



**Garage Parking**

- Visitors may park in garages at the hourly rate
- All parking garages are open 24/7 on a space-available basis for visitors and students and do not require a permit

**Garage Parking Rates\***

Duration	Rate
0 - 30 minutes	No Charge
30 minutes - 1 hour	\$ 3
1 - 2 hours	\$ 6
2 - 3 hours	\$ 9
3 - 4 hours	\$ 12
4 - 8 hours	\$ 15
8 - 24 hours	\$ 18

\* Rates and availability may vary during special events.

**Parking Meters**

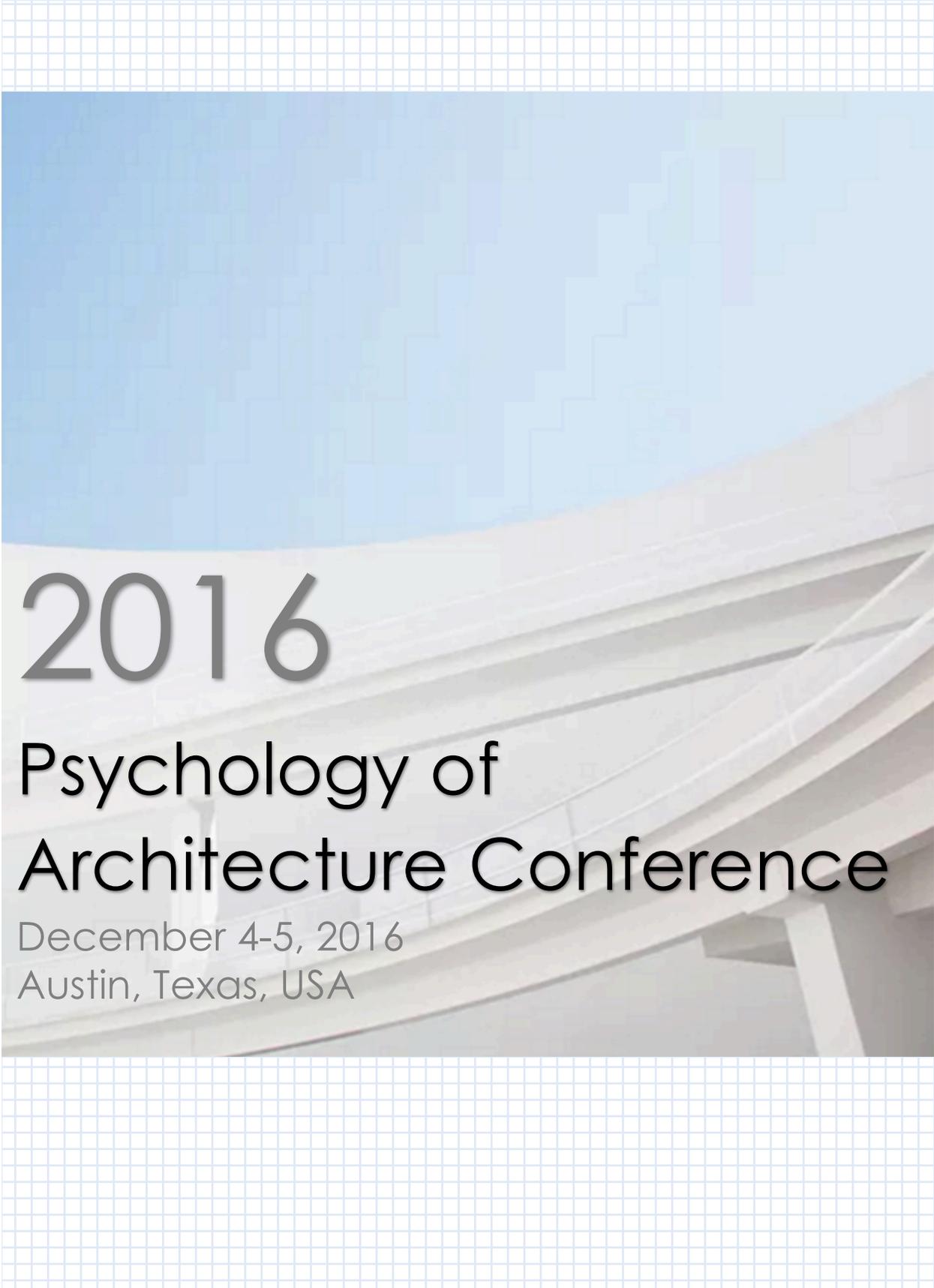
- Operational 24 hours a day, 7 days a week
- Located throughout the campus
- \$3 for 45 minutes weekdays 7:30am-5:45pm
- \$1 for 1 hour on nights and weekends
- Time limited to 45 minutes between 7:30am-5:45pm. If more time is needed during the day, please park in a garage

**Parking Restrictions**

- All spaces on campus require a valid UT Permit or the display of a paid parking receipt
- All garages provide parking for visitors 24 hours a day, 7 days a week
- There is no day/time visitor parking in surface lots except metered spaces

**Legend**

- Parking Meters
- Dining



2016

Psychology of  
Architecture Conference

December 4-5, 2016  
Austin, Texas, USA

# Table of Contents

Welcome.....	4
Sponsors.....	5
General Information.....	6
Schedule of Events.....	7
Keynote Address Abstracts and Bios.....	10
Alexi Marmot.....	12
Elizabeth Danze.....	13
David Canter.....	14
David Stea.....	15
Invited Speakers: Abstracts and Bios.....	16
Symposia Abstracts.....	24
Symposium 1: Individual Paper Session.....	26
Symposium 2: Healthcare Design.....	26
Symposium 3 (invited): Personality, Design, & the Home.....	28
Symposium 4: Workplace Impacts on Health & Well-Being.....	28
Symposium 5(invited): Architecture & Neuroaesthetics.....	31
Symposium 6: Exploring the Connections Between Emotions & Design.....	31
Symposium 7: Novel Methods.....	33
Symposium 8 (invited): Converting Knowledge Into Social Impact Panel.....	34
Symposium 9: Cognition & the Built Environment.....	27
Symposium 10: Individual Paper Session.....	29
Symposium 11: Site-Specific Studies.....	32
Poster Presentations.....	35
Notes.....	36

# Welcome to the 2016 Psychology of Architecture Conference!

## About

Every psychological process and every human interaction occurs in a physical place. The architecture and interior designs that create spaces for and guide daily human functioning are not only products of the human psyche but also act on the psyche in important ways.

The built environment may influence individuals' moods, motivations, judgments, decisions, health, behavior, and interactions with others. Preferences for certain physical environments may be neurally/hormonally underpinned, evolutionarily driven, and/or culturally modulated. Furthermore, individual differences are likely to lead to diverging experiences of the same building or room.

Scholars from an array of disciplines, ranging from psychology and neuroscience to architecture and engineering, are conducting important research that touches on these topics. The aim of the conference is to bring these researchers together to discuss what is known about psychology of architecture and the built environment more broadly.

We hope to draw attention to this understudied but crucial area of research and to inspire further cross-disciplinary research. The conference will be open to the public with the aim of disseminating empirically driven design insights to students, architects, builders, designers, and policy makers; we hope to encourage these decision makers to think about the psychological impact of the physical spaces they create and manage.

## Conference Goals:

- To feature the most current, rigorous, and innovative research on the psychology of architecture and interior spaces
- To emphasize the importance of the built environment on psychological processes
- To disseminate empirically-driven design insights to students, practitioners, and policy makers in the field
- To create a forum for interdisciplinary collaboration and discussion among individuals at a variety of career levels

## Conference organizers

Sam Gosling (samg@austin.utexas.edu) & Sanaz Talaifar (stalaifar@gmail.com)

## Venue

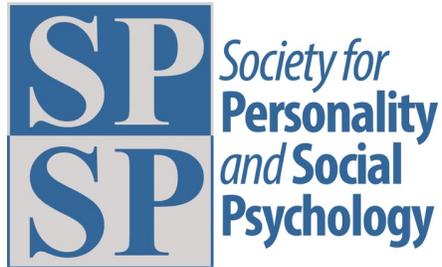
Glickman Conference Center, College of Liberal Arts (CLA 1.302)  
Avaya Auditorium, Peter O'Donnell Jr Building (POB 2.302)  
University of Texas at Austin

## Website

www.PsychologyOfArchitecture.org  
Facebook/Twitter: @PsychOfArch #Psychof

# Sponsors

This conference has been made possible by the generous support of:



## Special thanks to...

- Gina Pollard and Billie Pierce in the Psychology Department's business office
- Our volunteers: Meagan Khan, Skylar Brannon, Cliff Burke, Annie Haesung Jung, Dane Gunther, Aaron Wood, Joy Wyckoff, and Paul Lotze-Hermes

Thanks to all our speakers, many of whom traveled a long way to attend, and to all attendees.

