From the editor ...

Welcome to the second quarter of this year. I hope all are well and safe. From Australia the good news is we are normalising, but the bad news is we are isolated. Thoughts as to how to move forward in the post pandemic era is on every body's mind.

I would like to thank all for the support we have received to keep the journal moving forward through the last few months, in particular Peter Smith and Sue Macleod for their assistance.

We have initiated two new Special Editions. I would like to thank the guest editors for bringing these issues forward and highlighting the important research in these areas. These areas of knowledge are potential areas of growth for architectural science; the growth in interest in healthy and healthy buildings. I am reminded of the extremely highly read paper in ASR by Amirhosein Ghaffarianhoseini et al in 2018, called ‘Sick building syndrome: are we doing enough?’ This review of the literature points to issues in the diverse area of interdisciplinary research. Hence devoting more space in the journal to these issues has become a priority. Hence, we are focussing the first Special Edition on mental health issues and the second focussing the first Special Edition on environmental health.

Architectural Design Science for Dementia
Guest Editors: Jan Golembiewski and Kirsty Bennett
https://think.taylorandfrancis.com/special_issues/architectural-science-review/architectural-design-science-for-dementia?source=TLS&medium=cms&utm_campaign=JPD14075

Low Carbon Buildings and Neighbourhoods
https://think.taylorandfrancis.com/special_issues/low-carbon-buildings/

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Special Issue on Architectural Design Science for Dementia

This call for papers is for a special issue dedicated to an exploration of the most appropriate evidence-based and theoretical approaches to designing for people with dementia.

According to WHO figures, in 2010, there were 35.6 million people living with dementia, this number is expected to increase to 70m by 2030 and to 135m by 2050, with the greatest growth in the countries that can least afford it, so the search for evidence about how design affects people with dementia is an important endeavour. Environmental design for people with dementia can be highly problematic.

Dementia compounds the physical disabilities that already tend to worsen with age and poor health, posing an additional set of problems including loss of social networks, cognitive decline, memory loss and potentially challenging behaviours. While poor design exacerbates all of these problems, thoughtful design interventions have been shown to help. This Special Issue is an opportunity to share your insights and the evidence supporting them, into the following very important areas of design. We invite authors to submit research papers, reviews, discussions, case studies and conceptual articles on topics including, but not limited to:

- **Neuro-design:** How can we use design to maintain neural plasticity, happiness, independence and social networks?
- **Innovation:** What new ideas will help people with dementia remain in their own homes longer?
- **Policy:** What can architectural-science bring to (or turned to) policy to improve the physical environments of people with dementia (own homes, residential aged care, palliative care, acute settings, communities)?
- **Theory:** What appropriate theoretical models or principles that may be used to improve design for people with dementia? Are there any new models or ones that can be taken from other disciplines?
- **Typologies:** How do we handle various design typologies in the light of a growing global dementia problem – including cities and towns, own homes and aged care homes, gardens, public spaces, hospitals and care environments of people with dementia? What new ideas will help people with dementia remain in their own homes longer?

For more information about Architectural Science Review please visit: http://www.tandfonline.com/tasr;

We invite readers to suggest topics, submit book reviews or other material which may be of interest to our readers. We will consider advertising material. Please contact us at: sue.macleod8888@gmail.com

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First the paper called 'Passive house vs. passive design: sociotechnical issues in a practice-based design research project for a low-energy house,' by David Kroll, Sarah Breen Lovett, Carlos Jimenez-Becerrin, Peter Chinnall and Mathew Atchison. They look at the tension between traditional passive design in Australia and the Passive House Standard which originated in cool climate of Northern Europe. At the basis of this work is understanding the social and economic drives to the uptake of technology.

Second paper begins to encapsulate a similar theme. Called 'A Relational Approach to Understanding Inhabitants’ Engagement with Photovoltaic (PV) Technology in Homes,’ is by Ziyad Frances and Fionn Stevenson.

Third is by Davide Schaumann, Seonghyeon Moon, Muhammad Usman, Rhys Goldstein, Simon Breslav, Azam Khan, Petros Faloutsos, and Mubbasir Kapadia called 'JOIN: An Integrated Platform for Joint Simulation of Occupant-Building Interactions.' This paper has some interesting possibilities.

We have another book review reviewed by a colleague in Argentina for which we are very grateful; Felipe Durán brings insight into the book by Mary Guzowski on the 'The Art of Architectural Daylighting,' available from Laurence King Publishing Ltd, London. We have also gratefully sourced images from the publishers. This book is interesting as it aims to bring together the poetic and pragmatic aspects of daylighting so it is of relevance to both those that create and those that research buildings.

