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UIA 2014 DURBAN PROGRAMME PARTNERS AND GUEST EDITORS

The UIA 2014 Programme Partners have been instrumental in expanding the scope of the UIA 2014 Congress. These partnerships aim to use the event as a platform for furthering conversations around the Congress themes and pertinent built environment issues. They have therefore been initiated with a particular focus on enhancing and supporting the academic aspects of the Congress. These collaborations have been planned to fit seamlessly into the main UIA 2014 event and the synergy between the event and the Programme Partners has been crucial to the development of the Congress Programme and Content.

The Programme Partners have also acted as advisors to the General Reporter and editors for the various sections of the Abstract and Proceedings Books. The coordinators in these partnerships are listed as follows:

Angus Donald Campbell, Senior Lecturer in Industrial Design, Faculty of Arts, Design and Architecture, University of Johanesburg

Anna Rubbo, Research Scholar, Center for Sustainable Urban Development, Columbia University

Ariane Janse van Rensburg, Senior lecturer, School of Architecture and Planning, University of the Witwatersrand, Johannesburg

Geoff Abbott, Research Architect, Built Environment Unit, Council for Scientific and Industrial Research

Happy Ratna Santosa, Professor in Architecture, Head of the Laboratory of Housing and Human Settlements, Institut Teknologi Sepuluh Nopember, Indonesia

Jennifer Van Den Bussche, Project Manager, Global Studio and Director, Sticky Situations

Jia Beisi, Associate Professor of Architecture, University of Hong Kong

Martha Kohen, Professor, School of Architecture, University of Florida

Nancy Clark, Associate Professor and Head of Graduate Programs, School of Architecture, University of Florida

Naudé Malan, Senior Lecturer, Development Studies, University of Johanesburg Peta de Jager, Research Group Leader, Architectural Engineering Research Group, Built Environment Unit, Council for Scientific and Industrial Research

Rodney Harber, Principal, Rodney Harber and Associates

Shin Murakami, Professor, Department of Human Environment, Sugiyama Jogakuen University, Japan

Stephen Kendall, Emeritus Professor of Architecture, Ball State University

Tariq Toffa, Executive Manager, Social Housing Focus Trust (SHiFT) and Lecturer, Faculty of Arts, Design and Architecture, University of Johanesburg

Terence Fenn, Lecturer, Multimedia, Faculty of Arts, Design and Architecture, University of Johanesburg

Yusuf Patel, Executive Director, Basil Read and President, South African Planning Institute (SAPI)

UIA 2014 DURBAN SAIA-APPOINTED SCIENTIFIC COMMITTEE: CORE MEMBERS AND ADVISORS

Amira Osman, Associate Professor, Architecture, University of Johannesburg and UIA General Reporter is a National Research Foundation (NRF) rated researcher and SACAP-registered Professional Architect. As the UIA 2014 General Reporter, she heads the Scientific Committee which has a core team appointed by the South African Institute of Architects (SAIA). This core team have acted as advisors in the academic process:

Mokena Makeka, Director, Makeka Design Lab, Founder of The Museum of Design Innovation Leadership & Art, South Africa (MoDILA) and Adjunct Professor, GSAPP Columbia University New York and Resident Equity Scholar, School of Architecture and Planning, University of the Witwatersrand.

Hilton Judin, Architect and Curator, Cohen & Judin Architects and Adjunct Professor, School of Architecture & Planning, University of the Witwatersrand, Curator, blank_architecture apartheid and after.

Mphethi Morojele, Owner and Founder, MMA Design Studio, Johannesburg and Lecturer, University of Witwatersrand and Curator, South African exhibition, International Architecture Exhibition of the Venice Biennale and at the RIBA; past President of the Gauteng Institute of Architects.

UIA 2014 DURBAN GENERAL REPORTER-APPOINTED SCIENTIFIC COMMITTEE: MEMBERS AND EDITORS

The UIA 2014 Durban General Reporter has appointed three people to the UIA 2014 Scientific Committee, two of whom are the editors of the Scientific Committee publications:

Gerhard Bruyns is Assistant Professor of Environment and Interior Design, School of Design, Hong Kong Polytechnic University and Executive Team member of the International Forum on Urbanism (IFOU), Scientific Board Member of the African Studies Centre, Leiden and collaborator with CP, Arquitectura, Urbanismo, Investigacion. He was previously at the Faculty of Architecture, Delft University of Technology's [TU Delft].

Clinton Aigbavboa, Department of Construction Management and Quantity Surveying, University of Johannesburg, holds a masters' degree in Construction Management and a PhD degree in Engineering Management. He is a well published researcher. He is currently the editor of the Journal of Construction Project Management and Innovation.

UIA 2014 DURBAN SCIENTIFIC COMMITTEE

Ahmed Vawda, Andrew Makin, Bridget Horner, Eric Noir, Geci Karuri-Sebina, George Kunihiro (UIA Region IV), Janina Masojada, Jean Bosco Todjinou (UIA Region V), João, Belo Rodeia, Jonathan Edkins, Karel Bakker, Linda Mampuru, Luciano Lazzari (UIA Region I), Moleleki Frank Ledimo, Noeleen Murray, Phil Mashabane, Rodney Harber, Roger Schluntz (UIA Region III), Zeynep Ahunbay (UIA Region II)

UIA 2014 DURBAN ORGANISATION COMMITTEE

Hassan Asmal, Karen Eicker, Amira Osman, Peter du Trevou, Jan Ras, Trish Emmett, Nina Saunders, Obert Chakarisa, Fanuel Motsepe, Dhaneshwar Basdew, Jean Jacques Kotto, Victor Miguel.