# General Information

## Internet

Network: attwifi

Passcode: WPF3-1SSE-TV

## Location

All events will take place on the University of Texas campus, either in the Peter O'Donnell Jr Building (POB) or College of Liberal Arts (CLA) buildings. A map is included on the back of the program. The keynote addresses Sunday and Monday nights will be held in POB 2.302, the Avaya Auditorium. All other symposia will be held room B, D, and E of CLA's Glickman Conference Center. Poster presentations, breakfast, lunch, snacks, coffee/tea be located in CLA 1.302C.

## Food

Breakfast includes breakfast tacos, bagels and cream cheese, fruit, coffee, and tea. Coffee and tea will be available throughout the day.

Lunch options are as follows:

- Salads (includes freshly baked roll, fresh fruit salad, and a cookie)
  - Garden Salad with Chicken
  - Kale Pepita Salad (v)
  - Greek Salad (v)
- Sandwiches (includes fresh fruit salad, pasta salad, and a cookie)
  - Mozzarella and Tomato (v)
  - Classic Chicken Salad
  - Roast Pork Gouda
  - Turkey Havarti
  - Albacore Tuna on Honey Wheat
  - Roasted Veggie Sandwich (v)

We will provide an afternoon snack of cheese, crackers, cookies, and bars.

*Please visit our website for information about travel, accommodations, and Austin area restaurants and attractions.*

# Schedule of Events

<i>Sunday, December 4</i>	
<b>Start Time</b>	<b>Location: Peter O'Donnell Building (POB) 2.302 - Avaya Auditorium</b>
4:30 PM	Registration (name badges and programs) Presenter Set-Up
5:00 PM	Opening remarks
5:10 PM	Opening Keynote Address: Alexi Marmot "Architecture and Psychology: Lessons from the Coalface of Architectural Practice and Academia"
6:00 PM	Opening Keynote Address: Elizabeth Danze "Architecture, Psyche, and Self Reflection"
6:50 PM	Reception in Peter O'Donnell Building Lobby

Monday, December 5

Location: College of Liberal Arts (CLA) Glickman Conference Center		CLA 1.302E	CLA 1.302D	CLA 1.302C
<b>Start Time</b>	<b>Room set-up</b>	<b>Room set-up</b>	<b>Room set-up</b>	<b>Registration (name badges &amp; programs)</b>
8:00 AM	Symposium 1 set-up	Symposium 2 set-up	Symposium 9 set-up	Breakfast
8:30 AM	SYMPOSIUM 1: individual paper session	SYMPOSIUM 2: thematic paper session "Healthcare Design"	SYMPOSIUM 9: thematic paper session "Cognition & the Built Environment"	Poster Presentation Set-Up
9:00 AM	Ruta Lasauskatte "Influence of Lighting Color Temperature on Mental Effort"	Rana Zadeh (invited presentation) "Healthcare Workplace: From Psychology of Architecture to Organizational Outcomes"	Michael Abib "But What is the Psychology of the Building?"	POSTER PRESENTATIONS
9:30 AM	Kevin Nulte "Weather-Generated Indoor: Change as a Means of Improving the Well-Being and Performance of Building Occupants"	Cláudia Andrade (via live video conference) "Who Wants Control in the Hospital Room?"	Grace Lee "Wayfinding for Alzheimer's Disease with Cues from Episodic Memory Loss and Prosopagnosia"	-Amir Assadi & Yilin Wang: "Modeling Perception of Geometry and Motion in Interior Spaces" -Steven Binger: "Common Edge Collaborative" -Shireen Kanakri: "Links between Classroom Acoustics & Repetitive Behaviors in Preschool Children with Autism: An Observational Study"
10:00 AM	Cody Price "Architectural Inferences of Affordable Housing: Examining Stylistic Differences Amongst Boston, Columbus, OH, and San Diego"	Davis Harle "The Childbirth Supporter Study: Australian Hospital Birth Unit Design's Influence on Women's Birth Supporters"	Alexandra de Sousa "Architecture for the Mind: Linking Spatial & Social Cognition"	
10:30 AM	Keynote Address: David Canter (live video conference) "A Brief History of Architectural Psychology and Where We Went Wrong"	Keynote Address: David Canter (live video conference) "A Brief History of Architectural Psychology and Where We Went Wrong"	Keynote Address: David Canter (live video conference) "A Brief History of Architectural Psychology and Where We Went Wrong"	
	SYMPOSIUM 3: invited symposium "Personality, Design, & the Home"	SYMPOSIUM 4: submitted symposium "Workplace Impacts on Health and Well-Being"	SYMPOSIUM 10: individual paper session	Break Room
11:15 AM	Sam Gosling (symposium organizer) "Putting Personality in its Place"	Cristina Banks (symposium organizer) "An Integrated Approach to Healthy Workplaces"	Harry Wallace "Three Psychological Pitfalls of Aesthetically Pleasing Architecture"	Coffee break set-up
11:45 AM	Christopher Travis "Designing Lives"	Isabelle Thibau "Healthy Workplaces' Survey of Work Environments on Health and Well-Being"	Reina Loredo "Architecture & Surrealism: Luis Barragan & Architecture of Irrationality"	Coffee/Tea
12:15 PM	Sally Augustin "Living in an Impressionist World: Human Experience of Places"	Gail Bräger "Using Occupant Feedback to Understand Building Success"	Diogo Jeremias & João Pedro Schneider "Assessment Instrument of Emergency Units Focused on Users"	Coffee/Tea
12:45 PM	Pierluigi Serraino "Longevity by Architecture": How and Why Design Extends Life"	Anja Jamrozik (invited presentation) "Designing Healthy and Productive Offices"	Sangeeth Pillai & Trupthi Panicker "Nudge by Design: A Comparative Study Correlating Lifestyle Patterns & Domestic Interior Spaces"	Coffee clean-up & Lunch set-up
1:00 PM	LUNCH	LUNCH	LUNCH	Lunch
1:30 PM	(and symposium 5 set-up)	(and symposium 6 set-up)	(and symposium 11 set-up)	Lunch
	SYMPOSIUM 5: invited symposium "Architecture & Neuroaesthetics"	SYMPOSIUM 6: submitted symposium "Exploring the Connections Between Occupant Emotions and Design"	SYMPOSIUM 11: thematic paper session "Site-Specific Studies"	Break Room
2:00 PM	Oshin Vartanian (symposium organizer) "Behavioural and Neural Responses to Architectural Design"	Janice Barnes (via live video conference) "Perception of Loss and Workplace Satisfaction"	Jennie Black "Reviving the Grounds & Community of Glenn Dale Hospital"	Lunch clean-up & Coffee set-up
2:30 PM	Heeyoung Choo "Neural Codes of Architectural Styles in Human Visual Cortex"	Caitlin DeClercq "Designing for a Healthy Office"	Amber Raley "Proposing a Revised Definition of Urban Catalysis: Shaped by the People"	Coffee/Tea & Snacks
3:00 PM	Eve Edelstein "Your Brain is Tuned to Design"	Lindsay Graham (symposium organizer) "Charting the Emotional Landscape of Space"	Stephen Mainzer "Community & Landscape Driven Pro-Environmental Behavior: Preliminary Findings of Household Energy Consumption in Two Rural Towns"	Coffee/Tea & Snacks
	SYMPOSIUM 7: thematic paper session "Novel Methods"	SYMPOSIUM 8: invited panel discussion "Converting Knowledge Into Social Impact"		Break Room
3:30 PM	Colin Ellard "Field Investigations of the Relationship Between Place & Psychological State Using Mobile Sensor Technology"	Andrew Brown, Van Alen Institute (moderator)	Ana Karinna Hidalgo "Fascinating Urban Streets: Psychological Restoration in Winter Cities"	Coffee/Tea & Snacks
4:00 PM	Kriss Kennedy "Architectural & Behavioral Systems Design Methodology & Analysis for Optimal Habitation in a Volume-Limited Spacecraft for Long Duration Flights"	-Jennifer Roe, Center for Design & Health, UVA -Matt Dugan, Acting Division Manager, Long Term Planning for the City of Austin -Lourdes Rodriguez, Center for Place-Based Initiatives	Carrie Morrison "Investigating Home as a Safe Haven"	Coffee/Tea & Snacks
4:30 PM	Giyoung Park "Eating (alone) with Facebook: The Influence of Physical, Social, and Ambient Environments in Social Settings"	followed by Q&A		Coffee/Tea & Snacks
				Clean up

*Monday, December 5 (continued)*

<b>Start Time</b>	<b>Location: Peter O'Donnell Building (POB) 2.302 - Avaya Auditorium</b>
5:15 PM	Doors open
5:30 PM	Opening Remarks
5:35 PM	Closing Keynote Address: David Stea "From Architectural Psychology to Environmental Psychology: Behavior, to Cognition, to Participatory Design"
6:30 PM	Looking Forward & Bridging Disciplines Discussion Panel: -Tamie Glass (moderator) -David Stea -Elizabeth Danze -Alexi Marmot

## Keynote Addresses



## Alexi Marmot

*“Architecture and Psychology: Lessons from the Coalface of Architectural Practice and Academia”*

What are the big questions that clients and their designers need to resolve? Which of them can be illuminated by insights of psychologists? How can barriers to knowledge sharing and interdisciplinary working be overcome? Taking specific moments in the life of urban, architectural and interior design projects, from pre-conception to design, construction, use and re-use through a long lifetime, Alexi will highlight examples of really useful collaborations, and the reasons for their success. As founder of a respected firm devoted to evidence-based design, she will describe examples from different building types – housing, health buildings, workplaces, places of learning – where insights from psychology have influenced outcomes. Drawing on personal academic experience, she will identify the key theoretical and practical aspects in conducting research that will be noticed, maybe even heeded, by designers, their clients, and the built environment industries. The talk will conclude by offering a vision for future joint research-based knowledge.



