

ARCHITECTURAL SCIENCE REVIEW



From the editor ...

Welcome to this newsletter. This has been an intensive period rolling on from the beginning of 2019. We received a number of expressions of interest for Special Editions for the journal to be featured in 2020. This includes papers from the Architectural Science Association Conference in Melbourne last year and from the Passive Low Energy Conference, held in Hong Kong.

I would like to thank the team from School of Property, Construction and Project Management, RMIT University; Associate Prof Priya Rajagopalan, Director, Sustainable Building Innovation Lab. Dr Mary Myla Andamon, Senior Lecturer, also from Sustainable Building Innovation Lab (SBi Lab) for bringing this together. The Special Edition comes from the conference theme, 'Engaging Architectural Science – Meeting the challenges of higher density.'

Special thanks also for the PLEA team are from The Chinese University of Hong Kong, and Professor K.F. Fong and Dr. K.K.L. Lau, with papers from the conference on 'Smart and Healthy within the 2-degree Limit.'

A call for papers will be forthcoming Special Edition from an American and Australian team into Cognition and Neuroscience in Architecture. I would like to thank David Wadley for bring this to my attention and springs from his Special Edition a number of years ago. Thanks to Justin B. Hollander (Tufts University), Jonathan D. Ericson (Bentley University), and David Wadley (University of Queensland) who are guest editors for this Special Edition.

We have published one Edition recently, called 'Conversations in Architectural Science.' It features a diverse range of topics, which utilise scientific process and methods, NEWSLETTER

SECOND QUARTER 2019 Volume 5 No 2 *Cite score

A recipient of the 2011 University of Virginia

Fellowship, Marcu also taught at the American

University of Sharjah. In 2015, Mara co-chaired the

Annual ACADIA Conference in Cincinnati. She

also co-curated the "Computational Ecologies"

Exhibit at the Reed Gallery in Cincinnati. Marcu

joined the ACADIA Board of Directors and

the IJAC Editorial Board in 2016 and 2017,

Means, Methods, Machines and Making in Architecture

Guest Editors: Mike Christenson, Andrew John Wit, Mara Marcu, David Jason Gerber and Wassim Jabi



A s s o c i a t e Professor at the University of Cincinnati's School of Architecture and Interior Design (SAID). She coestablished the Architectural Robotics

Lab at SAID. Marcu graduated magna cum laude from the University of Houston with a Bachelor in Architecture, and in 2009 she received her Master in Architecture from Harvard GSD.

Marcu was awarded two international scholarships to attend the 2005 Design/Build Ghost Lab with Brian MacKay-Lyons in Nova Scotia-Canada, where she helped build the Shobac Cottages, and the 2010 Master Class in Sydney-Australia with Glenn Murcutt.

Her research work has been published and exhibited widely. Most recently, a project expanding on augmented reality was displayed at the "Time Space Existence" show at Palazzo Bembo, organized with the occasion of the 2018 Venice Biennale. Currently – through her private practice, MMXIII LLC – Marcu works to document and reinterpret late Eastern European Modernism. She is the editor of Echos, published with Actar, and awarded Top 50 Books and Covers in 2018 by the American Institute of Graphic Arts.



respectively.

Dr. Wassim interests are at the intersection of parametric design, the representation of space, building p e r f o r m a n c e simulation, and robotic fabrication in architecture.

During the period 1996 to 2008, among other academic activities, Dr. Jabi led the Association for Computer-Aided Design in Architecture (ACADIA), secured a \$250,000 National Science Foundation grant to study design creativity, and taught at various universities before moving to the UK in 2008. He is currently a Reader (tenured Associate Professor) at the Welsh School of Architecture, Cardiff University, where he leads the digital design area. Dr. Jabi has published widely on topics ranging from parametric and

Continued on page 2 ...

*ASR and Journal Metrics

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Taylor & Francis ASR website (http://www.tandfonline.com/tasr) also gives the number of reads and citations for each paper, as well as information on 'most read' and 'most cited papers'.

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demonstrating the range of research issues and new discussions about the nature of architectural science.

A number of feature papers have been selected. Called 'Biophilia and Salutogenesis as restorative design approaches in healthcare architecture,' authors Mohamed S. Abdelaal and Veronica Soebarto explore the application of two concepts concerning improvements in the human condition, that of Biophilia and Salutogenesis. The second 'Cognitive and linguistic differences in architectural design' by Ju Hyun Lee, Ning Gu and Michael J. Ostwald. Readers of this paper would be interested in the importance of linguistic systems and the way they shape the discussion and development of ideas in design.

Finally I would like to welcome new Associate Editors to ASR.

