



# ANFA | Academy of Neuroscience for Architecture

## Fifth International Conference: SENSING SPACES, PERCEIVING PLACE

In honor of John Paul Eberhard, FAIA, Founding President  
September 14-25th, 2020

### WELCOME

**Fred Marks** | "Dramatic view of Salk Institute from overhead and at close range plus a conference introduction from ANFA's President"

### KEYNOTES

<b>Scott Makeig</b>   "Processing Complex, Concurrent, Multimodal, and Multi-rate Data through Mobile"	<b>Live Session:</b> Thursday, September 24, 9:00 am PDT   Moderator Eduardo Macagno
<b>Alan Penn</b>   "Architectural Space, Intelligibility, and Social Progress"	<b>Live Session:</b> Friday, September 25 8:00 am PDT   Moderator David Kirsh
<b>Isabella Bower</b>   "Architecture with Feeling: Measuring Emotional and Neurophysiological Responses to the Built Environment"	<b>Live Session:</b> Thursday, September 24, 1:00 pm PDT   Moderator Alison Whitelaw, Frederick Mark

### TALKS

#### Design Thought Process

Understanding the Effect of Spatial Ambiguity on Creative Modes of Thinking	Rebecca Milne, Bob Condia, Hanna Neyami, Katherine Glucksleig
From Sensing Places to Design Spaces: Linking Wayfinding, Memory, and Imagination	Michael A. Arbib
Phenomena Potential - Towards a Practical Neurophenomenology of Architecture and Urban Design	Itai Palti, Aishwarya Narayana, Natalia Olszewska
Space Layout Design and Sketching: A Study of Architects' Neurophysiological Activations	Sonia Vieira, John S. Gero, Jessica Delmoral, Shumin Li, Gaetano Cascini, António Fernandes

#### Health & Healthcare

Designing a Retirement Community: Minding the Hippocampus.	Eduardo Macagno, Jessica Patrick
Architectural Subliminal Therapy: The Parallel of Architecture and Traditional Forms of Therapy to Propose New Accessible Treatments for Psychological Disorders	Katarina Richter-Lunn, Dr. Nancy Etcoff
Elements of Enriched Environments that Attune Activated Optimal Health	Tye S. Farrow

#### Performance Variables: Biophilia, Color, Light

Engaging Spatial Maps with Multisensory Illusions	Debajyoti Pati, Apoorva Rane, David A. Navarrete, Bill Witherspoon
Strategies for Measuring Attention, Saliency & Luminance in Cities	Biayna Bogosian, Kristine Mun, Ying Wu, Sydney Kessler, Weichen Liu, Chi-Yuan Chang
Personalized Lighting for the Non-visual Age and Beyond	Carolyn Swope, Regina Valcekonyte, Shengliang (Daniel) Rong
On Vision: The Science and Cultural History of Spatial Perception and Imagination	Zixuan (Sharon) Deng

#### Occupant Behavior in Buildings & Beyond

Cognitive Performance in Immersive Virtual Environments: Initial Assessment on Behavioral and Physiological Outcomes	Jesus G. Cruz-Garza, James D. Rounds, Saleh Kalantari
Experiments in Architectural Modeling with Visual Discriminative Neural Patterns	Pierre Cutellic
New Pathways for Neuroscience in Space Habitat Design and the New Field of Space Architecture	Melodie Yashar
Designing for an Aging Society: Neuro-generative Environments that Foster Creativity, Promote Positivity and Reduce Stress	Upali Nanda, Itai Palti, Aishwarya Narayana, Natalia Olszewska

#### Spatial Interactions & Navigation

Maps, Frames of Reference, and Spatial Cognition	Kathryn Rhett Nichols, Roberto Casati
Subiculum Neurons Fire to Multiple Orientations to Encode Environmental Path Structure	Ryan Place, Douglas Nitz
Brain Meets Building when Behavior Meets Space	Upali Nanda, Sally Augustin, Babak Soleimani
Architectural Affordances: Alpha Suppression of Proprioceptive Prediction-Errors	Zakaria Djebbara, Lars Brorson Fich, Laura Petrini, Klaus Gramann