Bio: Alexi Marmot is Professor of Facility and Environment Management and Head of the Bartlett School of Graduate Studies at University College London. She is an internationally acknowledged expert in the design, management, and use of places for work and for learning. Educated in architecture and town planning, Dr. Marmot has spent the last thirty years exploring how people use space, how buildings operate in practice, and how to create buildings that really work for the organizations that inhabit them. During her time at UCL, Dr. Marmot has continued to draw on her applied professional knowledge to inform teaching and research in facility management.

As Director of her London-based consultancy firm, AMA Alexi Marmot Associates Limited, Dr. Marmot continues to have a successful professional career helping organisations shape their built assets to deliver corporate goals. With its impressive client list of public, private and charitable organisations, including the Bill and Melinda Gates Foundation, the world’s largest grant-giving foundation, AMA provides an excellent base from which to forge industrial and academic links.

Dr. Marmot has co-authored the definitive book on office space planning in the USA, and another in the UK: *Office space planning: Designing for tomorrow’s workplace* (McGraw-Hill, 2000) and *Understanding offices: What every manager needs to know about office buildings* (Penguin, 1995). Recent appointments to UK government organizations, the Cabinet Office and Asset Skills Council, demonstrate the value placed on Dr. Marmot's advice on the development of the facility management industry. She has been invited to join the Cabinet Office FM/Soft Landingsgroup, part of the government’s Construction Strategy (2011/12); was invited to address the Government Property Unit as part of the efficiency review of property services (2011), and is on the FM Advisory Board of Asset Skills Council, the body charged with improving the skills of the UK workforce to boost productivity and competitiveness (since 2009).

## Elizabeth Danze

### *“Architecture, Psyche, and Self Reflection”*

Architecture works with the tangible, the physical, the factual, but it also has the potential to address the intangible. Architecture, which moves beyond mere building, strives to enhance the human condition and promote emotional well-being through the manipulation of space, light, material, and form. At its best, architecture enriches the experience of our surroundings and enhances self-reflection, through enhancing a state of awareness, both of ourselves and of how others interact with what we create. Psychoanalysis also examines the role and significance that places hold in our identities and memories, hopes and dreams and the means by which they enter and are expressed through our psyches and become a part of who we are. Psychotherapists promote mindfulness in their patients while architects enhance awareness of the self in the physical world and within the overlap of this discourses lies the emotional tonus of real and imagined places-whether at the scale of the city or the scale of the house-and it is this area of mutual concern that has continued to fascinate and engage my scholarly work and practice.



Bio: Elizabeth Danze began her tenure as interim dean for University of Texas at Austin's School of Architecture on July 1, 2016. She previously served as Associate Dean for Undergraduate Programs, and most recently as Associate Dean for Graduate Programs. She is an Associate Professor at the school, and a Fellow of the American Institute of Architects.

Danze is a principal with Danze Blood Architects, and her work integrates practice and theory across disciplines by examining the convergence of sociology and psychology with the tangibles of space and construction. She is co-editor of *Architecture and Feminism* and co-editor and author of *CENTER 9: Regarding the Proper and Psychoanalysis and Architecture-The Annual of Psychoanalysis, Volume 33*, and *CENTER 17: Space and Psyche*. She is also the architect advisor to the American Psychoanalytic Association's Committee on Psychoanalysis and the Academy.

Danze is the recipient of the University of Texas System Regents' Outstanding Teaching Award, the Texas Society of Architects Edward J. Romieniec Award for Outstanding Educational Contributions and is a member of the University of Texas Academy of Distinguished Teachers. She received her BArch. from University of Texas at Austin and MArch. from Yale University.

## David Canter

### *"A Brief History of Architectural Psychology and Where We Went Wrong"*

The study of how people use buildings has its roots in Europe in the provision of planning guidelines for the massive rebuilding of housing after the destruction of the Second World War. The boom in office building also gave rise to related research spearheaded by the Pilkington Research Unit at Liverpool University and followed up by the Building Performance Research Unit at Strathclyde in Glasgow. All of these activities in the 1960's were led by architects looking to respond to the slogan of the day 'form follows function'. In the US also architects were asking psychiatrists how mental patients experienced hospitals so that they could design them more effectively. All this activity brought together studies in heating, lighting and acoustics as well as studies of space use, with the first major conference labelled Architectural Psychology in Europe near Loch Lomond in Scotland in 1969. Increasingly also the 'meaning' of buildings was studied. So that by the mid-1970's most Schools of Architecture in the UK provided some sort of psychological teaching. But architectural fashion moved on 'post-modernism', 'deconstructionism' and other fads spread through Schools of Architecture, but psychologists did not follow. Studies became increasingly focussed on issues of interest to psychologists not architects. Consequently, psychological research was regarded as irrelevant to a wide range of designers. Planners, always more open to social issues, were the dominant professionals encouraging psychological research to become larger scale.

Eventually it took off following the lead of Proshansky and his colleagues in New York to identify the field as Environmental Psychology, with the inevitable move to a 'green' area of study that is now really a branch of social psychology studying attitudes and behaviour in relation to environmental issues. Aware of the powerful forces that take psychologists away from doing anything useful, when I established the new field of Investigative Psychology, in the 1990's, I defined it in terms of the decision processes investigators go through, Information, Inference then support for Action. At the heart of this is the study of what investigators actually do so that research can contribute directly to that. With the re-emergence of the interest in Psychology and Architecture I hope the lesson will be learnt that research should integrate with design decision making and not only focus on issues of interest to academic psychology.



Bio: Professor David Canter is Director of The Centre for Investigative Psychology at the University of Liverpool. David Canter's early work was as an Environmental Psychologist, working with architects on the psychological implications of the design of offices, schools, hospitals, prisons and housing. He also consulted on the design of Casinos for Ladbrokes and the Channel Tunnel terminal in Kent as well as Shell's Research Centre at Stanlow. He is the founding editor of the Journal of Environmental Psychology that he established in 1980.

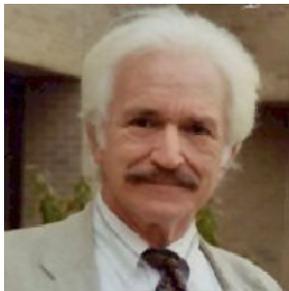
He has published over 20 books and over 200 articles in technical and academic journals as well as contributing to newspapers and many television documentaries. He has a regular discussion slot on BBC Radio Merseyside. His most recent television activity is his six-part documentary series for Channel 5 called 'Mapping Murder'. Professor Canter is a Fellow of the British Psychological Society and the American Psychological Association and a member of the Forensic Science Society. He has PhD from The University of Liverpool and is a Chartered Forensic Psychologist. He is one of the first psychologists to be elected as an Academician to the Academy of Social Sciences.

## David Stea

*“From architectural psychology to environmental psychology: behavior, to cognition, to participatory design.”*

This is the story of the birth, childhood, and stumbling adolescence of a new discipline, and of the slightly dysfunctional extended family that tried to raise the newborn entity. Not a standard research lecture, but rather a more humanistic account, it stresses major figures and events throughout the early colourful history of the new discipline, uniting known events with those lesser-known (including the social revolution of the 1960s, the expansion of architectural psychology into environmental psychology, and the transition from modernism to postmodernism in architecture), through the medium of stories.

