Location-based Visualization of Urban Scenarios and Information

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ABSTRACT

Visualizing data regarding space and time is always a challenging task. Yet, what really brings out this challenging aspect of design is trying to successfully visualize an abstract concept—and creating an urban olfactory map, for example. In our day, maps have moved beyond conveying solely geographical information, into providing humankind with knowledge regarding very niche fields of interest. Maps now supply users with spatial and temporal information concerning past, present (and even future) experiences. There has emerged a new field of cartography, experience mapping, which relates to this research's visualization trials of urban experience. Here in this study, I focus on a case study regarding an urban smellscape, as well as coming up with visualization solutions for the representation of olfactory data. I have briefly studied the various aspects of odor measurement (such as intensity, and hedonic tone assessment) and decided to concentrate on the pleasantness level of a smell in my designs. This study aims not only at contributing to the field of olfactory map visualization, but also at providing information for the scent archives of the city of İstanbul.

Keywords: olfactory map, smellscape, visualization, urban data, user-experience

INTRODUCTION

The project of creating an urban smellscape came in from the Department of Archeology and History of Art at Koç University; the purpose of the study was to expand the archive of İstanbul's intangible cultural heritage regarding urban scents. The department had obtained olfactory data from the Eminönü district of the city, which is known for hosting the famous Spice Bazaar—a place with an abundance of smells. With so much information gathered from this particular location, their study required an effective method of visualizing all sorts of scents that radiated from a

variety of shops and streets. Portraying a region's olfactory characteristics require heavy brainstorming in terms of what aspect of odor to portray, how to portray it and how easy it is to read this scent map. With the emergence and popularization of urban experience mapping, designers started asking themselves these questions alternately while shaping their sensory and olfactory maps. The Re_Search Lab, situated in Berlin, conducted a research (in the not too distant past) on the notion of smelling and transforming scents into a language. The study was fueled by the archive of over 6000 scents currently preserved in the lab. [1] Another recent contributor to this field is Kate McLean, a designer who creates sensory maps of different cities. She speaks of setting human subjectivity as her basis in cartographic practices. She suggests that, "using humans as sensors is a method of affective cartography that aggregates personal insight leading to interpretation of place thereby making the map affective". [2] Unless one works with a trained nose to successfully interpret and categorize all sorts of smells, our designs are prone to becoming subjective. As I came up with solutions on how to illustrate several aspects of smells, I embraced the fact that my categorizations and visualizations of scents were (and still are) based on my personal experiences and preferences.

LITERATURE REVIEW

Urban experience mapping, and focus on intangible culture heritage expanded greatly in the recent decades. Steering away from standardized visuals and information, people started taking interest in their own experiences, alternative routes or journeys. This need of accessing or mapping out niche branches of knowledge inevitably increased and motivated citizen participation in urban life. One of the sub-categories of urban experience maps the sensory map—the type of cartographic study this research covers. A prominent contributor to sensory mapping, which has spread over the years, is Kate McLean—and one of her most celebrated works is the Amsterdam smellscape she produced. (Figure 1)

Figure 1. The smell legend and a preview of the Amsterdam smell map created by Kate McLean.

It can be deduced from the chart above that McLean managed to successfully visualize the aromas all around the city, as well as handling numerous categories of scents and mapping them out in a legible way. My preliminary research before starting to sketch an olfactory map led to my encounter with sensory maps and McLean's works. Going through these projects, I realized I needed a functional information system for my own smellscape, and began looking into the categorization of smells. According to Vincenzo Belgiorno et al., Hedonic tone assessment deals with several levels of pleasantness in odors, varying from extremely unpleasant via neutral up to extremely pleasant. [3] The Odour Impact Assessment Handbook also offers several labels for odor quality or character, such as: fruity, floral, offensive, earthy, medicinal etc. [4]