#### Sensory Experience

Mind and Machine: Interaction, Performance and Mental Expression through Robotics and Computation	Katarina N. Richter-Lunn
Inner Geographies for Psycho-Spatial Wellbeing: Converging Situatedness and Mindfulness in an Ecologically-Valid Approach	Dr. Mizan Rambhoros, Dr. Matthew Pelowski
Sensory Hierarchies: An Investigation of Olfactory Architecture	Jenna Ritz
Towards A Neuroarchitectural Interpretation System and the Sensory Experience	Luis Othon Villegas Solis

#### Catalysts to Learning

The Measurable and Immeasurable: How Scientists and Architects Work Together	Dr. Colin Ellard, Bob Condia
Placing "Process" in the Spotlight: Architectural Education as a Testing Ground for Cognitive Science-Design Translation	Andrea Jelić, Zakaria Djebbara, Lars Brorson Fich, Tenna Doktor Olsen Tvedebrink
Common Sense: Investigating the Behavioral and Cognitive Impact of Architectural Qualities in Educational Environments	Klaudio Muca, Carsten Primdahl,
Embodied Design Cognition: Effects of Information Granularity and Task on Gestures while Interpreting Architectural Plans	Yesol Park, Martin Brösamle, Christoph Hölscher, John Gero

#### Measurement Tools: Hardware & Software

Comparative Studies of the Experience of Architectural Space through Reality Capturing and Virtual Reality	Kai Reaver
TRACER, a Neuroscientifically Enhanced AI for Analyzing and Certifying Culturally Encoded Emotions of Architectural Drafts	Rainer Gabriel, Heiner Mühlmann, Nico Pezer, Thomas Grunwald, Frank Medefindt
Architects and Citizens: Do They See Urban Environment Differently?	Irina A. Shmeleva, Veronika Yamilova
Aesthetic Judgments and Emotional Responses to Architectural Boundaries in Virtual Reality Environments	Tuğçe Elver Boza, Halime Demirkana, Burcu A. Ürgenb,

### POSTERS

#### Design Thought Process

Using a Detailed 'Lens of Care' to Re-evaluate and Learn from Specialized Architectural Practice	Anthony Clarke
The Architect's Brain Revisited: How Neuroscience Can Inform Architectural Education	Athena Moustaka
Strategies for Architectural Creativity using Artificial Intelligence: Understanding Our Cognitive Processes through Statistical Learning	Emmanouil Vermissos
Modalities in Motivation: Implementing Reversal Theory in a High Tech Work Environment	Haley Wilson
From Sense to Perception: Expectation	Kevser Yildiz
Corporeal Architecture: Integrating Neuroscience and Performance Art to Design for Experience	Maria da Piedade Ferreira
The Neuroaesthetics of Artificial Intelligence	Matias del Campo
Appraising the Role of Architectural Proportion from a Psychological Perspective	Tiziana Piroietti, Sergei Gepshtein
Movement of Professionals for Studies on Neuroscience for Architecture	Suzana Fetter Fagundes, Isabela Franco Schreiber, Sandra Marlise Cescon, Priscilla Bencke
Engineering Affect in Virtual Interior Space and Assessment in 360 VR	Ms. Judy Theodorson, Dr. Vahid Vahdat