Professor Justin B. Hollander, (Cognition and Neuroscience in Architecture) Tufts University, USA,

Professor Ning Gu (Design Computing and Cognition), University of South Australia, Australia

Dr Upendra Rajapaksha, (Low Energy Architecture) University of Moratuwa, Sri Lanka.

Conference Index

ANZAScA Conference:

Revisiting the Role of Architecture for 'Surviving' Development 28th - 30th November 2019 Indian Institute of Technology, Roorkee, India www.asa2019.com

The 5th International Conference on Architecture, Materials and Construction (ICAMC 2019) 2nd-4th December2019 Lisbon, Portugal www.icamc.org/

Experiential Design -Rethinking relations between people, objects and environments 16th January 2019 Tallahassee, **USA** http://architecturemps.com/florida/

Plea 2020 September 2020 A Coruña, **Spain** www.plea-arch.org/index.php/next-pleaconference-2020-spain/

Means, Methods, Machines and Making in Architecture

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generative design to the role of light in architecture and building performance simulation. In 2013, Dr. labi wrote and published a book . titled Parametric Design for Architecture King (Laurence

David Jason Gerber

Publishing, London). In the same year, Dr. Jabi secured a £70,000 (\$100,000 USD) grant to purchase a large 6-axis high accuracy industrial robot to innovative investigate digital fabrication processes. In 2016, Dr. Jabi secured a £300,000 (\$420,000 USD) grant from the Leverhulme Trust to develop a conceptual framework for the hierarchical

spatial representation of buildings. In 2017, he secured a £73,000 EPSRC grant to research robotic digital fabrication of Cob structures.

Dr. David Jason Gerber holds a joint appointment at USC's Viterbi School of Engineering and the USC School of Architecture as an Associate Professor of Civil and Environmental Engineering Practice and of Architecture. Dr. Gerber is the program Director for the Civil Engineering Building Science undergraduate program and teaches in both the Viterbi School of Engineering and the School of Architecture.

His professional experience includes work in the United States, Europe, India and Asia for Zaha Hadid Architects in London, England; for Gehry Technologies in Los Angeles; for Moshe Safdie Architects in Massachusetts; The Steinberg Group Architects in California; and for Arup as the Global Research Manager. Dr. Gerber's research is focused on the development of innovative systems, tools, methods for design of the built environment. He currently advises and co-advises PhD students from Architecture and Engineering on topics integrating computer science, robotics, and engineering with architecture. received his undergraduate Gerber architectural education at the University of California Berkeley (Bachelor of Arts in Architecture, 1996). He completed his first professional degree at the Design Research Laboratory of the Architectural Association in London (Master of Architecture, 2000), his post professional research degree (Master of Design Studies, 2003) and his Doctoral studies (Doctor of Design, June 2007) at the Harvard University Graduate School of Design.

ndrew John Wit is a co-founder of the Ainterdisciplinary research group WITO*, Laboratory for Intelligent Environments, a coeditor of the recent book Towards a Robotic Architecture with Mahesh Daas, and Assistant Professor of Digital Practice within Temple



Andrew John Wit

Mike Christenson

University's Division of Architecture and Environmental where Design, his work focuses on novel building systems generated through the integration of light-weight digital tools/

composites, fabrication + robotics.Wit serves on the board of directors for the Association for Computer Aided Design in Architecture (ACADIA), is an elected editor for the International Journal of Architectural Computing (IJAC), served as Technical Co-Chair for the 2018 ACADIA conference in Mexico City, and is an associate

editor for the Construction Robotics Journal. Wit's projects and avant-garde research have been recognized through awards, research/ production grants, and sponsorships. His widely-published research questions current methods of building and material systems while reimagining built structures capable of being easily robotically or hand fabricated in factories, on-site or in unknown environments. Professionally, Wit has practiced in renowned offices such as Atelier Bow-Wow in Tokyo, Poteet Architects in San Antonio, TDStudio in Tokyo, and with the Pritzker prize winning architect Toyo Ito also in Tokyo. Wit earned a bachelor's in architecture from the University of Texas at San Antonio and a master's in architecture from MIT.

ike Christenson, AIA, is Professor of Architecture and Director of Graduate Studies at the University of Minnesota's School of Architecture. A registered architect and the author of Theories and Practices of Architectural Representation (Routledge), Christenson is a longtime member of the Association for Computer-Aided Design in Architecture (ACADIA) and an Associate Editor for Architectural Computing for Architectural Science Review.