UIA 2014 DURBAN SCIENTIFIC PROGRAMME SUPPORT

The UIA 2014 General Reporter was supported by Gill Slaughter, Kerry FIrmani (both from Turners Conferences) and Nomfundo Nxumalo, Nikita Andrews (both appointed assistants to the General Reporter). They were instrumental to the success of the process.

UIA 2014 DURBAN CONGRESS PROCEEDINGS

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DECLARATION

All the full papers published in this book were double-blind, peer-reviewed by the UIA 2014 Panel of Reviewers. This process entailed detailed reading of the abstracts, reporting of comments to authors, modification of abstracts by the authors, editing by the UIA 2014 Editors as well as the UIA 2014 Programme Partners. All full papers were copy edited. The authors of submitted abstracts (those that were accepted by the reviewers) were further invited to submit full papers for consideration for the UIA 2014 Durban Proceedings Book. It is only the full papers in the UIA 2014 Durban Congress Proceedings that have successfully been accepted through the two-tiered, double-blind, peer-reviewed process. It is important to read the section on Categories of Particpation at UIA 2014 Durban to better understand this process.

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A WORD FROM THE EDITORS

The response to the first and second calls for the UIA 2014 Scienitifc Paper Process was overwhelming. We received a total of 554 abstract submissions and, once we launched the call for full paper submissions based on the outcome of the abstract review process, we received 270 draft full papers. This means that we have completed a total of 1108 abstract reviews and 540 full paper reviews. This mammoth task would simply not have been possible without the commitment, professionalism and support of the UIA 2014 Panel of Reviewers, 87 academics and professionals, who volunteered their services to ensure the success of the process. We would like salute them!

We acknowledge the UIA 2014 Durban Programme Partners and the important role they have played in making sure that what we deliver is relevant and of a good quality. And we also acknowledge the financial support we have received from the South African Council for the Architectural Profession (SACAP).

The process we followed has guaranteed the academic quality of what is delivered at the Congress and what is published in the proceedings. All abstracts have been double blind, peer-reviewed. Authors of accepted abstracts were invited to submit full papers, which were also being double, blind, peer-reviewed. This is to comply with the requirements for subsidy and accreditation by the South African Department of Higher Education of South Africa. This process demands a rigorous peer review process by no less than two acknowledged experts in the field is to be followed for all abstracts and papers submitted.

In this book, we present you with the UIA 2014 DURBAN CONGRESS PROCEEDINGS. All included papers were double-blind, peer-reviewed. This process entailed detailed reading of the abstracts/ full papers, reporting of comments to authors, modification of abstracts/full papers by the authors, editing by the UIA 2014 Editors as well as the UIA 2014 Programme Partners. All full papers were copy edited. It is only the full papers in the UIA 2014 Durban Proceedings Book (digitally available) that have successfully been accepted through the complete two-tiered, double-blind, peer-reviewed process.

The proceedings book sections are based on the UIA 2014 Durban sub-themes of RESILIENCE, ECOLOGY and VALUES as well as the themes of the 9 Programme Partners. The authors selected the themes and Programme Partners as part of their submission process. The General Reporter, and her assistants, in consultation with the Editors and the Programme Partners may have made some adjustments to accommodate topics in their appropriate slots. However, the categories were mostly as the authors initially selected.

This book must be considered as a part of the whole set of UIA 2014 PUBLICATIONS, printed and digital.

We hope you find value and inspiration in what UIA 2014 Durban has to offer you.

UIA 2014 EDITORS Amira Osman, Gerhard Bruyns, Clinton Aigbavboa

INTRODUCTION THE UIA 2014 DURBAN CONGRESS PROCEEDINGS: HOW TO USE THIS BOOK

This Proceedings Book needs to be read in conjunction with the UIA 2014 Durban Programme Book, the UIA 2014 Durban Otherwhere Guide and the UIA 2014 Durban Exhibitor's Guide as well as the digital publications, the UIA 2014 Proceedings Book and the UIA 2014 International Student Competition Book.

The academic paper sessions are presented in parallel sessions at the Congress Venue, the Inkosi Albert Luthuli International Convention Centre (ICC) in Durban and the Congress activities will be delivered in 38 venues. This Convention Centre complex includes the Durban Exhibition Centre (DEC) and Walnut Road that separates it from the ICC and which will be closed during the event. Walnut Road will be "occupied" by students and various other programmes. It will also have a Mussallah (prayer space) for Muslim delegates, some traders from Warwick and other architectural and artist interventions. The Programme Book offers basic and important information for delegates to navigate their way through the programme and venues.

