, specifically those of dead fish, would provide a fitting representation.

Interaction

Ironically, with this paper, we are subverting our argument for the use of other sensory modes besides the visual to creatively convey academic output. It is therefore that we believe our project really lives up to its potential when interacted with in person. Only then, it is possible to experience the research output of Lindborg and Liew in terms of smell.

Appendix

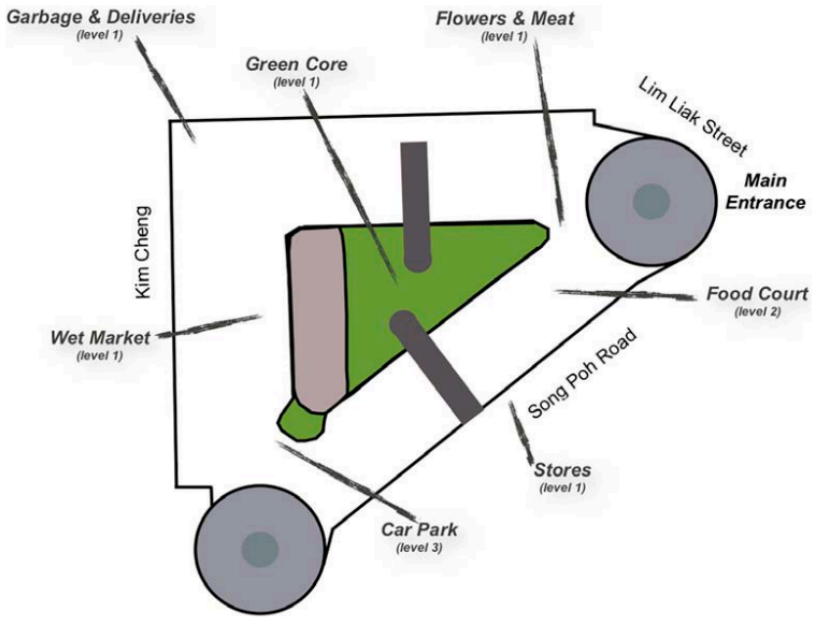

Figure 1

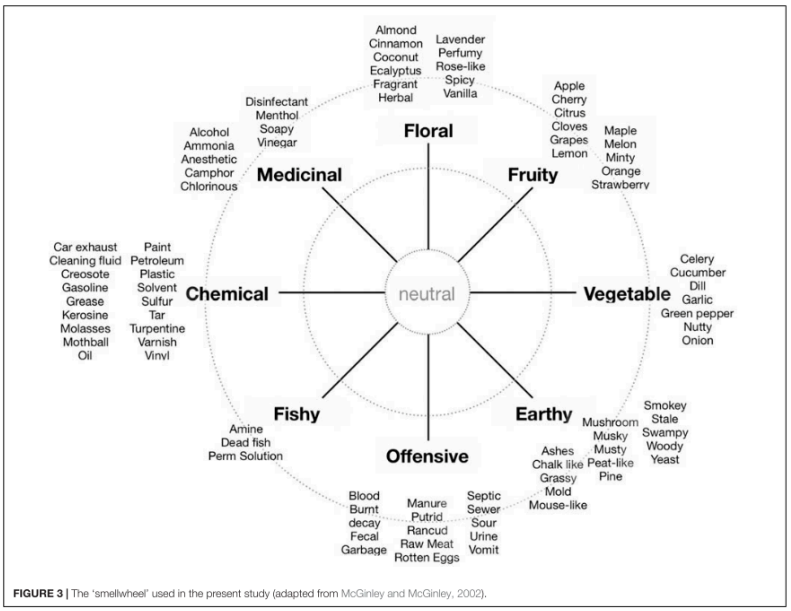

FIGURE 3 | The 'smellwheel' used in the present study (adapted from McGinley and McGinley, 2002).