He has published extensively in the areas of architectural representation, design technology, and the production and dissemination of architectural knowledge. Christenson's professional work includes experience at Minneapolis-based Alliiance on internationally-collaborative teams with the offices of Jean Nouvel and Cesar Pelli. Together with Malini Srivastava, he is a Principal Architect in the award-winning architectural firm Design and Energy Laboratory, LLC. Christenson's ongoing research in representation, and his experience in the professional practice of architecture, continually inform his teaching in areas of design fundamentals, digital technologies, and comprehensive design.



ASR 62.3 Featured paper Paper title: Biophilia & Salutogenesis as restorative design approaches in healthcare architecture



Care and a Connection to Nature

During the past decade, the notion of the 'therapeutic' environment became more accepted; it typically promotes daylight, views, connection to nature, and the inclusion of visual and performing art. This environment could be either indoor, or outdoor spaces. Hence, this study will focus on two nature-related design approaches in the healthcare design arena: salutogenic and biophilic design.

The central hypothesis addressed in this paper is that hospital design can reshape the care setting and influence the relationship between the hospital, as a building, and its users, the surrounding community and the natural world. The authors of this article argue that this can be achieved by integrating salutogenic and biophilic design principles into our hospitals to create a 'restorative' environment, leveraging the association between humans and nature, and surpassing the simple goal of the standard green architecture of



Authors: Veronica Soebarto and Shokry Abdelaal

"This study also investigates whether nature-related design approaches can overcome the crisis of 'modern' hospitals."

lowering the environmental impact of buildings.

Based on a comprehensive literature review, the authors proposed an initial design framework for the design of 'restorative' healthcare

facilities based on principles of salutogenic and biophilic design. The applicability of the framework has been tested in analysing the design of the Royal Children's Hospital (RCH) in Melbourne, considered to be a model of a 'restorative' hospital that connects its users to nature in various ways. The design premises of RCH are used to further inform the framework. This study also investigates whether nature-related design approaches can overcome the crisis of 'modern' hospitals. These two foci form the basis for the new proposed framework for restorative healthcare environmental design (RHED).

ASR 62.3 Featured paper 2

Paper title:

Cognitive and linguistic differences in architectural design



Authors: Ning Gu (left), Ju Hyun Lee (centre), Michael J. Ostwald (right).

Language in Design and Challenges Faced by International Students

Despite the importance of this topic, little research deals with multi-cultural characteristics in design and communication. Thus, a broad goal of research is to determine how different cultural and linguistic backgrounds shape design. In this context, this paper investigates the cognitive design processes of three groups of architectural designers from different cultural and linguistic backgrounds.

Past research into the role of language in design has studied both design studios and the critique system, which are at the core of education in the creative disciplines. The challenges faced by international students in the creative disciplines occur not only because the studio environment and associated assessment methods are so reliant on language skills, but because language, as a system, is a reflection of the way we think and of our sociocultural values, both of which are central to the process of design.

At the core of the research is a triplecoding system (design cognition, design information and spatial language) for protocol analysis, which formally captures both cognitive and linguistic characteristics in

"...a broad goal of research is to determine how different cultural and linguistic backgrounds shape design."

architectural design. Design experiments were conducted with 23 architectural designers drawn from three culturally and linguistically different groups: native English speakers, from Asian countries for which English is an official or common language, from Asian countries for which English is not an official language. The results of the experiment demonstrate the effectiveness of the coding system for facilitating the exploration of design cognition and its relationship to spatial language. The comparative analysis confirms that cognitive allocation is related to the production of design information and spatial language. It also indicates that there are observable differences in design cognition, design information, and spatial language among Australian and Asian designers. This multi-focused approach contributes to advancing fundamental knowledge about the relationship between design and language.



Figure I: Three design strategies: textual-goal forwarding strategy (left), graphical-goal forwarding strategy (centre), and drawing reflection (right).

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Books



Jean Prouvé, Architect for Better Days Authors: LUMA Foundation

Publisher: Phaidon Press (29 January, 2018) First Edition © 2017 Phaidon Press Limited Foreword: Maja Hoffmann and Mathieu Humery

Essays by Philippe Trétiack and Mark Wigley Review by **Diego Arroyo**

rchitect for better days" is a book based on the exhibition held at Parc des Ateliers, Luma Foundation in Arles, France from 21 October, 2017 to 15 April, 2018, based on a collection belonging to Patrick Seguin Gallery. The exhibition and publication is on twelve demountable structures most of them houses, two schools and a gas filling station, which were completely assembled at the premises of the foundation.

The book is structured like a mirror, a promenade narrative going onwards from a foreword to contemporary images of the exhibition, followed by an essay to reach the core of the book, a dedicated study to each work. Then it goes backwards with a second essay, again contemporary images and finishes with a chronology. Despite this straightforward structure, each part is self-concluding therefore could be read starting at any part.