THE PEER REVIEW PROCESS

Because of the need to maintain and assure the quality of the conference proceedings, and to comply with the requirements for subsidy of the South African Department of Higher Education, a rigorous two-stage peer review process by no less than two acknowledged experts in the field was followed. In this context, each abstract received was twice blind reviewed in terms of:

- · Relevance to conference theme and objectives;
- Originality of material;
- Academic rigour;
- · Contribution to knowledge, and
- Research methodology

Authors whose abstracts were accepted after the stage one review process was completed were provided with anonymous reviewers' comments and requested to submit their full papers noting and addressing these comments. Evidence was required relative to the action taken by authors regarding the comments received. These resubmitted papers were twice blind reviewed again in terms of:

- Relevance to conference theme and objectives;
- Originality of material;
- Academic rigour;
- Contribution to knowledge;
- · Research methodology and robustness of analysis of findings;
- Empirical research findings, and
- · Critical current literature review.

Authors whose papers were accepted after this second review were provided with additional anonymous reviewers' comments and requested to submit their revised full papers. These final papers were only included in the conference presentation programme and the conference proceedings after evidence was provided that all comments were appropriately responded to, having been double peer-reviewed for publication. At no stage was any member of the Scientific and Technical Committee or the editor of the proceedings involved in the review process related to their own authored or co-authored papers.

The role of the editors was to ensure that the final papers incorporated the reviewers' comments and arrange the papers into the final sequence as captured on the Table of Contents, printed and digital documents. Of the 554 abstracts originally received, only 270 papers were accepted for inclusion in the proceedings, representing a rejection rate of 51%. To be eligible for inclusion these papers were required to receive a minimum score of 3 out of 5 allocated by the peer reviewers during the final review process. Where there were conflicts between the grades and comments by the 2 assigned reviewers, the General Reporter was assisted by the two Editors and made the final decision as to what got included in the abstract and in the proceedings books.

UIA 2014 CATEGORIES OF PARTICIPATION FOR AUTHORS AND PRESENTERS

There were various identified categories of participation for authors at UIA 2014 Durban. These are as follows:

- a) ABSTRACT PUBLICATION AND PRESENTATION. This group of participants were notified of acceptance of their abstracts. The abstract is published in the BOOK OF ABSTRACTS and a time slot is provided in the OFFICIAL CONGRESS PROGRAMME for presentation in a thematically relevant parallel scientific presentation stream. All author that failed to submit a full paper, but were the topic was considered relevant to the Congress theme, were automatically considered for this option based on the outcome of the abstract review process. Where a full paper was submitted, but not accepted for publication in the proceedings, the abstract was also automatically considered for this option.
- b) FULL PAPER PUBLICATION AND PRESENTATION. This group of participants submitted full papers for review and the papers will have been deemed competent for inclusion in both the BOOK OF ABSTRACTS as well as the CONGRESS PROCEEDINGS (digital publication only). The author, in this case, was also allocated a time slot in the OFFICIAL CONGRESS PROGRAMME.
- c) SPECIAL PRESENTATIONS. There will be a number of special sessions within specialised FOCUS AREAS. In some cases the authors/presenters will be advised by the UIA 2014 General Reporter to present within these special sessions. The requirements and publication options were discussed on a case-by-case basis. Some full papers were considered important and/ or significant but did not meet the requirements for the proceedings document. These are published in a special publication digitally available.

All submitted and published abstracts and papers had to adhere to a prescribed format provided through a document titled: UIA 2014 INSTRUCTIONS FOR AUTHORS.

UIA 2014 DURBAN PANEL OF REVIEWERS

Zeynep Ahunbay

Zeynep Ahunbay studied architecture at Istanbul Technical University (1965-1970). She is a professor at the Faculty of Architecture ITU since 1988; lecturing on conservation techniques for historic buildings and sites, traditional building types, reuse of historic buildings, conservation of World Heritage sites; conducts studios on conservation design. She has publications on the conservation of cultural heritage, Cultural Heritage of Turkey, Istanbul and Ottoman Architecture.

Karel Bakker

Prof Karel Bakker (PhD) is currently the head of Architecture at the University of Pretoria. He is involved in the pedagogy of Design, History of historic African Environments, Heritage in many formats of undergraduate and post graduate levels, as well as in the international arena. He has published widely and performed at many international academic events.

John Bello

I graduated from Ahmadu Bello University in 1979 with an MSc (Architecture) and obtained my practice license in 1982, with the registration nos F530. My practice is called Project Design Associate (PDA), registered in 1992. I have concentrated my practice on design of buildings and infrastructural facilities for higher education.

Jhono Bennett

Jhono Bennett obtained a Master's Degree in Architecture with Design distinction from the University of Pretoria, South Africa (2011). He completed his undergraduate education in Architecture at the University of Kwa-Zulu Natal with a supplemented semester abroad at the Carlton University, Ottawa, Canada. Jhono currently works at the University of Johannesburg as a part-time lecturer and Independent Researcher while managing the operations of 1:1 – Agency of Engagement

Roberto Bologna

Professor Roberto is Director of the master's degree in Architecture at the University of Florence. He has reviewed countless papers for the "International Journal of Resilience and the Built Environment and Disaster".

Ruzica Bozovic Stamenovic

Associate professor Ruzica Bozovic Stamenovic, Ph.D. is an award winning architect, researcher and educator concurrently teaching at University of Belgrade and National University of Singapore (2000-2012). She is also Faculty Fellow of Center for Health Systems and Design, Texas A&M University and lecturing internationally on health driven design. The theory of Human Ecology, health-space and their interconnectivity is at the core of her teaching and research interests.