This illustrated presentation begins with the presumed origins of architectural psychology in engineering psychology and other fields, from the 1940s through the 1960s, in Saskatchewan, Massachusetts, and the UK, starting with the people and the forces that generated architectural psychology in studies of mental hospitals and public housing. The discussion continues with the contribution of the cognitive approaches of the philosopher Kenneth Craik, the psychologist E. C. Tolman and the urban planner Kevin Lynch et al, to the evolution of participatory architecture. As interdisciplinary activity has ebbed and flowed, environmental psychology has partially abandoned architecture (and vice-versa), but may be primed for a resurgence.



Bio: David Stea received a B.S. in Mechanical/Aeronautical Engineering from Carnegie Institute of Technology in 1957 and a Ph.D. in Psychology from Stanford University in 1964. As Carnegie Interdisciplinary Fellow at Brown University, he developed the new field of Environmental Psychology and the related study of spatial and geographic cognition. He was Associate Professor of Psychology and Geography at Clark University, Professor of Architecture and Urban Planning at UCLA through 1988, and then Distinguished Professor of Architecture at the University of

Wisconsin. Dr. Stea has held four distinguished professorships in the U.S.A., Indonesia, and Mexico.

He is a member of the editorial boards of a number of journals, the co-author or co-editor of several books, including *Image and Environment*, *Landscape in Language*, and *Maps in Minds*, and some 150 articles. Dr. Stea has given some 200 lectures and presentations in a dozen countries around the globe and has been visiting professor and planning consultant on all inhabited continents. In the mid-1980s, Dr. David Canter and Dr. Stea began editing the “Ethnoscapes” book series in the U.K. In 1987 he was nominated for the Right Livelihood Prize (also known as the “alternative Nobel”). Later with a grant from the U.S. Department of Education, Dr. Stea established and directed the International Center for Culture and Environment in Santa Fe, New Mexico, training environmental specialists in for international practice, and continued its work in Mexico. In 2008 he was named Distinguished Visitor by the City of Veracruz and also received citations from Mexico and France for his pioneering work in relating environmental psychology to environmental design.

Dr. Stea is now Professor Emeritus of Geography and International Studies at Texas State University and Research Associate with the Center for Global Justice in Mexico. Since becoming Professor Emeritus in 2006, he has continued research in central Mexico and in the Navajo Nation in the USA.

## Invited Speakers



## Personality, Design, and the Home

### **Sam Gosling** (symposium organizer)

#### *“Putting Personality in its Place”*

In 1943, upon the rebuilding of the Houses of Parliament in London, Winston Churchill observed, *“We shape our buildings; thereafter they shape us.”* The connections between people and spaces they occupy are pervasive and powerful. Here we summarize a series of studies examining the connections between people and the places they occupy, focusing on how people manipulate and select their environments to reflect and express their attitudes, values, traits, and emotions. The studies also point to the deliberate and unconscious mechanisms by which people leave traces of their personalities in their living and work spaces. These studies hint at the psychological functions served by physical spaces in everyday life, providing a foundation for work on the factors that drive people to seek out different kinds of spaces and consequences of succeeding or failing to find a suitable fit. By emphasizing the importance of these psychological factors and also showing how the relative importance of these factors may differ across individuals, such work suggests a number of steps that could be integrated into architectural practice to improve the wellbeing and productivity of a building’s occupants.

Bio: Sam Gosling is a Professor of Psychology at the University of Texas, Austin. He did his doctoral work at the University of California at Berkeley, where his dissertation focused personality in spotted hyenas. Gosling has published broadly on the topics of Internet-based methods of data collection, personality in non-human animals, and on how human personality is manifested in everyday contexts like bedrooms, offices, webpages, music preferences, and social-media. This latter work is described in his book, *“Snoop: What Your Stuff Says About You”*; it is based on the idea that we deliberately and inadvertently express our personalities the ways we manipulate and select the environments in which we live and work. As a result, these spaces are rich with information about what we are like. His work is widely covered by the media and he is the recipient of the American Psychological Association's Distinguished Scientific Award for Early Career Contribution. In 2016 he was recognized by Thompson-Reuters as one of the most highly cited scientists in the world.

### **Christopher Travis**

#### *“Designing Lives”*

Architects and designers have long struggled to find the right balance between the expression of art in a building, and the demands of its functional requirements. We argue that “functional requirements” should include a much greater focus on creating spaces tailored to enhance the emotional and psychological wellbeing of the individuals who inhabit them. We also assert such an approach solves a large number of the client concerns typical in private practice. Because each individual’s experience of their environment is unique, psychological in nature, largely nested in the unconscious, and a complex social system, accomplishing enhanced life outcomes in actual practice requires expertise that is typically outside the field of architecture. We promote collaboration between designers and wellbeing professionals during the design criteria stage of a project, and discuss applied methods that effectively provide the psychological criteria designer’s need to produce spaces that support better life outcomes.

Bio: Christopher K. Travis is the Managing Partner of Sentient Architecture, LLC and Truehome Design.Build. He has used psychological methods and questionnaires to develop criteria for residential and other projects since 1998. Sentient Architecture was recently named “2016 Full Service Architecture Firm of the Year” for South Central Texas by Build Magazine.

### **Sally Augustin**

*“Living in an Impressionist World: Human Experience of Places”*

Human emotional experience of the physical environment is shaped by five factors. They are: fundamental, universal sensory processing; individual place experience/history; group culture; national culture; and personality. The integration of the perceptions resulting when these five separate experiential criteria are used to assess the physical environment leads to individuated emotional encounters with the world that surrounds us. Each of us interprets the materiality of physical experiences, just as impressionist painters evaluate and capture their own notions of “objective” reality. Our emotional state has cognitive and physical implications, among others. Sets of people with similar personality profiles share criteria applied to expectations and experiences of real world situations; and rigorous research indicates what those responses are likely to be. In practice, it is complicated to design spaces that recognize and respect personality-related differences in users; doing so, however, makes positive user experiences more likely. Pragmatic ways that design practice and personality research can be coordinated to inform the development of spaces where desired user experiences are more probable will be reviewed. Impediments to this process and their potential resolution will also be discussed.

Bio: Sally Augustin, PhD, is a practicing environmental psychologist, specializing in person-centered design, and a principal at Design With Science. She integrates insights from environmental/design psychology, other social/physical sciences, and project specific research to develop places, objects, and services that support desired experiences. Her clients include manufacturers, service providers, design firms, and individuals in North and South America, Europe, and Asia. Sally is a graduate of Wellesley College (BA), Northwestern University (MBA), and Claremont Graduate University (PhD).

### **Pierluigi Serraino**

*“LONGEVITY BY ARCHITECTURE: How and Why Design Extends Life.”*

In the 19th century, modern architecture got its jumpstart from two primary objectives: 1) To align the architectural design process and output to the portentous rise of industrial technology; 2) To address public health distress as population was rapidly migrating from the rural to the urban setting to raise their logistical standards in the midst of an unstoppable capitalism. This paper argues this stance examining three distinct houses, interviewing their living occupants and recordings their memories and impressions of inhabiting such spaces over their long lives. In this delivery it will be argued that a discrete combination of architectural choices from site planning to design elements at the scale of the hands and the material finishes enabled its occupants to inhabit their residences in an optimal mental and physical states. It will be further argued that a great many of the architectural features marking these houses are unrelated to scale- the square footage often being quite modest- and to budget- just as often these projects were built with rather limited means. The underlying design principles, instead, shape the spaces where the human body flourishes under all circumstances of contemporary living.

Bio: Pierluigi Serraino, AIA, is an architect, author, and educator. He holds multiple professional and research degrees in architecture from Italy and the United States and has over 15 years of work experience as a design architect. Prior to opening his independent design practice, Pierluigi worked on a variety of residential and institutional projects in the United States and overseas at Mark Mack Architects; Skidmore, Owings & Merrill; and Anshen+Allen.

## Architecture and Neuroaesthetics

**Oshin Vartanian** (symposium organizer)

*“Behavioural and neural responses to architectural design”*

Humans in the developed world spend approximately ninety percent of their time indoors. Yet, despite our intuition that the built environment affects the way we think, feel, and behave, we know surprisingly little about how our brain responds to variations in architecture and design. In my presentation I will review two strands of research that have begun to make inroads into addressing this question. The first strand of research has focused on the effects of basic architectural design features—contour, ceiling height, and perceived enclosure—on aesthetic judgments and approach-avoidance decisions. This work has shown that variations in the same design feature can have profoundly different effects on brain function and behavior depending on the context in which choices are made. The second strand of research has revealed that expertise—in the form of formal training in architecture—can affect brain function when making aesthetic judgments of buildings but not aesthetic judgments of faces. Taken together, this body of research has begun to show the context-dependent nature of the brain’s response to architectural design.

Bio: Oshin Vartanian received his Ph.D. in experimental psychology from the University of Maine. He is the editor of the journal *Empirical Studies of the Arts*, and has co-edited volumes including *“Neuroaesthetics”* (Baywood) and *“Neuroscience of creativity”* (MIT Press), among others. His main areas of interest include the cognitive and neural bases of aesthetics and creativity.