The Manifesto for Quantum Architecture: Regaining Memory of a Neuroscience-inspired Model to Precipitate an Architectural Paradigm Shift	Tom Haynes
A Computational Approach to Space identification of the Architectural Plan	Chae-Shin Yoon
<b>Health &amp; Healthcare</b>	
An Anthropological Approach to Health Clinic Design in Rwanda	Hannah Thayer, Judy Theodorson
Integrating Auditory Neuroscience into Architectural Acoustics Consulting Practice	Ben Davenney, Ioana Pieleanu
Interior Design Attributes to Stimulate Cognition and Assist people with Alzheimer's.	Jay Gangwani
Nexus between Sustainable Buildings and Human Health	Madlen Simon, Edward Bernat, Ming Hu
Impact of Project Strategies on the Wellness in a Corporate Building: Well Certification and "Neuroarchitecture"	Mariana Hommerding
Can Residential Architecture Constitute a Part of Human EE and Contribute to Recovery, Prevention, and Stress Reduction?	Hanna Morichetto
Reinventing Culture Through the Use of Space: Longitudinal Survey Presenting Four Case Studies in Workplace and Healthcare Facilities	Pamela J Cole
Backyard Motosensory Path - Pilot Study	Patrycja Haupt
Enriching Spatial Memory in Individuals with Mild Cognitive Impairment through Enriching their Living Environment	Raha M. Rastegar
Revisiting Kirkbride: The Dark Side of Attunement and Designing for Respite	Reneé Desneige Christensen
If These Walls--and Inhabitants--Could Talk: How Ethnographic Methods Give Voices to Those Most Impacted by Carceral Design	Stephen A. Carter
Fractal Aesthetics: Designing for Stress Reduction with Fractal Geometries and Soft Fascination	Maria Decker
Post-Occupancy Evaluation of a Hospital Intensive Care Unit: Users' Perception of the Built Environment Quality	Eleonora C. Zioni
<b>Performance Variables: Biophilia, Color, Light</b>	
Temporal Impact of Spatial Features	Basma Altaf
Depression and Environmental Potential Therapy: Experience the Immediate and Periodical Impact of an Urban Landscape Components that can Reduce the Symptoms of Women's Depression	Elnaz Abbasian
Retrofit and Sustainable Strategies Improve Quality in the Workplace and Promote User Satisfaction	Isabela Franco Schreiber, Suzana Fetter Fagundes
Light Hygiene in the Built Environment	Marilyne Andersen, Victoria E. Soto Magán, Forrest Webler, Clotilde Pierson
Biophilic Design into Neuroarchitecture: Influence of Vegetation within Indoor Spaces on Restorativeness	Rhee Heon Rhee, Brian Schermer
The Impact of Biophilic Design on Employee Satisfaction and Well-being	Dr. Mascatelli, Ms. Bochart, and Mr. Piacentini,
Do Aesthetic Attributes of Architectural Design Promote Mental Health and Well-being?	Sarah Williams Goldhagen, Jennifer Jane Roe, Hana Kassem, Collin Ellard
The Experience of Immersion in Colored Light: Subjective Impression and Preference	Judy Theodorson
<b>Occupant Behavior in Buildings &amp; Beyond</b>	
Quality of Life, Perceived Stress and Work Environment: A Pilot Study among Prison Officers	Pier Marconi
Developing an Emotionally Intelligent Architectural Language: Raising EQ in Prison Architecture	Jessica Patrick
Space Matters: Designing for Resident and Staff Outcomes in a Confined Civil Commitment Facility	Jeri Brittin, Jason Beshore, Antia Schlank
How Does Expert Opinion Affect Personal Liking in Different Temperatures?	Arzu Shain
Perceiving the Past: Experiences of Architecture and Authenticity in Barcelona	AnnaMarie Bliss
Effect of Orphanage Interior Design on the Sense of Place Attachment and Changes of Brain Funtional Connectivity	Farzaneh Behzadi
Impact of Scale and Crowding on People's Movement, Perception and Phenomenological Experience of Architectural Space	Lara Gregorians
Aesthetic Jdgments and Emotional Responses to Architectural Boundaries in Virtual Reality Environments	Tuğçe Elver Boza, Halime Demirkana, Burcu A. Ürgen
A Private Residential Complex Designed to Enhance User's Brain Activity Using Interactional Design Parameters (QEEG-VR)	Mahmoud Turk
<b>Spatial Interactions &amp; Navigation</b>	
An Approach to Categorization of Effects of Architecture on the Brain Based on Time of Exposure to Stimuli	Andrea de Paiva
Space and Place as Architectural Concepts: Confronting a False Dichotomy	Mark Alan Hewitt
Spatial Ability and Human Perception of Spatial Depth and Complexity	Joori Suh , Ji Young Cho
Room for Being Apart Together: How Spatial Organization Affords Social Interactions across Different Contexts	Ann Heylighen
Mapping Urban Moods: A Study on Comparing Human Response Between Walking and Cycling Along Streets	Ercument Gorgu,Chaoran Chen
Implementation of Eye-tracking in the Process of Design for Wayfinding	Jain Kwon
Representations of Spatial Analogy Found in Rat Subiculum Neurons	Alexander Johnson, Douglas Nitz
Inner Geographies for Psycho-Spatial Wellbeing: Converging Situatedness and Mindfulness in an Ecologically-valid Approach	Dr. Mizan Rambhoros, Dr. Matthew Pelowski
Structuring Senses - Efficient Walking Spaces	Sagar Jhanglani
Role of Intuitive Geometric-constructs in Human Wayfinding Behaviours	Sudhir Kumar Pasala,Mehdi Khamassi
Socio-cultural and Individual Differences in Neural Underpinnings of Perceiving Exterior and Interior Elements of Environment: A Cross-cultural Functional MRI Study	Yang Chen Lin, Chih Mao Huang
<b>Sensory Experience</b>	
Distributed Wellness: Leveraging Activity-Based Working Methodolofies for Cognitive Diversity	Melissa Marsh
The Relationship Between Childhood Spaces and Memory – Daniel Liebeskind	Ana Mirea
Neuroarchitecture Approaching Einföhlung's Theory and an Essay of Constructive Lines	Lori Crizel
Residential Interior Form Analyses and Its Impact on Emotion	Maryam Banaei
Graffiti, Green Areas and Blank Facades: An Eye-tracker Urban Application	Andrea Ribeiro Gomes
Measuring Street Enclosure and Its Influence to Human Physiology	Ercument Gorgu
How Three-Dimensional Perception is Facilitated in an Object- Centered Coordinate Frame of Reference	John Shoaff
Architecture as a Buliding Block of our Memory	Ana M Korošec
Architecture of Memory or Memory of Architecture	Maria Aslam
Investigating Positive and Threat-based Awe in Natural and Built Environments	Hanna Negami,Colin Ellard
The Relationship between Architecture and Body Expression: A Pilot Behavioral Study in Virtual Reality	Paolo Presti, Davide Ruzzon, Stefano Lenzi, Fausto Caruana, Giacomo Rizzolatti, Pietro Avanzini, Giovanni Vecchiato
Connections Between Creativity, Brain Fog and the Intelligence of the Built Environment; "SPACE WE-Q"	Anat Mor-Avi
<b>Catalysts to Learning</b>	
Case Study Remodeling Building 15 to "Living 360": We Learn Best in Rich, Well-designed Environments	Mariah Klüsener Pinheiro
How Can Different Kinds of Minds Inform Campus Design? Reflections on a Field Experiment	Ann Heylighen
Can Grade 6-8 Students Demonstrate Cognitively that the Building's Design Impacts Their Academic Engagement Levels?	Lennie Scott Webber
Learning Environments for Creativity: The Impact of Learning Spaces on Student Creativity and Well-being	Mackenzie Sims
The Employment of Sensory Design within Urban Educational Environments: A Critical Analysis of the Qatar University Campus	Maryam Al-mohannadi