Christina Breed

Ida Breed is registered as a Professional Landscape Architect (SACLAP, 2006). She has practiced in many spheres of landscape architecture in the past decade. Her research includes urban ethnography and urban ecology with focus on contextual environmental and cultural suitability in design applications.

Gerhard Bruyns

Gerhard Bruyns is Assistant Professor of Architecture and Post Graduate design instructor at the Faculty of Architecture, TU Delft. He holds a both design related PhD and MSc degrees from the Delft University of Technology. He has lectured at a number of Architecture Schools [Visiting Professor at DIA] and has acted as a jury member at various universities in South Africa, Chile, Asia and the United States.

Angus Donald Campbell

Angus Donald Campbell is a qualified industrial and product designer with over a decade of university lecturing, research and freelance design experience. His research and design interests focus on design and technology for sustainable development within the South African context and are evidenced through multiple publications, conference papers and postgraduate student supervision. His Masters in Industrial Design (2003) was focused on African style in product design and foregrounded his current trans disciplinary Doctorate in Development Studies exploring innovation and adaptation of technology by small-scale urban farmers in Johannesburg.

Marianne de Klerk

Marianne de Klerk is an architect and urban designer who has worked for seventeen years on a wide range of projects in South Africa, the United States, and Asia. She brings a multidisciplinary approach to her practice with projects ranging from regional and urban revitalisation initiatives to individual buildings and infrastructure orientated urban redevelopment strategies. Her designs endeavour to balance the development, restoration and protection of Sensitive environmental sites, brownfields and cultural landscapes.

Romanda Del Nord

Since 1991 he has been head of TESIS, an inter-university research center on systems and technologies for healthcare architecture, that gathers the University of Florence and of 'La Sapienza' University in Rome. He works with the Department of Education, University and Research to define standards and models used in determining the building needs for schools and universities. He was head of research for the project 'Design criteria for the humanization of hospital facilities', on behalf of the Department of Health

Chrisna Du Plessis

Chrisna du Plessis is Associate Professor at the Department of Construction Economics, University of Pretoria where she is currently leading a research programme on resilient and regenerative cities and lecturing on sustainable construction. She is also currently Theme Coordinator for the International Council on Research and Innovation (CIB) Priority Theme Sustainable Construction. Her research interests focus at both a theoretical and technological level on the principles and guiding frameworks for the practices of sustainable construction and human settlement development as informed by urban sustainability science.

Louis Du Plessis

Louis studied both undergraduate and postgraduate degrees in Architecture at the University of Kwa-Zulu Natal, where amongst other achievements; he received top honors in the post-graduate course of Ecological Resource Management. Subsequent to graduating with an M. Arch in 2008, Louis has been working in private practice in Durban for a firm focusing on community, social housing and governmental projects. While working in private practice, he has been lecturing architecture part time at his alma mater since 2009, focusing on the undergraduate design studio and History of Architecture.

Abbas Elmualim

Dr Elmualim is a senior lecturer and coordinates the work of the Sustainable Design and FM Informatics Research Group within the School in addition to the FM Research Group that he co-established six years ago conducting research in various socio-technical aspects of digital technology and sustainability within an FM context. Dr Elmualim research work has been widely published in various journals (30 papers) and has presented at various national and international conferences (more than 70 papers). His current research focuses on the development of integrative approaches to design, construction and facilities management with particular interest in sustainability and digital technologies viewed from a broad socio-technical systems perspective and seek to combine engineering research methodologies with those derived from the social sciences.

Fidelis Emuze

Fidelis is presently a Senior Lecturer in the Department of Built Environment at the Central University of Technology, Free State. His qualifications include a National Diploma in Civil Engineering, a Higher National Diploma in Civil Engineering, and an MSc in the Built Environment with specialisation in Construction Management as well as a PhD in Construction Management. Fidelis has published widely in Journals and presented papers at conferences in Africa, Europe, South America, Asia and Australasia.

Tiziana Ferrante

Architect, PhD and Professor of Architectural Technology of the "Sapienza" University of Rome, conducts teaching and research activities for the "Planning, Design, Architectural Technology" Department. Since 1991 has been carrying out studies, research and experimentation in the field of planning and design of healthcare and social inclusion facilities, subject of numerous papers and publications. Speaker at national and international conferences; consultant on institutional committees for the evaluation of projects, collaborated in the development of guidelines and technical standards.

Martin Fiset

Martin Fiset is an architect with over forty years of experience in health care facilities planning and design. He has worked as a consultant, design architect and project manager on numerous projects across Canada, the United States and abroad. Mr. Fiset holds a Bachelor of Architecture degree from the Université de Montréal and a Master of Architecture degree in Health Facilities Design from Texas A&M University

Avi Friedman

Dr. Avi Friedman received his Bachelor's degree in Architecture and Town Planning from the Israel Institute of Technology, his Master's Degree from McGill University, and his Doctorate from the University of Montréal. Avi is known for his housing innovation and in particular for the Grow Home and Next Home designs. He is the author of 14 books and was a syndicated columnist for the CanWest Chain of daily newspapers. In the year 2000 he was selected by Wallpaper magazine as 1 of 10 people from around the world "most likely to change the way we live."