**Heeyoung Choo**

*“Neural codes of architectural styles in human visual cortex”*

Images of iconic buildings, such as the CN Tower, instantly transport us to specific places, such as Toronto. Despite the substantial impact of architectural design on people’s visual experience of built environments, we know little about its neural representation in the human brain. In the present study, we have found patterns of architectural styles in several high-level visual brain regions, but not in primary visual cortex (V1). This finding suggests that the neural representations of architectural styles stem from style-specific complex visual structure beyond the simple features computed in V1. Surprisingly, the network of brain regions representing architectural styles included the fusiform face area (FFA) in addition to several scene-selective regions. Hierarchical clustering of error patterns further revealed that the FFA participated to a much larger extent in the neural representation of architectural styles than in the representation of entry-level scene categories. We conclude that the FFA is involved in fine-grained neural representations of scenes at a subordinate-level, in our case, architectural styles of buildings. This study for the first time shows how the human

visual system encodes architecture, one of the predominant and longest-lasting artefacts of human culture.

Bio: Heeyoung Choo received her Ph.D. in Psychology from the Northwestern University in 2012. She is a postdoctoral research associate in the Beckman Institute Cognitive Neuroscience group. Her main areas of interest are visual perception of real-world environments and objects, and visual attention, and cognitive neuroscience.

### **Eve Edelstein**

*“Your Brain is Tuned to Design”*

Our sensory, perceptual, and cognitive functions reveal themselves within the domain of neuroscience. The human experience of design may thus be measured across multiple dimensions where the physics of form meet the physiology of function. Studies using emerging biosensors, environmental trackers and fully immersive real-time virtual reality simulations, will be described that explore the interaction between buildings and the brain, body, and behavior. The resultant brain-based design principles may be applied via a neuro-architectural process that serves better serves human performance, creativity, health and well-being. Discussion will focus on opportunities for new modes of design ideation and innovation that inform investment in design.

Bio: Dr. Eve Edelstein is Director of the Human Experience Lab and Gadget Lab at Perkins+Will. Dr. Eve Edelstein is Director of the Human Experience Lab and Gadget Lab at Perkins+Will. Dr. Edelstein also directs the Gadget Lab, leveraging emerging and existing biosensors, environmental trackers and virtual reality simulations measure the impact of places on people and their performance. In addition, Eve directs the DesignHealth Co-Laboratory, part of the AIA Design + Health Research Consortium that explores the impact of design at environmental, urban and architectural scales. Dr. Edelstein’s translational design approach integrates neuroscientific and clinical data into design principles that have applied in award winning built projects in the United States, Canada and China. Dr. Edelstein’s background combines research expertise with design practice, drawing upon a doctorate in neuroscience (University College London), a professional master in architecture, and degree in anthropology (University California, Berkeley). Eve developed the first series of courses in Neuro-Architecture leading to Certificate and Master Programs at the NewSchool of Architecture & Design along with the Academy of Neuroscience for Architecture. Eve’s publications and presentations describe research and applications in hearing science and acoustics, circadian rhythms, behavioral and neural health, and the integration of brainwave recordings with immersive and interactive virtual reality to test the impact of design. Dr. Edelstein holds a B.A.in Anthropology, M.Sc. in Neuroscience, M.Arch. in Design, and Ph.D. in Neurophysiology.

## Design, Health, and Well-Being

### **Rana Zadeh**

*“Healthcare workplace: from psychology of architecture to organizational outcomes.”*

The largest portion of the life cycle cost in a healthcare organization is allocated to healthcare employees and therefore their performance and health. We will discuss how lessons learned from

the fields of psychology, organizational behavior and architecture could help create high performance and LEAN healthcare workplaces. The presentation will provide a number of case studies improving alertness and vigilance as well as health and productivity in the healthcare work environments and therefore organizational outcomes such as safety, efficiency and quality.

Bio: Rana Sagha Zadeh, M.Arch., Ph.D., Associate AIA, LEED AP, EDAC, is a tenure-track assistant professor and the co-director of the Health Design Innovations Lab in the Department of Design & Environmental Analysis at Cornell University. Dr. Zadeh's interest includes healthcare design, evidence-based design and the translation and application of scientifically tested research about design innovation into real-life policy and practice. Dr. Zadeh's team is currently working on several projects. Projects include healthcare workplace design and improving alertness, productivity, and efficiency, development of non-pharmacological system solutions to improve quality of life and manage symptoms for patients with advanced and chronic illnesses, particularly in end-of-life, geriatric, and acute care settings, the economic evaluation of improvements in healthcare care environments. Zadeh's team is the recipient of the Novel Technology Award from the Clinical and Translational Science Center and Weill Cornell Medical College. Zadeh has also received the Center for Health Design's 2012-13 New Investigator Award for high-quality research in the field of evidence-based healthcare facility design and the 2013 Architectural Research Centers Consortium King Medal for innovation, integrity, and scholarship in environmental design research.

### **Anja Jamrozik**

*"Designing healthy and productive offices"*

Americans who work full-time spend an average of 47 hours each week working. How can we design workplaces that enhance people's productivity and well-being during this time and have a positive impact on the rest of their lives? Previous research has identified a number of environmental variables—including light, sound, and temperature—that can have an impact on office users, but much remains unknown. Most research to date has relied on field studies or constrained laboratory experiments, which either lack full control of environmental variables or whose findings are difficult to apply to real-world settings. The Well Living Lab affords a unique opportunity to study how environmental variables affect people's performance, health, and well-being in a tightly controlled, real-world-like setting. In a multi-week study of office workers, we varied three environmental aspects: light, temperature, and sound. We collected daily and weekly survey data to assess people's comfort, satisfaction, and productivity, and conducted in-depth interviews at multiple points during the study. These data will identify what aspects of an office make people feel comfortable, and what environmental variables help or detract from their work. Future work aims to provide comprehensive evidence-based recommendations for the design of healthy and productive office spaces.

Bio: Anja Jamrozik is a cognitive scientist and behavioral science consultant passionate about improving our design of the built environment. She is currently a behavioral scientist at the Well Living Lab, where she is responsible for testing the environment's impact on people: their cognitive function, productivity, feelings, comfort, and well-being. Anja received her B.Sc. in psychology and cognitive science from McGill University and her Ph.D. in cognitive psychology from Northwestern University. She received postdoctoral training in cognitive neuroscience at the University of Pennsylvania.



# Symposia



Symposium 1: Individual Paper Session, CLA 1.302B

**9:00 AM - Ruta Lasauskaite** (Centre of Chronobiology, Psychiatric Hospital of the University of Basel), Christian Cajochen

*“Influence of Lighting Color Temperature on Mental Effort”*

We proposed that mental effort intensity should decrease with increasing color temperature of light (more blue spectrum components). We tested effort-related cardiac response under four lighting conditions and found that it decreased with color temperatures. Thus, blue-enriched light in offices and schools might allow preserve resources during cognitive activities.

**9:30 AM - Kevin Nute** (University of Oregon), Richard Marrocco, Jagdeep Kaur-Bala

*“Weather-Generated Indoor Change as a Means of Improving the Well-being and Performance of Building Occupants”*

Most people in the developed world will spend more than ninety percent of their lives indoors. Many buildings do such an effective job of protecting us from the outdoor environment, however, that they also inadvertently deprive us of two important requirements for our long-term well-being—contact with nature and change. The work presented examines how the movements of a universally available natural resource usually excluded from buildings—the weather—could be used to alleviate both of these deficiencies, and in the process help to lower stress and improve the performance of building occupants. Using a combination of controlled human subjects experiments, on-site monitoring in working buildings, and environmental testing of physical models, it was found that the natural movements of sunlight, wind and rain can both lower stress and increase the alertness of building occupants; such movement can effectively be brought indoors without undermining physical shelter using simple spatial enclosure and light projection, and many existing passive environmental control and rainwater harvesting devices could be used to transmit such movement, , in the process helping to raise awareness of these underused sustainable practices.

**10:00 AM - Cody Price** (Ohio State University)

*“Architectural Influences of Affordable Housing: Examining Stylistic Differences Amongst Boston, Columbus, OH, and San Diego”*

People stigmatize affordable housing, assuming that it will be unattractive and poorly maintained. Research in architectural symbolism suggests that people infer consistent meanings from home exteriors (Cherulnik and Wilderman, 1986; Sadalla et al., 1987). For example, Nasar (1989) found that residents in different U.S. cities consistently associated Tudor and Colonial styles with leadership and Farm styles with friendliness. Using Nasar’s (1989) research as a stepping-stone, the present study sought to uncover effects of architectural styles on perceptions that a house is an affordable house. The study used images of Tudor, Colonial, Contemporary, Farm, Mediterranean, and Saltbox homes to understand stylistic associations with affordable housing for U.S. homeowners. An on-line survey showed participants the six styles, told them that the houses are on the same block and have the same size, cost and layout, and had them put the houses in order for the degree to which they believed each to be an affordable house. They also reported the physical qualities of the houses that affected their judgments. The study revealed consistent patterns of association to the styles; and a content analysis of the reasons given suggest other ways to reduce the stigma towards affordable housing.