‘Light is an important, if complex, tool in architecture. Not only does it lend atmosphere, texture, and vibrancy, but it is increasingly essential in an age where technology alienates us from nature. In this excerpt from Mary Guzowski’s new book, The Art of Architectural Daylighting, she introduces the science and art of daylighting – and details six ways the masters approach the challenge. (https://www.archdaily.com/896229/how-the-masters-see-it-six-ways-to-design-with-light)

I have been looking into further ways authors can contribute to ASR. Please refer to Taylor and Frances author services which provide a range of additional ways for authors to increase the impact of their research and scholarly insight. Taylor and Frances have an expert collection which seems to be orientated to medical journals. However, it does seem possible to use some of these services to further enhance discourse. In the past ASR editors have supported ‘letters to the editor’ as a way of opening up more debate to the direction of research and to allow commentary on particular issues. See Taylor and Frances guidelines (https://authorservices.taylorandfrancis.com/letter-to-the-editor/) It is important they have a strong basis and rather make observations of and or comments on a particular work in the journal. This is an example found in ASR of a letter from 2001 on the design of Gothic cathedrals!

https://www.tandfonline.com/doi/abs/10.1080/00038628.2000.969691

It is perhaps time to utilise again the mode of scholarship in these interesting times.

Best wishes
Richard

These references are for consideration:

Aminhasein Ghaffarianhoseini, Husam AlWaeer, Hossein Omrany, Ali Ghaffarianhoseini, Chaham Alalouch, Derek Clements-Croome & John Tooke (2018) Sick building syndrome: are we doing enough? Architectural Science Review, 61:3, 99-121, DOI: 10.1080/00038628.2018.1461060

Dikhar SA, Letter to editor: its importance and drawbacks. Int J Community Med Public Health 2018;5:4634-6.

spaces (both indoor and outdoor), and hospitals and hospices?

• Retrofit:
Are there approaches that should be looked at or adopted when old facilities are being retrofitted for new paradigms?

• Case studies and pre-and post-occupancy evaluation:
Are there lessons from buildings that have undergone pre- and/or post-occupancy evaluation that should be reported?

• Environmental factors:
How can environmental factors be addressed, such as lighting, the acoustic environment, air-quality, olfactory environment etc?

• Cost effectiveness:
Are there designs that reduce capital and operational costs while maintaining, or even improving, outcomes for people with dementia?

• Cultural factors:
Are there principles of design that are common to all cultures? Are there principles of design that must be considered when designing for specific cultures?

Keywords
Aging, barrier free design, comfort, sensory perception, occupant behaviour

Papers Manuscript Submission Instructions:
Please check this link https://www.tandfonline.com/action/authorSubmission?show=instructions&journalCode=tasr20

Paper submission processes and dates:
Please send an Expression of Interest as soon as possible with the title, 350 word abstract and 500 word research synopsis to register for this Special Edition. Email to: Jan A. Golembiewski +61 424 936 263 jg@psychological.design

The ASR online portal (https://mc.manuscriptcentral.com/www.earthscan.co.uk/journal/ASRE) will be open for paper submissions on June 1, 2021.

The papers will be double blind reviewed by the Special Edition Technical committee and published online, once they are accepted. An official volume of this Special Issue will be published in late 2021.

Guest Editors:
Associate Professor Jan Golembiewski BFA BArch MArch PhD (Architect and mental health design specialist)
Kirsty Bennett BArch Hons Grad Dip Ger BD Hons, PhD Candidate (Architect, dementia design specialist, Research Fellow (Environmental Design, University of Wollongong)
Passive house vs. passive design: Sociotechnical issues in a practice-based design research project for a low-energy house

David Kroll, Sarah Breen Lovett, Carlos Jimenez-Bescos, Peter Chisnall and Mathew Aitchison

Introduction

Building performance simulation tools such as the Passive House Planning Package (PHPP) can be invaluable for improving energy-efficiency in housing design. However, achieving improved energy performance is also a sociotechnical issue, and how this is dealt with during the architectural design process seems less well studied. This collaborative design research project for a low-energy prefab house with an industry partner, a manufacturer of Structural Insulated Panels (SIP), is used as a case study to show that it is possible to achieve high energy performance while addressing specific sociotechnical concerns within an Australian volume homebuilding market. A key issue that emerged in this project was the perceived tension between passive design expectations in Australia and those promoted through the Passive House software tool.
A Relational Approach to Understanding Inhabitants’ Engagement with Photovoltaic (PV) Technology in Homes