Tony Fry

Tony Fry is a design theorist, award winning designer and Professor of Design Futures, Griffith University, Brisbane working in Australia and internationally. Tony is the author of ten books and is currently completing a book on 'The Future of Cities in the Age of a Changing Climate'. He is also director of sustainability consultancy Team D/E/S, was the founding director of the EcoDesign Foundation, Sydney (1991-2001) and as such worked for government and the private sector.

Rob Geraedts

Prof. Rob Geraedts is co-founder and member of the international CIB Working Group W104 Open Building Implementation since 1996 and Associate Professor of Design & Construction Management in the Faculty of Architecture at the Delft University of Technology, The Netherlands. His research field is Open Building: the flexibility or adaptability of the product (buildings), the flexibility of the process (design & construction), and the transformation of vacant buildings into new functions, to meet the continuously changing user demands.

Suzette Grace

Suzette Grace holds qualifications in architecture, business leadership, politics and philosophy. She's also taught architecture at UJ for 3 decades.

Rodney Harber

Professor Rodney Harber graduated from the University of Natal in 1965 and after five years in practice began teaching in the School of Architecture, Planning and Housing at the University of Natal (now University of Kwa Zulu Natal). He taught in all three disciplines during his thirty six years before retiring as Associate Professor. Rodney is a registered Urban and Regional Planner and Heritage Practitioner and heads a busy multi-disciplinary practice focusing on developmental work all along the eastern seaboard of KZN. Rodney runs a small bustling practice from home as an extension of his commitment to teaching, with students from South Africa, Malawi, Mauritius, U.S.A., U.K., Germany, Norway, Sweden and Denmark passing through at times.

Pieter Herthogs

He studies the influence of adaptable buildings and infrastructure on the evolution of urban neighbourhoods and sustainable urban projects. He is developing assessment methods, tools and design guidelines to complement his theoretical framework on urban scale adaptability. As a teaching assistant at the BruFace English Master in Architectural Engineering (VUB), Pieter Herthogs lectures on the design of transformable structures and parametric design, and advises master dissertation students.

Bridgette Horner

Bridget Horner is an architect and Director of Space Syntax South Africa; she is also a lecturer in the Architectural Post Graduate Programme at the University of Kwa-Zulu Natal. Bridget's expertise lies in evidence based analysis and strategic design advice empowering public and private agencies with the tools to evaluate project proposals and participate in the development of the design process.

Antje Ilberg

Antje Ilberg is an urban planner and architect with research, planning, and implementation experience at national, municipal, and grassroots levels in Sub-Saharan Africa and in the Near East. She has expert knowledge of the legal and administrative dimensions of physical planning and land management, and of informal urbanization in Africa. Since 2013, she has been with Ministry of Infrastructure, Rwanda. Urban Planning and Housing Development Expert and Adviser to Minister

Beisi Jia

He is the joint coordinator of W104-Open Building Implementation in International Council for Research and Innovation in Building and Construction (CIB). Besides design studio, he is teaching in courses History of Chinese Architecture and Housing in Urban development in his school. He is supervisor of MPhil and Ph.D. students. His students have won more than 30 national and international student design competition, including 1998/99 Dupont Benedictus Awards, and in exhibitions, such as UIA XXII World Congress of Architecture 2005.

Hilton Judin

Hilton Judin is an architect and curator working in Johannesburg. He developed the exhibition and research projects

[setting apart] and blank_____Architecture, apartheid and after. In practice as Cohen&Judin he worked on the Nelson Mandela Museum in Qunu and the Living Landscape in Clanwilliam.

Geci Karuri-Sebina

GECI KARURI-SEBINA joined the South African Cities Network in 2011 as Executive Manager. Ms. Sebina holds Masters degrees in Urban Planning and in Architecture & Urban Design, both from the University of California Los Angeles (UCLA). She has worked with numerous organizations including South Africa's Council for Scientific & Industrial Research (CSIR), Human Science Research Council (HSRC), and the Advanced Policy Institute of the then- UCLA School of Public Policy and Social Research in Los Angeles, California.

Tom Sanya

Tom Sanya is a Senior Lecturer in sustainable design at the University of Cape Town's School of Architecture, Planning and Geomatics. His main research area is building sustainability and contextuality. Using a transdisciplinary approach, he teamworks with different academics, practioners, government actors, civil society, small-and-medium scale enterprises and members of the general public in the search for and reflection upon (innovative) solutions for long term building sustainability and contextuality.

Emeritus Johan Silas

JOHAN SILAS, prof. (retired since 2006) born in Samarinda, in 1936. As one of the founder of the School of Architecture in Surabaya Indonesia (1965) and is still teaching for graduate and post graduate students. Awarded with among others The Aga Khan Award for Architecture (1986), Chevalier dansl'ordres des Arts et Lettres (1989), Matsushita Prize (1991), Satyalencana (from the government of Indonesia 1993), The Habitat Scroll of Honour (2005), etc.

Melinda Silverman

Melinda Silverman is an architect, urban designer and urban strategist interested in settlement issues in cities of "the global south". She has worked for city, provincial and national government in South Africa on urban issues including sustainable human settlements, informality, low income housing, and land management practices that impact on the absorption of the poor in urban areas. She currently teaches urban design and urban policy studies at the University of Johannesburg.