Symposium 2: Healthcare Design, CLA 1.302E

**9:00 AM - Rana Zadeh** (Cornell), invited speaker

*"Healthcare Workplace: From Psychology of Architecture to Organizational Outcomes"* abstract on pg. 21

**9:30 AM - Clàudia Andrade via live video conference** (ISCTE-IUL), Ann Sloan Devlin

*"Who Wants Control in the Hospital Room?"*

Based on the hypothesis that environmental control does not always lead to better adjustment (it may depend on individual differences in terms of desire for control), an experiment based on a scenario of a hypothetical hospitalization, showed that control decreases expected stress only for those with high desirability of control.

**10:00 AM - Davis Harte** (Boston Architectural College), Athena Sheehan, Maralyn Foureur

*"The Childbirth Supporter Study': Australian hospital birth unit design's influence on women's birth supporters."*

Childbirth supporters are beneficial for women in labor. Birth units in hospital settings are medicalized spaces that communicate an unbelonging paradox message to supporters. The evidence-based design research described here provides solutions to support the supporters, as both an individual and part of a dyad.

Symposia 9: Cognition & the Built Environment, CLA 1.302D

**9:00 AM - Michael Arbib** (NewSchool of Architecture and Design)

*"But What is the Psychology of the Building?"*

Neuromorphic architecture seeks to incorporate neuroscience-inspired "interactive infrastructures" (analogous to an animal's brain) in future buildings. What would be the psychology of such a building be, interacting with its inhabitants?

**10:15 AM - Grace Lee** (NewSchool of Architecture and Design)

*"Wayfinding for Alzheimer's Disease with Cues from Episodic Memory Loss and Prosopagnosia"*

While there's a high demand for neurological understandings, particularly in Alzheimer's Disease (AD), how can architects make concrete decisions in their designs until those discoveries are made? Conducting post-occupancy surveys only share an overview of the space's perception and greatly lack specificity in identifying which architectural elements are beneficial. Recently, wayfinding is an architectural focus on those with the rapidly deteriorating condition. While neuroscientists are struggling to understand this condition, it may be possible for architects to make design assumptions based on the commonality of episodic memory loss, prosopagnosia, and AD. In various studies conducted on subjects with one, or in some cases, two, of the conditions, experiments request subjects to make a path from Point A to Point B, in a two-dimensional format. The subjects unanimously failed to draw a direct path, even when the direct route was provided prior to the start of the test. This simple map task provided the significant similarity of difficulty in all three conditions. With these similarities in mind, could studying the effects of specific architectural elements in those with episodic memory loss or prosopagnosia provide us cues on what's beneficial, neutral, or negative towards those with Alzheimer's Disease?

**10:45 AM - Alexandra de Sousa** (Bath Spa University), Michael J. Proulx, Orlin S. Todorov, Amanda Taylor Aiken

*"Architecture for the Mind: Linking Spatial & Social Cognition"*

Our experience is influenced by who we are, and where we are. Architecture creates environments; does it also create behavior? We approach this question across multiple disciplines. First, we consider the evolutionary foundations of spatial and social cognition, and discuss whether these branches of cognition might share neural correlates. Second, we review a budding body of research into the relationship between social and spatial cognition. In both spatial and social cognition, perspective-taking strategies influence our experience and behavior. Thus, the two spatial reference frames, egocentric and allocentric, might transcend into the social realm. Third, we consider how individuals vary in personality, navigational strategies, and numerous cognitive and social competencies. It is also important to consider how individuals respond to environmental stimuli differently, thus our interactions in social and spatial environments relate to who we are. For example, sensory experience influences the use of spatial reference frames; might sensory experience influence the use of social reference frames as well? Fourth, we offer a framework that encompasses spatial and social cognition that might be taken into consideration by architects and urban planners.

Symposium 3: Invited Symposium on Personality, Design, & the Home, *CLA 1.302B*

**11:15 AM - Sam Gosling** (University of Texas at Austin), symposium organizer  
*"Putting Personality in its Place"* abstract on pg. 18

**11:45 AM - Christopher Travis**  
*"Designing Lives"* abstract on pg.18

**12:15 PM - Sally Augustin**  
*"Living in an Impressionist World: Human Experience of Places"* abstract on pg. 19

**12:45 PM - Pierluigi Serraino**  
*"Longevity by Architecture": How and Why Design Extends Life* abstract on pg. 19

Symposium 4: Workplace Impacts on Health and Well Being, *CLA 1.302E*

**11:15 AM - Cristina Banks** (University of California at Berkeley), symposium organizer  
*"An integrated approach to healthy workplaces"*

Worker health and well-being is built on the understanding of the interaction between the worker and his or her environment; specifically, how the work and workplace affect a worker's basic physical and psychological needs. Here we will discuss our model for shaping healthy workplace design that integrates the scientific literature across disciplines and focuses development of new approaches on the most important element of employee health and well-being: the employee. The model shows the employee nested within several different concentric contexts, each context having an impact on how the employee feels physically and psychologically at work. Worker health and well-being is built on the understanding of the interaction between the worker and his or her environment; specifically how the work and workplace affect a worker's basic physical and psychological needs. Here we will discuss our scientifically derived model for shaping healthy workplace design.

**11:45 AM - Isabelle Thibau** (Interdisciplinary Center for Healthy Workplaces, UC Berkeley)  
*"HealthyWorkplaces' survey of Work Environments on Health and Well-Being"*  
Work environments affect worker health and well-being, but exactly which elements positively affect health, well-being, and work outcomes, and how? We developed a survey to assess the work

environment for graduate students on and off the UC Berkeley campus, and to analyze the effects of certain elements on students' health and well-being, and their correlation with performance and engagement. The aim of this survey is to understand the relationship between work environment, psychological states, and health and well-being outcomes among graduate students. The survey assesses a variety of work environment elements, including those of the built environment, campus culture, resources, and social connection. We will discuss our survey, the results, and how it supports the HealthyWorkplaces model.

**12:15 PM - Gail Brager** (Center for the Built Environment, UC Berkeley)

*"Using occupant feedback to understand building success"*

While there has been considerable focus on measuring and regulating the resource efficiency of buildings, less attention has been paid to the issue of how well buildings meet their design intent for occupants. Occupants themselves are often an untapped resource that can provide an incredible wealth of information about how well a building is actually performing. Here we will share insights learned from the largest global database of its kind—a collection of surveys from more than 100,000 occupants collected in more than 1,000 buildings of various building types (e.g., workspaces, education spaces, laboratories, multi-occupant residential). We will use this data to explain how various aspects of the environment (e.g., lighting, acoustics) influence occupant satisfaction within a space. We will also use this data to explain how occupant perceptions of environmental characteristics differ in sustainable buildings compared to traditionally constructed buildings (i.e., those that are LEED certified vs. those that are not). We will also describe a number of case studies in which these findings have been used in actual practice to improve design and occupant experience. Finally, we will conclude by giving key takeaways practitioners can use from occupant insights to improve user experience and design.

**12:45 PM – Anja Jamrozik** (Delos Well Living Labs), invited speaker

*"Designing Healthy & Productive Offices"* abstract on pg. 22

Symposium 10: Individual Paper Session, CLA 1.302E

**11:15 AM - Harry Wallace** (Trinity University)

*"Three Psychological Pitfalls of Aesthetically Pleasing Architecture"*

Architecture can elicit thoughts of satisfaction and appreciation, and feelings of joy, comfort, and even awe. Psychological pitfalls associated with attractive architecture are less obvious, but I will highlight three. The first problem is hedonic adaptation: Intense positive emotions inspired by architecture cannot be sustained. The risk is that these emotions may tempt people to invest resources unwisely in a futile effort to extend a fleeting psychological experience. The second problem, architectural intolerance, is a curse of refined taste: Appreciation for good architecture could alternatively be framed as intolerance for bad or mediocre architecture. To the extent that good architecture is atypical, individuals who recognize the difference should experience more negative responses to their everyday observations in public space. The third problem is a peril of prosperity. Aesthetically pleasing architecture improves neighborhood curb appeal. Many urban neighborhoods are grappling with symptoms of end-stage gentrification, which include unaffordable housing and lost vitality caused by the exodus of quirky businesses and interesting people. It is no coincidence that gentrification tends to afflict once-neglected neighborhoods with intact structures of architectural merit.