My purpose in this study is to produce an urban olfactory map with clear and minimal layers of information, as I study methods of visualizing location-based data. From the knowledge I collected by the guidance of the odor handbook, I derived three major categories for a trial map, and a smellscape prototype was produced according to pleasant, neutral and unpleasant odors.
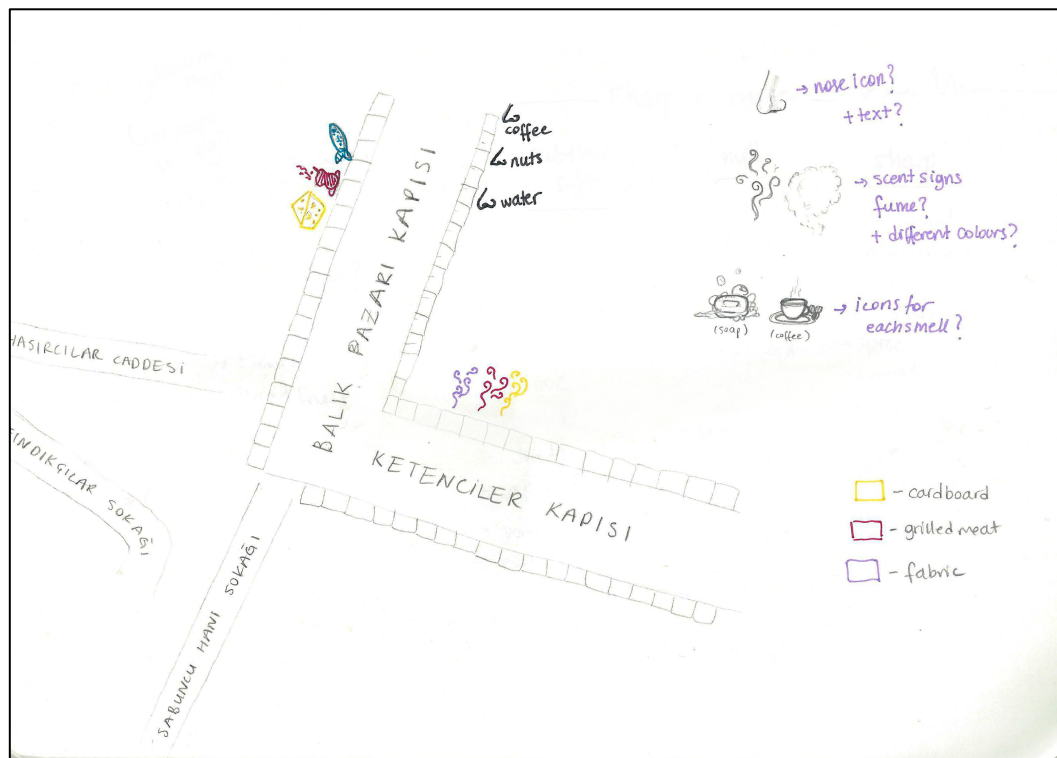
METHODS

The motivation behind the explorations on visualizing a smellscape map, comes from a related study on collecting olfactory data from the city in order to expand the archive of İstanbul's intangible cultural heritage regarding urban scents. The Department of Archeology and History of Art (ARHA) at Koç University; has been running workshops for obtaining olfactory data from the Eminönü district of the city, which is known for hosting the famous Spice Bazaar—a place with an abundance of smells. Eminönü has ever been a center for trade and a variety of goods throughout its history. This district is quite populated and touristic, with a wide range of shops. The repertoire extends from coffee shops, and spice stands to textile markets. With so much information gathered from this particular location, their study required an effective method of visualizing all sorts of scents that radiated from a variety of shops and streets.

My initial efforts of generating design solutions for an olfactory map consisted of carefully inspecting the data and visuals that were gathered and produced by the Department of Archeology and History of Art. There was a map, which color-coded every different scent that oozed out of the shops in Eminönü. There would be too many categories if our olfactory map color-coded the list of scents in original the data set— there were more than 25 of them. I studied the methods of visualizing an abstract concept like scents and gave a gander at sensory maps produced by various designers to draw influence, while I researched for odor assessment and attempted to reduce the large number of smell codes to no more than 3 categories. Using the category labels Hedonic Tone Assessment offers for the pleasantness degrees of a smell, I derived three levels of data to portray in my urban smellscape trials: pleasant-coded purple, neutral- coded blue and unpleasant- coded green. I firstly studied the visualization of the pleasantness levels of smells, during which I took a smellwalk around my neighborhood. This small tour helped me comprehend the times we realize we are keenly smelling something in the air, what kinds of smell we are quick to sense and how they spread. I used my experience to produce a prototype and later moved onto integrating the types of essences into my olfactory map.

THE DESIGN PROCESS

The most important problem regarding a smellscape design is that, it is not possible to create an objective urban olfactory map if one is not an expert of odor assessment. A designer's creations will yield, no matter how much one focuses on user-experience research, quite personal approaches when it all comes down to visualizing the pleasantness or unpleasantness levels of a smell. Making a distinction between smells is therefore a subjective action. The designer aims to create a universal language as she maps out information for any types of users to benefit from, but as urban planner Victoria Henshaw mentions in her book, "it is unlikely that the resulting smellscape will be liked by everyone". She also adds, that "the design of urban smellscapes must therefore acknowledge and allow for difference, both in recognizing that odours will be perceived differently by different people, and in thinking about the variety of odours that may be detected in a city or neighbourhood." [5] It is important to keep Henshaw's statement in mind, but in designing a data visual, taking user-experience into consideration is also very informative. This way, one can build on subjective knowledge and create a more satisfactory and representative visual for the users. Therefore, I consulted Dr. Asım Evren Yantaç and the Design Lab team during each phase of my design process in order to come up with an effective urban olfactory map.