Preeti Onkar Singh

Academic brief: Graduation in Bachelors of Architecture, Masters in Urban Development and Planning and PhD in Architecture and planning. Professional Background: Consultant for various Architectural and Planning projects for last 16 years. Research background: Sustainable Architecture, Urban Renewal & Redevelopment and Quality of life.

Gerald Steyn

Gerald Steyn is Research Professor at the Department of Architecture of the Tshwane University of Technology. He holds BArch and MArch degrees from the University of the Free State and a PhD from the University of Pretoria.

Ken Stucke

Ken Stucke is a practicing architect registered with the South African Council for Architects. For more than twenty years, he has focused his architectural work on green architecture and sustainable development, and now practices full time in this idiom. Ken has been asked to be part of several expert critique panels and workshops, asked to review design proposals or establish project briefs.

Philippa Tumubweinee

Philippa Tumubweinee is a senior Lecturer at the Department of Architecture at the University of the Free State [UFS] South Africa, a co--Founder and Director of IZUBA INafrica and a Doctoral student at the University of the Free State, South Africa. She has also serving on the Board of Directors for: VEGA: School of Graphic Design and Adverting iMPAC: The Moving Images Festival and the 40 000 Bubbles Club After completing her M.Arch. Prof Degree in 2006 with a notable distinction in Construction, Philippa Tumubweinee was introduced to Academia while teaching at the dept. of Architecture, University of Pretoria as an assistant Studio Master in the First Year Studio from where she progressed on to join the dept. of Architecture, University of Johannesburg [UJ] South Africa.

Andre van Graan

Andre holds a PhD in architecture from the University of Cape Town and currently heads the architecture program at the Cape Peninsula University of Technology. He lectures in the History and Theory of design at undergraduate level as well as lecturing at post-graduate level in research methodologies and supervising masters and doctoral students. In addition to his academic work he is also the Immediate Past President of the Cape Institute for Architecture was well as serving on the National Board of the South African Institute of Architecture. He is a member of the South African branch of Docomomo, a past chairman of the Vernacular Architecture Society of South Africa and the convener of the Cape Institute for Architecture's Heritage Committee.

Robert van Kats

Robert van Kats (DASUDA /BKVV), chairman, architect, urban designerarchitect ing. Robert van Kats has studied architecture and urbanism at the Academy of Architecture Amsterdam. The office acts on the business, governmantal, NGO and private market both national and international with the a specific focus on the African market specialised in sustainable architecture, urban planning, master planning and building related energy concepts. BKVV follow an integral approach that leads to low energy and sustainable projects.

Christo Vosloo

Qualified with BArch degree from the University of Pretoria in 1981. Completed research based March degree from the University of Cape Town and MBA from Nelson Mandela Metropolitan University. In practice since 1983 and academia since 1984 (whilst practicing part time till 2006)

Macharia Waruingi

I am physician and healthcare executive presently holding various positions in healthcare business, academia and research. I am a Research Faculty Fellow of the Center for Health Systems & Design at the College of Architecture, Texas A&M University in College Station, Texas. I have extensive experience in advanced academic instruction in medicine, health administration and global health. I have expertise in design, development and implementation of world-class health delivery systems in the United States and frontier markets in Africa and Middle East.

David Week

Dr David Week is Executive Director of Assai Consult an international aid consultancy specialising in social infrastructure. For the first seven years of his career, David founded and co-managed a social enterprise in Papua New Guinea which developed an architecture that was modern extensions of traditional building knowledge. Since 2002, David has been an adviser to World Bank and AusAID funded large scale social infrastructure projects, including post disaster reconstruction projects in Aceh and Timor Leste.

Debbie Whelan

My architectural experience is focused on community development and heritage. I locally, I have been active in trying to promote the heritage of Edendale by instituting community projects intended to reserve earthen buildings constructed in the 1860's. I have written a number of publications on heritage related issues.

Eric Charles Wright

Eric is a practicing architect and lecturer. He coordinates the 3rd year architecture program at the University of Johannesburg and runs the 1st and 3rd year design studios. The philosophy and approach employed in teaching investigates the changing nature of Johannesburg as a city, landscape and people. In his practice, in partnership with Claudia Morgado, Boom Architects work explore these urban-land-people focused concepts with a critical underpinning – the relevance of contemporary architectural and urban paradigms

Carlos Zeballos

Peruvian architect, he got an MSc in Peru in urban environmental planning and another MSc in Argentina in sustainability. Subsequently he got PhD at Kyoto University, Japan in urban and landscape design. He worked for 5 years as a Post PhD Senior Researcher at the Research Institute for Humanity and Nature in Japan. Since 2013 he has launched a Laboratory of Urban and Landscape Design at the Far Eastern Federal University in Vladivostok, Russia

Peta de Jager

Peta de Jager is a registered professional architect with a masters' degree in applied ethics. She is currently research group leader in the building science and technology competence area for the built environment unit at the Council for Scientific and Industrial Research in Pretoria. The research group undertakes research and development projects which are related to building performance, architectural engineering in social infrastructure, primarily health-care and education buildings in the Southern African region.