**11:45 AM - Reina Loredo** (Universidad Autónoma de Tamaulipas)

*“Architecture and Surrealism: Luis Barragan and architecture of irrationality”*

In 1935, André Breton proposes to break the social and contextual scheme that it converts to the objects into fetishes. For which, first it raises the denial of the social meaning that has assigned him to the object, later there are established methods that explore the unconscious processes and finally the experimentation with a series of techniques to achieve this aim. The surrealism seeks to break also the rules of association of the objects across the transformation of the space in the one that they are assembled and the treatment of the materials that form them. This treatment implies his transformación since it breaks again with the conventional meaning of the same one, extending this way his place in the social space. This paper reflects on the compositional character of the architecture, inquiring into the ambit of the processes and generating ideas, revealing that the modern architects also sought the establishment of a particular nexus with the irrationality. In the aim of re-reading the Mexican architecture of the post-revolutionary age and its relationship with the Surrealism, it was analyzed the architectonic production of Luis Barragán, through three surrealist compositional mechanisms: the automation, the displacement, and the spaesamento or disorientation.

**12:15 AM - Diogo Jeremias & João Pedro Schneider** (Universidade Federal de Santa Catarina), Dra. Patrícia Biasi Cavalcanti , Dra. Vera Helena Moro Bins Ely, Diogo Mello Jeremias, João Pedro Schneider, Marcus Vinícios da Silva, Thaize Vanessa Costa Bortoluzzi

*“Assessment Instrument of Emergency Units Focused on Users”*

The research focuses on the development of an assessment instrument to evaluate environmental configuration of Emergency Units that reflects the environmental awareness of its members. With the tool developed aimed to support the evaluation of the minimum aspects necessary for the operation of these units, and even desirable aspects related to the quality of architecture and its humanization. To support the development of the instrument, the following methods were used: literature review and exploratory visits to two units of Emergency. To fine tuning assessment instrument, it has been implemented in six case studies. Structured in two different spreadsheets, the instrument has 500 questions organized by environments that composing a unit of Emergency. Considering the extent of spreadsheets and the limited time availability of health professionals, most questions is answered by the researchers themselves. However, in both spreadsheets are prewise questions to be answered by the users, which require the experience and in-depth knowledge of the place. The application of the instrument allowed to identify the main problems, adjustments and adaptations necessary to each of the evaluated units and set them, supporting the planning of actions by public agencies responsible.

**12:45 AM - Trupthi Panickor** (University of New Mexico) & **Sangeeth Pillai via live video conference** (Indian Institute of Technology Roorkee)

*“Nudge by Design: A Comparative Study Correlating Lifestyle Patterns and Domestic Interior Spaces”*

The most intimate of spatial connection predominately for most human beings, if not all, is with their residential space, fondly called as “home”. This paper aims to compare and contrast the idea of “home” between its two set of case studies, first in India and the second among non-resident Indians in the United States of America. The paper will employ an ethnographic approach to collect the essence of the idea of the “home” spaces from its respondents, and analyses how the image of home space is constructed by the respondents and how it has varied between the two sets of respondents. Further, analysis of this data set through the theoretical lens of the research in phenomenology of spatial perception as developed by Merleau-ponty (Merleau-Ponty, 1996) and later by Pallasma (Holl, Pallasmaa, and Gómez, 1994) will be conducted. The study will try to infer how the image of homeliness exists in the two groups. The inferences thus obtained from the study

will be incorporated in further research possibility of instrumentalising the results of evolving home design nudges (Thaler and Sunstein, 2008) that choice architects can adapt or understand from this study.

Symposium 5: Invited Symposium on Architecture & Neuroaesthetics, CLA 1.302B

**2:00 PM - Oshin Vartanian** (University of Toronto), symposium organizer  
*“Behavioural and neural responses to architectural design”* abstract on pg. 20

**2:30 PM - Heeyoung Choo** (Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign)  
*“Neural codes of architectural styles in human visual cortex”* abstract on pg. 21

**3:00 PM – Eve Edelstein** (Perkins + Will)  
*“Your Brain is Tuned to Design”* abstract on pg. 21

Symposium 6: Exploring the Connections Between Occupant Emotions and Design, CLA 1.302E

**2:00 PM - Janice Barnes via live video conference** (Perkins + Will)  
*“Perception of loss and workplace satisfaction”*

From 2014-2016 our team examined Satisfaction, Wellbeing, Work Effectiveness and Engagement in an Activity-Based Workplace research project conducted for the UCSF School of Medicine. This project used multiple methods and collected responses from participants (N = 1,000) who had either relocated to a new Activity-Based Workspace or were in the process of doing so. Findings suggest that perception of loss predicts workplace satisfaction and that programming new facilities for functional fit does not solve for the impact of perceived loss. In addition to unpacking these findings, we will discuss the ways in which design can help mitigate these perceptions of loss and also provide discussion on important occupant considerations with regards to space transition and change-management.

**2:30 PM - Caitlin DeClercq** (Interdisciplinary Center for Healthy Workplaces)  
*“Designing for a healthy office”*

We enlisted users to design workspaces from the ground up to physically embody drivers of positive psychological states, which are known to affect health, well-being, and engagement. These drivers are safety, connection, equity, flexibility, predictability, privacy and comfort. We discuss the results and implications for designing healthy workplaces. We held two focus groups with groups of 2-4 participants for each of the seven drivers in which they discussed the physical manifestations of those drivers and designed what workplaces might look like if trying to create a workplace that emulated the assigned driver. The results of these workshops are designs of buildings, floors, and individual offices that inform how to design workspaces to promote health, well-being, and positive work outcomes, and prevent injury and ill-health.

**3:00 PM - Lindsay Graham** (Center for the Built Environment, University of California, Berkeley), symposium organizer  
*“Charting the emotional landscape of space”*

Spaces have the ability to not only reflect aspects of our identities, but also to influence the way we think, behave, and feel. But how do spaces actually influence our thoughts and feelings? More specifically, how do we select and craft environments to fit the cognitive and emotional states we'd

like to experience as occupants? And do these emotional expressions say anything about who we are as individuals? In this talk, we will describe a series of multi-method empirical studies that explore the ways in which occupants craft and select space to influence their emotions. The studies cover a range of public, private, and shared spaces, and were each conducted using a combination of methods including surveys, interviews, and observations. In addition to sharing the findings, we will also discuss how the results from these studies can be used to help inform design decisions and environment-matching for occupants.

Symposium 11: Thematic paper session – Site-Specific Studies, CLA 1.302D

**2:00 PM - Jennie Black** (Martinez +Johnson)

*“Reviving the Grounds and Community of Glenn Dale Hospital”*

The majority of sanatoriums and asylums were designed with early ideas about biophilia, or the healing powers of nature. A case study for Glenn Dale hospital, a former tuberculosis sanatorium, illustrates how a design intervention could provide a community with the health benefits of nature.

**2:30 PM - Amber Raley** (University of Texas at Arlington)

*“Proposing a Revised Definition of Urban Catalysis: Shaped by the People”*

Attoe and Logan (1989) acknowledge the role of people to begin the catalytic process. However, the specific behaviors and actions of individuals were not included in their architecturally-focused description of the urban catalyst project. The present research points to specific human elements of catalyst projects through the lens of one such project, the Atlanta BeltLine.

**3:00 PM - Stephen Mainzer** (Stuckeman School at Pennsylvania State University)

*“Community and Landscape Driven Pro-Environmental Behavior: Preliminary Findings of Household Energy Consumption in Two Rural Towns”*

This talk presents the preliminary findings of a dissertation study that explores relationships across interactive behavioral, community, and landscape theoretical fields. The study seeks to comprehensively describe how environmental and energy values, community engagement, and social factors influence household energy consumption in two rural Pennsylvanian towns.

**3:30 PM - Ana Karinna Hidalgo** (University of Calgary)

*“Fascinating Urban Streets: Psychological Restoration in Winter Cities”*

Winter landscapes offer a fascinating set of textures and colours that have been underutilized and even hidden from the public realm. Low temperatures and the reduced sun exposure also characterize a winter city and may affect the use of outdoor spaces. Streets, as the main public space, are aimed at providing character to cities. The urban elements that create the street atmosphere should be conceived, designed and built harmonically characterizing a place. Winter cities are to be shaped differently with respect to its natural features in order to provide psychological benefits. Urban design, environmental psychology and biophilia provide insights for the development of mentally healthy spaces. The attention restoration theory in psychology proposes that fascination is an important step for the mental restoration process. This fascination can be obtained from biophilic elements such as native vegetation and sunlight. This presentation proposes urban design principles for restorative winter streets based upon evidence showing the effect of brightness and winter vegetation on psychological health. These results based on a literature review and experimental evidence from the research that I

am conducting can inform public urban policies for the design of healthy winter cities.