The attention grabbing title "Architecture for better days", is taken from a particular moment in Prouve's life. Philippe Trétiack essay uses the metaphor of "contortions" -like folded metal to describe the personality and paradoxical historic facts Prouvé went through his life, abundant in discredits and hard financial times. After being set apart from his workshop, the "house for better days" prototype achieved a culminate point in terms of design, meeting all requirements related to budget, brief and construction logistics. Having gathered the press through Abbe Pierre, better days seemed to have arrived at last for Prouvé, his lifetime goal of producing industrialised houses was then feasible. Nevertheless, history turned in a different direction. The story is told from

adversity, for anyone who is not acquainted with Prouvé, it is definitely an attractive way of approaching him and his work.

The contemporary exhibition images are in general two-page wide format and no indentation. They strictly show the prototypes, no furniture displayed in any of them, each part of the kits could be clearly identified. The images are inedit, high quality, either on full views or carefully selected details showing the patina of aged materials. All were taken from a visitor point of view, but for a general aerial view as the end of the promenade route, enhancing the relationship with the exhibition.

The core-dedicated to the twelve structures is chronologically organised. A brief description plus historic facts is included on each project, followed by photographs, drawings, newspaper articles and brochures. An assembly sequence is considered for each project, supporting the editors' aim on revisiting the functional side of Prouvé's work.

The material comes from originals, is well organised and allows to understand how projects are related to one another and how they evolved in terms of size, materials and also details. It is not completely clear if this material was deployed at the exhibition or only included in the book. Despite the coverage of each project, schemes comparing one to another, e.g. page 169 in Sulzer Highlights book(1), would have been desirable for a more comprehensive and graphic comparison.

The second essay by Professor and Dean Emeritus from Columbia University, Mark Wigley builds up a very interesting argument on Prouve's work. The following quote gives a glance on how he approaches it.

"The person supposedly responsible for details is secretly responsible for the overall concept and aesthetic effect". The exhibition shows a clear interdependence in between the components of the prototypes. Wigley not only identifies this condition in each structure, but also in Prouve's entire work. A "single project with many variations" as he mentions in an interview at LUMA(2). He interlaces different features of Prouve's signature design unveiling the thoughts that shaped the prototypes. The idea of a lowflying architecture comes from his fascination with aircraft, industrialised manufacturing and methods of quick assembly for these nomadic lightweight structures. The design process understood as collaborative work carried out in the workshop rather than on the drawing board, focused on details and material optimisation. To exemplify this continuity in Prouvé's entire body of work, the Maison du Peuple building is considered as "an incubator" of the ideas applied in the demountable houses.

A final layer in Wigley's plot is related to Trétiack's essay's. Prouvé rejected credit and the idea of being considered an architect throughout his life, driven by social welfare and collaborative work.

All in all, the book has been carefully put together with an interesting sequence. All parts are tied up, the selection of demountable structures and essays, especially the second one, allows to understand the strong coherence in Prouvé's work. Chronology at the end fits perfectly to contextualize each project. Going over assembly sequences either at LUMA and Seguin websites is recommended (2,3). If looking for more detail, dedicated books to each project are available by Seguin Gallery publications.

(1)2002, Sulzer, P. Jean Prouvé Highlights: 1917 - 1944, Birkhaüser, Basel, Switzerland. (2)https://www.luma-arles.org/en/luma/home# (3)https://www.patrickseguin.com/fr/designers/ jean-prouve-architecte/videos/



Figure 1: Advertising brochure for Ateliers Jean Prouvé.Studal, Paris, c. 1950-1

Call for Papers: "Cognition and Neuroscience in Architecture"

in Architectural Science Review

Special Issue Editors:

Justin B. Hollander (Tufts University), Jonathan D. Ericson (Bentley University), and David Wadley (University of Queensland)

Deadline for Abstracts: I September 2019

Send to: Justin.Hollander@tufts.edu

Contributions are sought for consideration in a Special Issue of Architectural Science Review that focuses on the theme of Cognition and Neuroscience in Architecture.

While the environmental psychology literature has studied questions of human cognition and perception in the design of buildings and places for decades, there has been an explosion of research in cognition and neuroscience in recent years. This new knowledge has drastically changed scientists' understanding of how people experience places around them, yet few of these findings have been employed or expanded upon by architectural scholars in their own research. This Special Issue seeks to collect papers that do just that, drawing on the latest cognitive and neuroscience knowledge and methods to understand and improve the practice of architecture and planning.



Langert Lange