#### Measurement Tools: Hardware & Software

Eye-Tracking Street Users' Visual Exploration of Buildings Across the Globe	Frank Suurenbroek, Gideon Spanjar
Expert vs. GSR Assessment of Architecture Students' Design Task	Alexandra Mesias, Md. Rakibul Mowla, David Thompson, Bob Condia
Modern Architecture: A Direct Expression of TRAUMA of WWI Trench	Ann Sussman
Inceptive Perception: Stacking [Un]relat[able] Spaces in Immersive Narratives	Carla Leitao
Designing Architecture through Thinking: Decoding and Designing from Humans' Sub-vocalisations in EEG Signals using Artificial Neural Networks	Duong Nguyen
Visual Perception of Architecture in Two-Dimensional Representations: Comparing Selective Attention	Jennifer Shields
PERCIBO, Experimental Emotional and Sensory Module of the Environment	María Araya León
Exploring Responses to Real and Digital Interior Space using fNIRS – A Comparative Study	Marissa Lindquist
Pilot Studies of Ecologically Valid Urban Design Experiences for Laboratory-based Mobile Brain/body Imaging	Sidney Newton
A Measuring Tool for How Buildings Teach Kindness: Three Specific Intersections of Architecture and Neuroscience	Robin R. Randall
Immersive Space: Using Adaptive Kinetic Architectural Design to Regulate Human Emotional States	Dr. Yousefi , Dr. Farzin

#### EXTRAS


##### Videos

Friday, September 25   12:00am PDT	Moderator: George Christopoulos
Friday, September 25   9:00am PDT	Moderators: Laura Wolszon, Kris Mun, Adam Brager

##### COVID-19 Live Discussions

Beyond Intuition	The story behind ANFA's start, a tribute to John Paul Eberhard
ANFA Voices	Susan Magsamen, Colin Ellard, Andrea Jelic, Nick Watson

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