**4:00 PM – Carrie Morrison** (University of Buffalo)

*“Investigating Home as a Safe Haven”*

We tested whether, like social attachments, places such as one’s home are important to people because they can provide a distress-buffering & ‘safe haven’, using a sample of college freshmen (N=228, 48% female). As predicted, when socially excluded, those primed with their home, versus classroom, reported lower felt ostracism ( $\beta = -0.98$ ,  $p = .023$ ). However, when socially excluded, and primed with one’s home, participants with higher home attachment tended to report greater anxiety ( $\beta = -0.90$ ,  $p = .004$ ). Results are interpreted in terms of access to one’s home, in that many participants in our sample lived far away from the place they considered to be their home. Thus, although more highly home attached persons may have had a greater desire to return to their homes for comfort following social exclusion, they were unable to do so, and in turn, experienced greater anxiety than those less attached to their homes.

Symposium 7: Novel Methods, CLA 1.302B

**3:30 PM - Colin Ellard** (University of Waterloo), Vedran Dzebic, Hanna Negami, Emily Grant, Robin Mazumder, Adam Francey

*“Field Investigations of the relationship between place and psychological state using mobile sensor technology”*

Field investigations of the effect of a built setting on psychological state can provide invaluable information about the effect of architecture on cognitive and emotional state. We have developed a toolkit using specially programmed mobile phones and sensor technology that permits rapid assessment of psychological and physiological responses to place. Participants in our experiments are led on curated walks while prompted to answer self-assessment questions, complete cognitive tests, and are monitored for physiological arousal and some simple indices of brain activity. Findings from experiments conducted in five different cities have shown a strong dependence of mental state on façade design and landscape architecture. Participants not only preferred higher complexity facades, but such designs also showed higher affective states and physiological arousal. Measures of eye movements also suggested that higher complexity locations elicited increased cognitive processing. Locations rich in greenspace showed both high affect and low arousal, but impeded performance on a test of sustained attention. Collectively, these findings suggest that our methodology can provide a useful, rapidly deployed methodology for assessing the psychological impact of architectural designs.

**4:00 PM - Ruthan Lewis, Kriss Kennedy** (NASA), L. Toups, R. Howard, D. Smitherman National Aeronautics and Space Administration; A. Whitmire, Wyle Laboratories; A. S. Howe, Jet Propulsion Laboratory

*“Architectural and Behavioral Systems Design Methodology and Analysis for Optimal Habitation in a Volume-Limited Spacecraft for Long Duration Flights”*

As our human spaceflight missions change as we reach towards Mars, the risk of an adverse behavioral outcome increases, and requirements for crew health, safety, and performance, and the internal architecture, will need to change to accommodate unprecedented mission demands. Evidence shows that architectural arrangement and habitability elements impact behavior. Net habitable volume is the volume available to the crew after accounting for elements that decrease the functional volume of the spacecraft. Determination of minimum acceptable net habitable volume and associated architectural design elements, as mission duration and environment varies, is key to

enabling, maintaining, and/or enhancing human performance and psychological and behavioral health. Current NASA efforts to derive minimum acceptable net habitable volumes and study the interaction of covariates and stressors, such as sensory stimulation, communication, autonomy, and privacy, and application to internal architecture design layouts, attributes, and use of advanced accommodations will be presented. Furthermore, implications of crew adaptation to available volume as they transfer from Earth accommodations, to deep space travel, to planetary surface habitats, and return, will be discussed.

**4:30 PM - Giyoung Park** (HKS Architects), Gary Evans

*“Eating (alone) with Facebook: The influence of physical, social, and ambient environments in social settings”*

Ubiquitous communication technologies—such as mobile phones and the Internet, termed screens in this paper—enable social interaction beyond physical co-location. However, the effects of screen use in social settings are not fully understood. Furthermore, few studies have investigated the effects of context, the surrounding physical and social environments, on online-offline communication dynamics. This study examines the influences of contextual factors on screen use in college dining halls. Employing sequential mixed methods, an exploratory qualitative phase included focus groups, interviews, anonymous Facebook posts and unstructured observations; then, field observations followed. Screen use decreased with group size up to six persons then increased, and face-to-face interaction revealed the opposite pattern. Furthermore, physical attributes, social and ambient environments interacted with each other on in-person interaction and screen use. Corner location, for example, was associated with greater in-person interaction among group diners and with solitary diners’ greater screen use.

Symposium 8: Invited Panel Discussion on Converting Knowledge into Social Impact, *CLA 1.302E*

**3:30 PM - Andrew Brown** (Van Alen Institute), moderator; **Jennifer Roe** via live video conference (Center for Design and Health, University of Virginia); **Matt Dugan** (Long Term Planning for the City of Austin); **Lourdes Rodriguez** (Center for Place-Based Initiatives)

Panel Discussion on 1) Achieving social impact often requires breaking out of our silos and actively searching for problems to address and novel, unexpected partnerships, and 2) Some ideas/tips for navigating the "breaking out" process and collaborating beyond one's specialization. Research into the influence of the built environment on wellbeing has yielded exciting and promising insights. Increasingly sophisticated, innovative methodologies and tools have enabled researchers to analyze an expanding array of characteristics related to individuals and their environments. But as techniques and technologies become more complex, communicating the value, meaning, and potential of resulting knowledge can prove a challenge. How might researchers investigating psychology, wellbeing, and the design of places engage relevant stakeholders - designers, government officials, the general public - to ensure their work has impact? What benefits and challenges await researchers who introduce this consideration into the research process? Referencing Van Alen Institute’s ongoing research initiatives into urban design and wellbeing, we will explore issues relevant to converting knowledge into impact in a lively roundtable discussion. Researchers currently working on projects that combine psychophysiological methods with strong elements of public engagement will lead participants in conversation. Participants are encouraged to share experiences from their work, promising new developments, and any challenges they may be facing with engagement. We hope that discussing critical challenges in research and public engagement can empower teams to make their work more accessible and increase the potential for lasting social impact.

## Poster Presentations

**Amir Assadi**, Hasti Mirkia, Mark S.C. Nelson, **Yilin Wang**, Qianhui Wan

*“Modeling Perception of Geometry and Motion in Interior Spaces”*

Architecture brings together diverse elements to enhance the observer’s measure of esthetics and the convenience of functionality. Architects often conceptualize synthesis of design elements to invoke the observer’s sense of harmony and positive affect. How does an observer’s brain respond to harmony of design in interior spaces? One implicit consideration by architects is the role of guided visual attention by observers while navigating indoors. Prior visual experience of natural scenes provides the perceptual basis for Gestalt of design elements. In contrast, Gestalt of organization in design varies according to the architect’s decision. We outline a quantitative theory to measure the success in utilizing the observer’s psychological factors to achieve the desired positive affect. Our objective is to provide a unified framework for modeling perception of geometry and motion in interior spaces. Ultimately, our model integrates affective and cognitive aspects of human vision in the context of anthropocentric interior design. The affective criteria are derived from contemporary theories of interior design. Our contribution is to demonstrate that the neural computations in an observer’s eye movement could be used to elucidate harmony in perception of form, space and motion, thus a measure of goodness of interior design. Through mathematical modeling, we argue the plausibility of the relevant hypotheses.

**Shireen Kanakri**

*“Links between Classroom Acoustics and Repetitive Behaviors in Preschool Children with Autism: An Observational Study”*

The objective of the present study is to explore the impact of acoustical design on children with autism in school classrooms. Empirical research on this topic will provide information on how interior space features and spatial environment characteristics can be used to support the learning and developmental needs of children with autism. Specifically, the connection between repetitive behaviors and ambient noise levels in school classroom environments was observed in four classrooms. The occurrence of repetitive motor movements, repetitive speech, ear covering, hitting, loud vocalizations, blinking, and verbally complaining in relation to decibel levels were analyzed using Noldus Observer XT software. As hypothesized, a correlation between noise levels and frequency of target behaviors was found; that is, as decibel levels increased, several of the observed behaviors occurred with greater frequency. Further empirical testing is necessary to test a causal relationship between increased ambient noise levels and autism-related behaviors, and sensory discomfort as a mediator of that relationship. Findings are applied to the development of classroom design guidelines.

**Steven Bingler**

*“Common Edge Collaborative”*

In February 2017 a website: <http://commonedge.org/> was launched to explore ways to reconnect architecture and design with the public that it&rsquo;s meant to serve. In only eight months the site has featured more than 80 essays and attracted more than 80,000 unique visits. We are searching for a community of engaged writers, researchers, designers, public servants, and activist citizens who are committed to creating designs that manifest the highest aspirations of a democratic society.

# Notes