Ziyad Frances and Fionn Stevenson

Introduction

Photovoltaic (PV) systems have been promoted in the UK housing sector as a key strategy for meeting carbon reduction commitments by offsetting the use of the non-renewable grid energy with renewable energy. However, inhabitants are not changing their routine energy consumption practices to take advantage of off-grid day time solar energy and, in some cases, even shifting practices away from the initial intentions underlying the technology. This means that necessary energy savings from new housing are not being achieved. In this paper, this is attributed to the variation in the provisioning of PV technology in new homes, as well as inhabitants’ engagement with and know-how of PV technologies, subject to explicit rules and policies. The key contribution of this paper is to reveal how PV technologies and inhabitants interact within different socio-technological home contexts drawing on Practice theory and ethnographic methods applied to four cases within a case study of housing development in England.

Ziyad Frances

I studied architectural engineering at the University of Technology/Baghdad (1990-1995) and I was awarded my MSc degree in Architectural Technology from the same university in 2000. After graduation, I joined the design team of the Scientific & Engineering Consulting Bureau of the University of Technology and participated in the design of various architectural competitions and design projects. In 2006, I established my own architectural practice in Iraq: UR for Architectural and Engineering Consultancy and became a design studio leader for the 5th year undergraduate students at the University of Koya School of Architecture and Construction – Kurdistan Region of Iraq. I have combined architectural practice with teaching for many years with a focus on creating synergies between architectural education and practice as well as building a strong network and collaboration with other engineering departments and building construction industry to develop multidisciplinary seminars and workshops for students. I believe that architecture should be seen as a piece of art sitting within its cultural and environmental contexts, beside the engineering and functional side, as Alvar Aalto said, “Building art is a synthesis of life in materialised form”. This is reflected in my practice and teaching works by focusing on a design concept rich of meaning, value and social needs, sense of humanity and integration with the urban environment and context.

My PhD study at the University of Sheffield School of Architecture has given me particular expertise in a socio-technical understanding of low carbon building design and technologies, community energy resilience and adaptation to climate change and renewable energy technology. My research interest focuses on improving energy efficiency in the housing sector and combines evidence-based design and occupancy feedback to enhance the relationship between the architectural design, environment and the occupants.

I’m persistently focused on bringing my research expertise and knowledge into teaching and learning environment focusing of the practical aspect of architecture, low carbon building and renewable technologies, taking the sociocultural meanings of end users into account.

My new research work has emphasis on developing co-production methodologies and community participation approaches for developing resilient communities in relation to energy demand management.

Fionn Stevenson

Professor Fionn Stevenson holds a Chair in Sustainable Design at the University of Sheffield School of Architecture, with the role of developing cross-faculty interdisciplinary research and teaching. She has previously held academic positions in five other UK Universities and was in practice for eight years as a qualified architect prior to this.

Her research and consultancy work focuses on developing innovative methods of building performance evaluation in relation to occupancy feedback in order to improve building design and develop new policy and practice in the built environment. She has held a visiting professorship at the University of British Columbia in Canada, and has worked on POE projects in the UK, Mexico and Brazil. She is particularly interested in the control interfaces between housing and people from a holistic perspective that includes resource use in its widest dimension.

She is co-director of the Royal Academy of Engineering’s Centre for Excellence in Sustainable Building Design (Sheffield) and a member of the ‘Design, Engagement and Practice’ research group. As a principal and co-applicant, she has obtained and managed £1.53 million in research funding to date, derived primarily from government agencies and the EU. She has 119 publications including her seminal book: Stevenson, F. (2019) Housing Fit For Purpose: performance, feedback and learning. RIBA Publishing, London pp.1-225.
JOIN: An Integrated Platform for Joint Simulation of Occupant-Building Interactions
Davide Schaumann, Seonghyeon Moon, Muhammad Usman, Rhys Goldstein, Simon Breslav, Azam Khan, Petros Faloutsos, and Mubbasir Kapadia

Introduction
Several approaches exist for simulating building properties (e.g., temperature, noise) and human occupancy (e.g., movement, actions) in an isolated fashion, providing limited ability to represent how environmental features affect human behaviour and vice versa. To systematically analyze building-occupant interactions, several requirements must be met, including the modelling of:
(a) interdependent multi-domain phenomena ranging from temperature and sound changes to human movement, (b) high-level occupant planning and low-level steering behaviours, and (c) environmental and occupancy phenomena that unfold at different time scales.

In this work, we propose an integrated platform that satisfies the aforementioned requirements thus enabling the joint simulation of building occupant interactions. The platform can be extended to support additional analyses of building-human interactions to enhance safety and productivity in the workplace, such as air flow, social distancing, contact tracing, and social interactions. In these uncertain times, human behaviour simulation holds promise to help designers, engineers, and workplace managers make more informed decisions to foster a safe workplace reactivation and reopening of the global economy.