Figure 2. The initial sketches of the smells spreading from Eminönü's shops. At first, I was studying the methods of visualizing all of the smell codes.
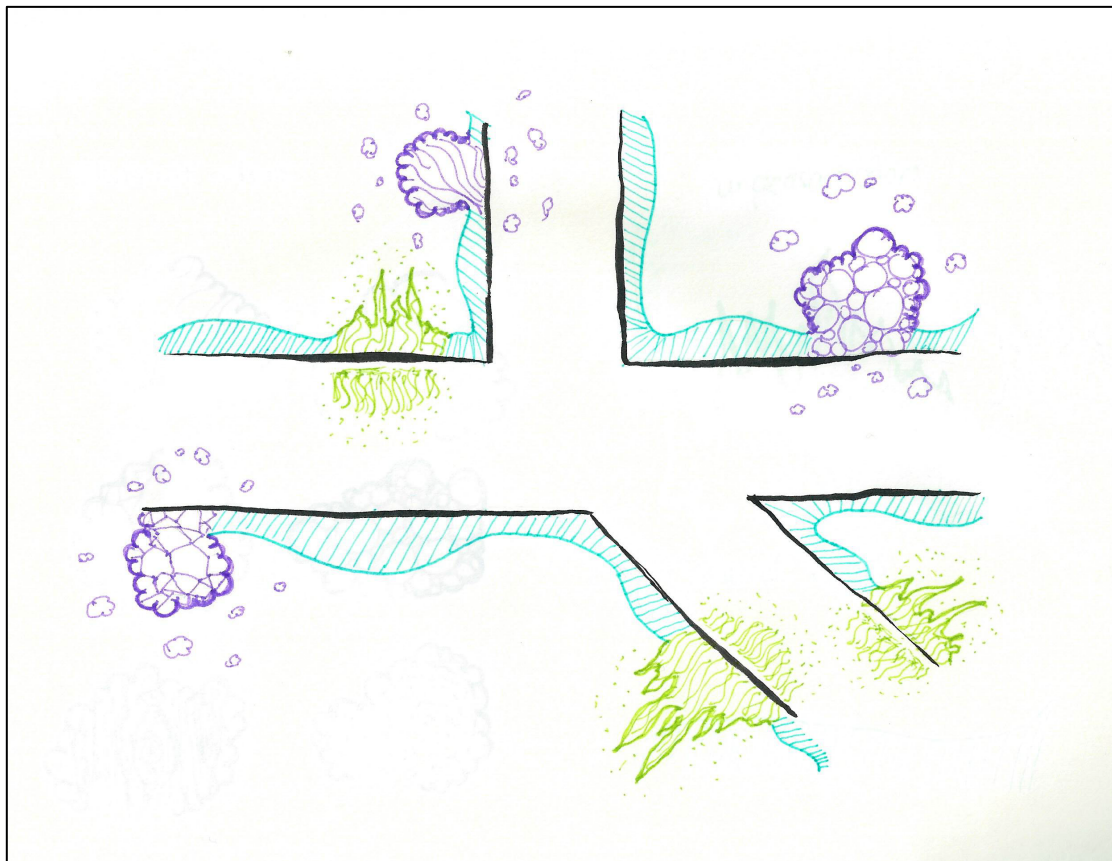
Figure 3. The final version of the urban smellscape, with the integration of textures to enhance the consistency of my design. The three levels of pleasantness are visualized above: purple clouds for pleasant, blue arcs for neutral and green waves for unpleasant.
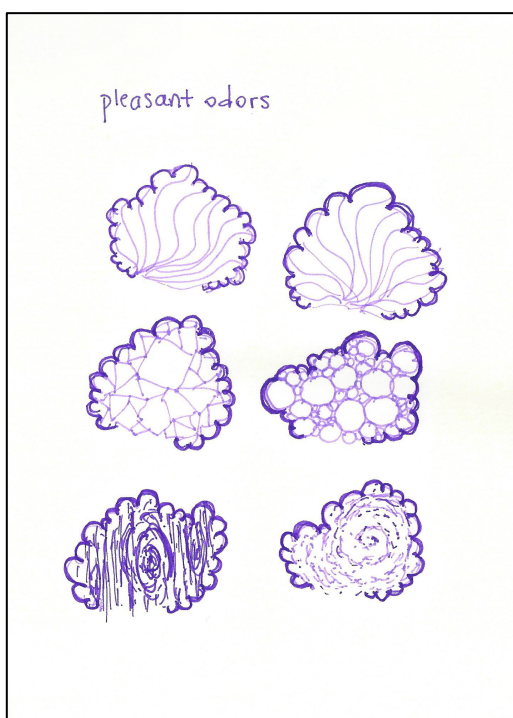
Figure 4. My studies of patterns and textures regarding the visualization of pleasant smells and indicating their characteristics.

DISCUSSION

The visualization of an Istanbul smellscape is only the initiative step of a greater project. I currently focus on the methods of how to illustrate the scents that surround us in urban life, and which design approach works best in terms of mapping out the layers of information regarding olfactory sensation. This case study will serve as the base of future studies, which will investigate and provide design solutions for this urban smellscape's different modes of usage (interactive, print etc.) in accordance with user-response. In the more advanced stages of this research, user-experience tests will be conducted and users' feedbacks will be taken into consideration in revising the urban sensory map. These refinements will be crucial in our contribution to Istanbul's smell-based intangible cultural heritage archive, and in our studies in the field of olfactory map visualization.

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