



ANFA 2014 CONFERENCE

PRESENTER ABSTRACTS
ACADEMY OF NEUROSCIENCE FOR ARCHITECTURE

Blue Sounds, Black Smells

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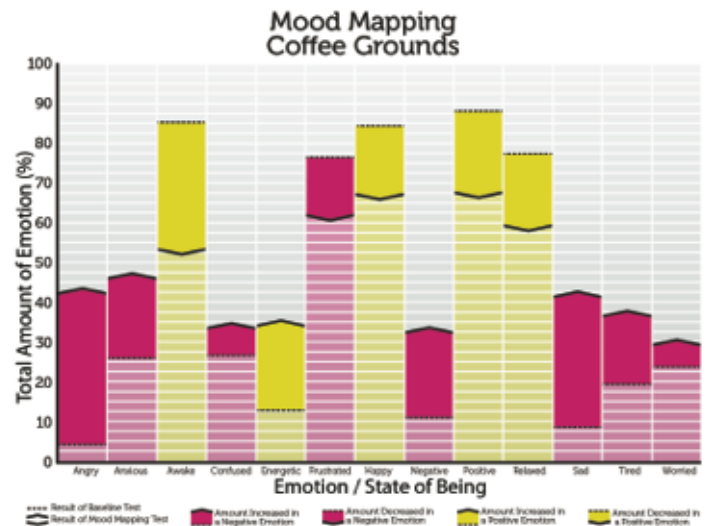
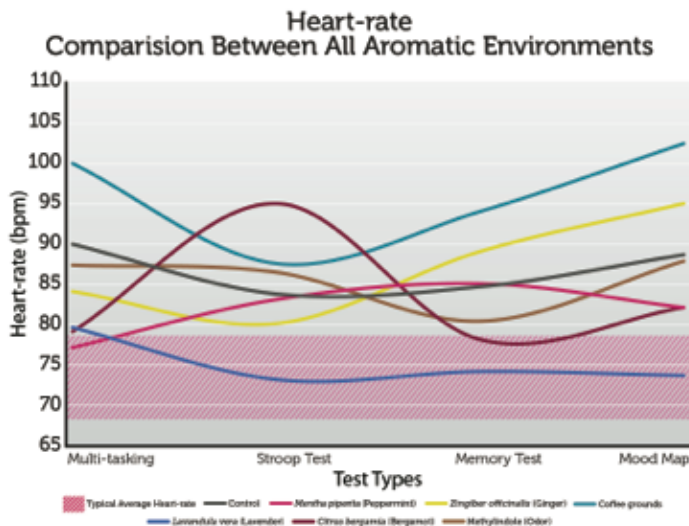






















Sensory design has been an under-utilized element to architectural design. Traditionally the approach to senses has been static, passive, treating each sense modality as independent, and treating auditory, tactile, haptic, gustatory and olfactory senses as secondary to the visual. In this presentation we will compare the traditional approach of "sensory orders" (supported by anthropology) to the more current notion of neural "plasticity"- a constant dialogue between the senses, that craft our perceptions and shapes our experiences. We will, in this first presentation, focus on the sense of smell and how it blends with the other senses.

1. ABSTRACT

Architecture is fundamentally about crafting the human experience- and the human experience is not just visual- it is multi-sensory. Traditionally the approach to senses has been static, passive, treating each sense modality as independent, and treating auditory, tactile, haptic, gustatory and olfactory senses as secondary to the visual. In this presentation we will compare the traditional approach of "sensory orders" (supported by anthropology) to the more current notion of neural "plasticity"- a constant dialogue between the senses that craft our perceptions and shape our experiences. We will start with a single sense- Smell, and share a case study in a simulated Emergency Department where caregivers (nine total; seven RNs, one technician, one physician) were exposed to different senses, and their physiological feedback (heart rate and bio-feedback) were used to measure the physical stress response, while mood mapping indicated the individual's emotional state of being at the start and end of each aromatic environment. These tests demonstrated that some aromas were indeed more "therapeutic" than others, while others may cause more harm than good. We will then discuss where smell falls in the sensory order- including the differentiation between the "human" and the "animal" senses by Aristotle, Hayek's theory of sensory linkages, and culturally defined sensory orders. Findings from a pilot study (17 responses) that investigated the sensory orders of common architectural spaces will be shared.

Finally, we will discuss the relevance of synesthesia, a neurological condition where stimulation in one sense triggers a perceptual experience in another. We will discuss the neurological basis, and the theoretical significance to architecture. Findings from a case study asking people to link smells and sounds to colors will be shared. The presentation will conclude on how under-utilized senses, sensory orders, and sensory "cross-connections" can affect how we design. Hypothesis for neuro-architecture will be shared with the audience- calling out the need for synesthetic approaches to research that bring together designers, neuroscientists, and philosophers/theorists.



Music Concert <i>(w=0.87)</i> 	Bakery <i>(w=0.85)</i> 	Painting Gallery <i>(w=0.8)</i> 
 SOUND  SIGHT  TOUCH  SMELL  TASTE	 SMELL  TASTE  SIGHT  TOUCH  TOUCH  SOUND	 SIGHT  SOUND  TOUCH  TOUCH  SMELL  TASTE

Architecture student response to the hierarchy of senses in different places (n=17)

cross-modal approach to sensory design has been published as a book on "Sensthetics."

Ana Pinto-Alexander: Principal and Senior Vice-President and Director of Healthcare Interior Architecture with HKS, Ana Pinto-Alexander has more than 25 years of experience designing interiors for the country's most progressive health care facilities. Ana has a Bachelor of Arts degree in Interior Design from Purdue University and has been a guest lecturer there. She is a member of the International Design Association and holds a certificate from the National Council for Interior Design. In 2013 Ana was recognized as the Legends IN Design recipient with the Indiana Interior Design Coalition. Ana has spoken nationally and internationally on the importance the built environment in the healing process. The recipient of numerous awards for her interior design projects, she has also been featured in several national publications, including a cover story for Interiors and Sources and as one of the "25 Most Influential People in Healthcare Design" by Healthcare Design Magazine.

Carina Clark: Carina received her undergraduate degree at Arizona State University with a Bachelor in Interior Design as well as her graduate degree in Design in Health and Healing Environments. Her research focuses on how sensory perception affects an individual's performance, specifically within a healthcare environment. Carina's most recent research explored the potential of emergency caregivers' performance being directly linked to pleasant and unpleasant olfactory stimuli through testing physical, mental, and emotional attributes. Her expertise includes work in the healthcare interior design field at HKS, Inc. as well as contributing to research focusing on the effects of user experience based on positive influential and unconventional methods.

ACKNOWLEDGMENTS

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2. REFERENCES

- Nanda, U. (2008). *Sensthetics: A Crossmodal Approach to Sensory Design*. VDM-Verlag.
- Rosso, R. (2007). *Scents of place : defining the interior environment through our sense of smell*.

3. AUTHOR BIOS

Upali Nanda: Dr. Upali Nanda is the Director of research for HKS, responsible for designing, spearheading and implementing research projects domestically and abroad for the firm. She is also the Executive Director for the Center for Advanced Design Research and Education (CADRE), the research arm of HKS committed to original research that advances the design industry. Dr. Nanda's research focuses on the impact of the designed environment on human and organizational health, with a focus on perception. Her work has resulted in numerous publications (including architectural and medical peer-reviewed journals), presentations, invited talks, and CEUs. Her doctoral work on a