Dr. Davide Schaumann
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About
Dr. Schaumann is the CEO and Founder of Spacemate. He is also currently enrolled as a Runway Startup Postdoc at the Jacobs Technion-Cornell Institute (JTCI) at Cornell Tech. Dr. Schaumann’s work is focused at the intersection of Architectural Design, Artificial Intelligence, and Human Behavior Science.

His mission is to optimize the design and day-to-day operations of complex workplaces to maximize space utilization, enhance operational efficiency, and improve people productivity and well-being. Dr. Schaumann received his Ph.D. in Architecture from the Technion Israel Institute of Technology and he holds B.A. and MSc degrees in Architecture from the Politecnico di Milano. His research on human behavior prediction and analytics led to the publication of more than 40 peer-reviewed scientific papers in leading conferences and journals.

Spacemate
Spacemate is a New York City-based Software Company that uses AI and human behavior predictive analytics to enhance operational efficiency and workforce well-being in offices, hospitals and warehouses.
The Art of Architectural Daylighting

Author: Mary Guzowski
Publisher: Laurence King Publishing Ltd, London
https://www.laurenceking.com/us/product/the-art-of-architectural-daylighting/

During the past decade there has been a tremendous growth in daylighting analysis methods, allowing designers to meet ever higher standards. But in relying too heavily on these methods, there is a risk of reducing daylighting design to a quantitative exercise, overlooking the qualitative, aesthetic, and experiential aspects of design.

www.laurenceking.com

Book review: Felipe Durán

The Art of Architectural Daylighting published by Lawrence King Publishing Ltd in 2018 presents natural lighting in both its material and phenomenological dimensions. The book analyses 6 themes of natural lighting - choreographic, atmospheric, sculpted, structural, material and integrated light - through 12 contemporary projects to “inform and inspire design practitioners, educators and students in their own daylighting explorations”.

Each lighting theme analysed the light concept of 2 case studies designed by architects, called by the author as “masters of light”, such as Tadao Ando, Renzo Piano and Cristián Undurraga. In each project, the work with natural lighting

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is presented both in its qualitative and quantitative dimensions. The qualitative dimension is expressed through the words of the architects themselves and by the photographs of their works. The quantitative dimension is analysed through data, structure and material schemes, bioclimatic schemes, and through the illuminance levels analysis (seasonal plans) and luminance analysis (walk-through perspective renderings and seasonal time lapse) as well as 3D studies shape of light studies.

One of the most interesting contributions of the book is the realization of natural lighting analysis in 8 of the 12 projects, since the remaining 4 projects the analyses were provided by the architects themselves. These analyses allow to standardize the information and facilitate the objective analysis of the work. The photographs, meanwhile, allow to express the “unspeakable”, the impact of natural lighting on the quality and particularity of the architectural spaces.

The book transits between art and science and meets the objective of informing and inspiring future architectural design processes considering the context in which it is located and how it will impact the natural lighting of the spaces. For a next edition it would be interesting to incorporate architectural details that allow us to understand how each of these works of art is constructed, with what materials and techniques, each of these work of art, the art of architectural daylighting.

**Reviewers biography**

Felipe Durán is a graduate architect by Pontificia Universidad Católica de Chile (2000) and holds a Master of Philosophy (MPhil) in Environmental Design in Architecture at the University of Cambridge (2006).

In 2008, he founded B-green Chile S.A. one of the first environmental consultants in Chile, dedicated to energy efficiency, IEQ advisory and implementation of LEED certification rating system, becoming LEED BD + C accredited professional in 2010. (https://b-green.cl/)

He has also taught in postgraduate courses at the P. Universidad Católica de Chile and Universidad del Desarrollo, both in Santiago, Chile.

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**Conference Index**

35th PLEA Conference
Sustainable Architecture and Urban Design Planning Post Carbon Cities
1-3 September 2020
A Coruña, SPAIN

Sustainable Architecture and Social Concerns Conference 2020
22-23 October 2020
Istanbul, TURKEY

ASA Conference (ANZAScA)
25-28 November 2020
Auckland, NEW ZEALAND

Architecture and Artificial Intelligence Conference
15-16 February 2021
Dubai, UNITED ARAB EMIRATES

Biomimetics and Biomimetic Architecture Conference
18-19 February 2021
Rome, ITALY

Performance-Based Building Design and Construction Conference
8-9 April 2021
Athens, GREECE

Architextiles: Textiles and Architecture Conference
15-16 July 2021
Bali, INDONESIA