Jacques Laubscher

Jacques Laubscher obtained his Bachelor's degree in Architecture and Master's degree in Urban & Regional Planning at the University of the Free State. Dr. Laubscher is currently appointed as an Associate Professor at the Tshwane University of Technology, where he coordinates and teaches the 5th year design and technology. Since 2001, he is practicing under the name Studio Jacques Laubscher, focusing mostly on the adaptive re-use of existing buildings.

Anna Rubbo

Anna Rubbo, LFAIA, B.Arch (Melbourne), D. Arch (Michigan) joined CSUD at Columbia University in 2012. A member of the Millennium Project Task Force on Improving the Lives of Slum Dwellers (2002-04) she went on to found the Global Studio, an action research project to help urban professionals work more effectively with the urban poor. Rubbo is project director for the traveling exhibition, People Building Better Cities shown in eight countries and 11 cities in 2013.

Fani Vavili-Tsinika

Professor Fani Vavili-Tsinika graduated from the School of Architecture, Aristotle University of Thessaloniki, with a Master of Arts in Health Facility Planning, Metropolitan University of London and a Ph.D. from the School of Architecture, Faculty of Technology A.U.Th. She is practicing and teaching architectural design. Her work includes health care facilities planning & design and has published many articles, research results and other publications.

Sam Moshaver

Sam Moshaver is a registered architect in province of Ontario, and currently a PhD candidate in Department of Environmental Design in University of Montreal. My research interests are in housing, flexibility and building systems. He has participated in many conferences on the issues of housing, and open building, inclusionary zoning, and housing systems.

Roger Riewe

Born 22.07.1959 in Bielefeld, Germany, grew up in Cape Town, South Africa, studied architecture at the RWTH Aachen, Germany, graduated 1986, founded Riegler Riewe Architects in Graz, Katowice and Berlin (www.rieglerriewe.co.zt) with projects in Austria, Germany, Switzerland, Poland, Croatia, Italy, Vietnam and Korea. The work has been published extensively. He has taught as guest as guest professor in Houston, Barcelona, Prague, Calgary and Aachen and is since 2001 a full professor at TU Graz, being head of the institute of Architecture Technology IAT and of the research lab IAT|Lab.

Gavin McLachlan

Holds the following qualifications: Bachelor of Building (1972 UPE), Bachelor of Architecture (1974 UPE), M Sc (Town and Regional Planning) (1979 UPta). Is a registered architect and town planner. Experienced a wide range of architectural and planning work and projects prior to joining the academic staff of the then UPE (now the NMMU).

Alexander Opper

Opper completed a master's degree in architecture at the University of the Arts in Berlin in 2001. In 2006 he moved to Johannesburg where he works as educator, writer, artist, architect and designer. He is the director of the Architectural master's programme at the University of Johannesburg's Faculty of Art, Design and Architecture, a context in which, since 2007, he has developed an immersive mode of teaching-and-learning premised on "folding" the [architectural] studio into the field'.

Julian Raxworthy

Dr Julian Raxworthy is a Lecturer in the Master of Landscape Architecture program in the School of Architecture, Planning and Geomatics, at the University of Cape Town. He was the co-author of Sunburnt: Landscape architecture in Australia, and co-editor of The Mesh Book: Landscape/ Infrastructure. His PhD thesis with the University of Queensland was entitled Novelty in the Entropic Landscape: Landscape architecture, gardening and change.

Stephan Kendall

Dr. Stephen Kendall's career in architectural practice, research and education spans more than 35 years. He is a registered architect w/a PhD from MIT. His research in open building encompasses new design methods and logistics, and new technology needed to make buildings more adaptable, easier to customize to meet changing preferences and thus more sustainable.

Taibat Lawanson

Taibat Lawanson is a senior lecturer and coordinator of postgraduate programs at the Department of Urban and Regional Planning, University of Lagos, Nigeria. She holds a PhD in Urban and Regional Planning; and is a 2013 World Social Science Fellow. Her research over the years has focused around poverty and informality, environmental health and governance dynamics in the Lagos Metropolis; and more currently Africa's emerging urbanism, urban livability and urban inequalities.

Yashaen Luckan

Yashaen Luckan is an academic and practicing architect. He holds a Btech Degree (DUT), and a Master of Architecture Degree from UKZN where he is presently a PhD Candidate. Yashaen serves on professional bodies such as the South African Council for the Architectural Profession (SACAP), where he is a member of the Validation Panel and the Heads of Schools committee, and the Council on Higher Education (CHE) where he serves as evaluator of applications for new academic programs.

Andrew Makin

Formed designworkshop: sa with Janina Masojada in 1997. Regular writer on the City as an important enabler of an optimized South African economy culture and society. Current projects are a village for 1000 orphans, many of HIV Aids; Community Centers and Sports facilities in two historically black townships; a hotel and apartments; a range of private residential houses; and a 25 story office building in Sandton, Johannesburg's Corporate business district

Jako (Jakobus Immanuel) Olivier

After graduating in Law at the University of the Free State, Jako successfully completed his degree in Architecture at the same university. He is currently the program director for and lecturer at the Department of Architecture, UFS. His research interests are architectural design, architectural theory and higher education.