Figure 2

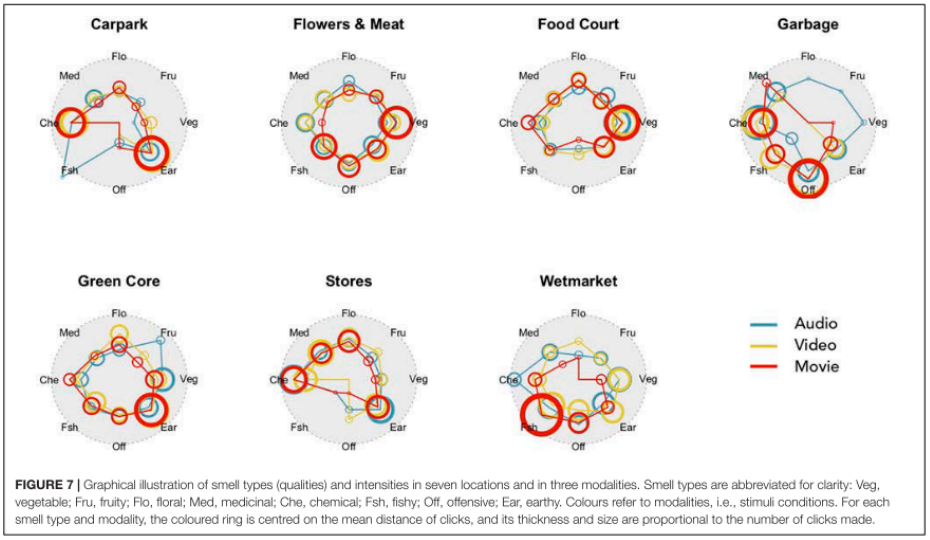

FIGURE 7 | Graphical illustration of smell types (qualities) and intensities in seven locations and in three modalities. Smell types are abbreviated for clarity: Veg, vegetable; Fru, fruity; Flo, floral; Med, medicinal; Che, chemical; Fsh, fishy; Off, offensive; Ear, earthy. Colours refer to modalities, i.e., stimuli conditions. For each smell type and modality, the coloured ring is centred on the mean distance of clicks, and its thickness and size are proportional to the number of clicks made.

Figure 3

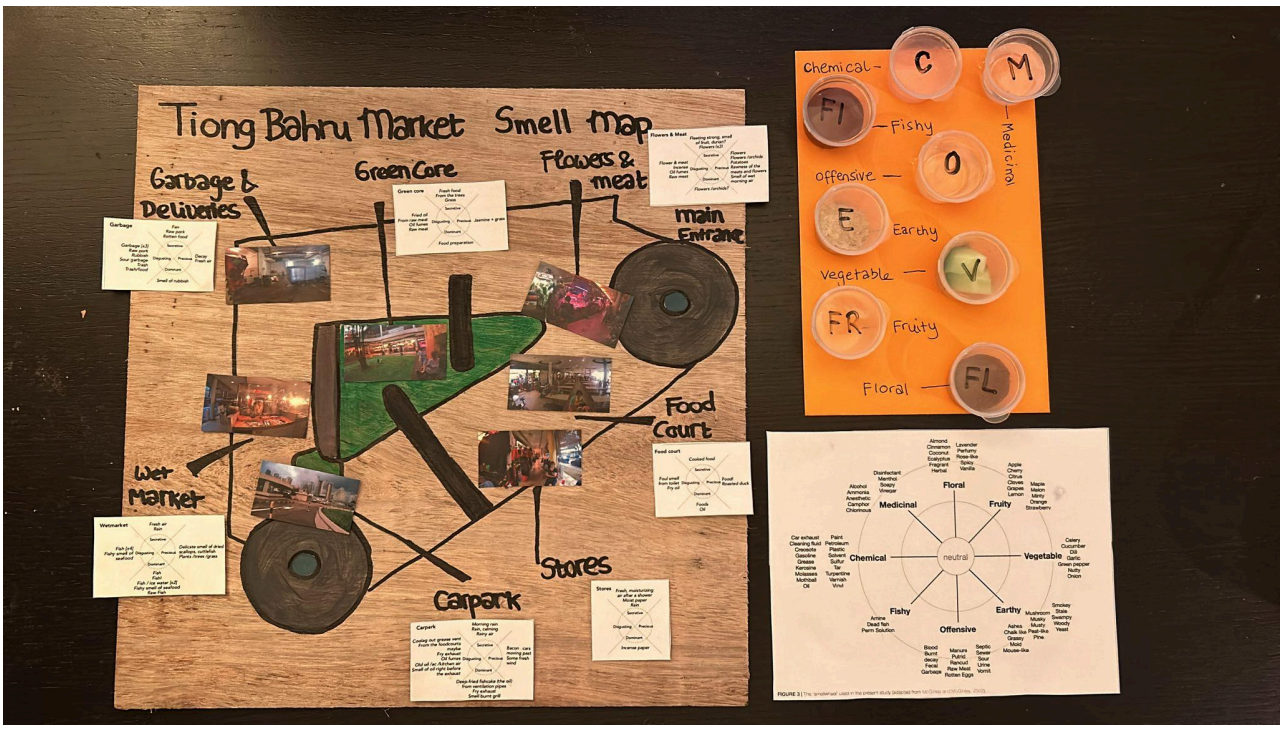

Figure 4

Literature

Lindborg, PerMagnus and Kongmeng Liew. ns. Real and Imagined Smellscapes. 2021. Front Psychol. Dec 24 (12): 1-19.