



# ANFA 2014 CONFERENCE

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ACADEMY OF NEUROSCIENCE FOR ARCHITECTURE

# Visualizing the Invisible: Spatial Manipulations of the Olfactory Sense

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## 1. ABSTRACT

Over the past three decades, architecture has become a product of advertising. Instead of stimulating through spatial experience, buildings have been reduced to a stream of visual images flattened by the speed of modern technology. As a result, the profession has become marginalized as nothing more than art, suited purely for the pleasure of the eyes.

This research aims to challenge this obsession with the eye by refocusing on the nose. As an Architect and Cognitive Scientist, we seek to explore collaboratively the relationship between our "hidden" sense of smell and the spaces we inhabit.

The olfactory sense is oftentimes mysterious due to its intangible properties and a lack of proper and descriptive vocabulary. However, it is also the sense that is tied most strongly to memories and emotions due to the direct connection between the primary olfactory cortex, where olfactory information is first processed, and the limbic system of the brain, where memories are formed and emotions processed. Thus, odorant stimuli are better able to conjure up an array of memories and emotions, compared to visual or auditory stimuli.

This unique, close association between olfaction and emotion provides a possible, promising method to improve or even manipulate people's emotional and cognitive states using their sense of smell. As scent is ever-present when we navigate spaces, we aim to examine the association between olfaction and the perception of space. Architects are often concerned with choreographing a spatial experience that is memorable and desirable. In doing so, they pay particular attention to light, color, and sounds present in a space, overlooking our most emotionally connected sense. In this research, we study the neurological effects of a series of scents along with investigating methods of containing and dispersing these aromas in relation to building form, in order to spatially manipulate our sense of smell and compose a desired cognitive experience.

## 2. AUTHOR BIOS

**Avideh Haghighi.** Avideh is an architectural designer interested in the intersection of science and architecture. She seeks to explore the overlapping relationship between human factors, sustainability and building science in architecture. As a student at Woodbury University School of Architecture, she was often intrigued by the concepts of perception of space and the neuroscience associated with it. Her research on this topic began as a part of her undergraduate thesis and since then has developed into a more focused exploration of sensory spatial experiences. Currently working on educational and civic projects at PJHM architects, Avideh hopes to develop a career equally rooted in practice and multi-disciplinary research.

**Anousheh Haghighi.** Anousheh is currently a junior researcher at the UCI Computation of Language Laboratory, where she studies linguistic cues to authorship and the relationship between language acquisition and neuroscience. In the past, she has worked with the team at the UCSD Research on Autism and Development Laboratory, where she has conducted EEG experiments and various cognitive tests on children with ASD (Autism Spectrum Disorder). She is interested in researching the effects of different sensory stimuli on our emotional and physical health. Her study is focused on the cognitive science of perception and sensation, especially as it relates to the neuroplasticity of behavior and cognition and the ways in which it can help people with particular cognitive disorders, such as Autism Spectrum Disorders. This research has enabled her to study the specific neuroscience of olfaction and the effects of different olfactory stimuli on mood and emotions.