Happy Ratna Santosa

Happy Ratna Santosa is lecturer/professor in the department of Architecture, ITS, Indonesia since 1976 and head Laboratory for Housing and Human Settlements ITS. She is lecturer in Architectural Design, Human Settlement and the Environment, Sustainable Development, Human Settlement in Urban Development and Research Methodology. He is also supervisors for under graduate final Project Design, thesis for Master and PhD student's dissertation.

Luciano Lazzari

Luciano Lazzari was born in Trieste, Italy and grew up in Cape Town, South Africa, where he began his studies in architecture at UCT. He qualified at the Polytechnic of Central London, taking the RIBA Part III exam in 1977. After working in London, he moved back to Trieste and set up a joint architectural office in partnership with Paolo Zelco in 1981. The office has carried out a lot of residential development and health care buildings and more recently the office has become involved in urban renewal. He is currently serving as President of the Architects' Council of Europe after his election for a two year mandate. From 2005 till today, he has been a jury member for various national and international competitions and is a member of the Scientific Committee for the UIA 2014 Congress in Durban.

Denise Morado Nascimento

Denise has a degree in Architecture and Urbanism, MA in Architecture and Ph.D. in Information Science. She is a Professor at the School of Architecture at Universidade Federal de Minas Gerais, coordinator of the research group PRAXIS (Social practices in urban space) and researcher of CPNq.

Abimbola Olukemi Windapo

Dr Abimbola Olukemi Windapo is a Senior Lecturer at the Dept. of Construction Economics and Management, University of Cape Town. Abimbola's career spans 26 years after graduating from the University of Ife with a BSc (Hons.) degree in Building. She has both MSc and PhD degrees in Construction Management and Building respectively. She has practiced in, written, lectured and researched on housing and construction studies; building materials; and construction industry, company and project performance. She is a member of the South African Council of Project and Construction Management Professions.

Roger Schluntz

Schluntz received his Master of Architecture degree from the University of California, Berkeley. A Fellow of the American Institute of Architects and NCARB certified, he is licensed to practice architecture in New Mexico and Nebraska. In a consulting capacity with public agencies and universities nationwide, Schluntz has served as the Professional Adviser for over twenty-five major design competitions. One of the first group of those serving on the National Register of Peer Professionals for the US General Services Administration, he has been involved with the selection of architects and the design review of major public buildings for over three decades.

Kevin Bingham

Kevin Bingham is a Professional Architect and a director at FGG Architects Inc, based in Durban. He holds a National Higher Diploma in Architecture, a Bachelor of Architecture degree, a Master of Architecture Degree by research, is currently reading for a PhD in Architecture and is a Fogarty Research Fellow (USA). Kevin is the current president of the KZN Institute for Architecture (2012 -) and is a member of the South African Institute of Architects National Board. He serves on numerous education advisory boards, trusts and sporting committees.

Fanuel Motsepe

Having lectured at the University of the Witwatersrand Johannesburg for 4 years, Fanuel practices as an architect and urban designer. Fanuel established Motsepe Architects Research Unit and Practice Unit Learning Apprenticeship (MARU a PULA) cc, which is equipped with a library, a computer lab, an audio-visual room, and a model-making studio. MARU a PULA engages local and international researchers and publishes research findings.

Claudia Morgado

Claudia (M Arch prof WITS 2007) is a practicing architect and part-time lecturer at the University of Johannesburg, working in the 1st and 3rd year design studios. In 2009 Claudia formed BOOM Architects in partnership with Eric Wright. Their work explores urban and people focused concepts with a critical underpinning – the relevance of contemporary architectural urban approaches, and a focus on systems that gain value over time with lasting benefits to those it impacts. Both partners at BOOM are co-founders of the (in)formalStudio, in collaboration with 26'10 south Architects, Thorsten Deckler and Anne Graupner, and have implemented the Marlboro South course held in 2012. (in)formalStudio is a multidisciplinary platform which pools resources and skills on in-situ teaching, research and actual projects located in complex urban conditions.

Stephen Adams

Stephen Adams is a British Trained architect, with experience of developmental and disaster relief work in Lesotho, Swaziland, Kenya, Aceh Indonesia and Haiti. Recently, he has been teaching at the Polytechnic of Namibia as studio leader in the new school of Architecture and is the external moderator/examiner for TUT Pretoria, University of Johannesburg and University of Pretoria. He has also practiced in London and Oxford.

Magdalena Cloete

Magdalena Cloete qualified with a B.Arch from UOFS in 1998. In 2012 she joined the University of KwaZulu Natal where she lectures History and Theory of Architecture as well as Architectural Design and Technology in the 3rd year BAS programme. Magdalena's research relates to the role of Theory in the making of architecture and the relation between Architecture and People. She is a Professional Architect and co-founder of an architectural Company XO consultancy.

Tsinikas Nikos

Architect A.U.T., M.Sc. Sound & Vibration I.S.V.R., Dr. Architect A.U.T., Professor School of Architecture A.U.T. Member M.I.O.A., eCAADe, IASS. Vice-president Hel.In.A. Director 5th Department School of Architecture, Vice-president School of Architecture. Participation in the general assembly for the creation of a) School of Media & b) School of Film. Head of School of Film 2007-11. Teaching in School of Architecture, of Environment, of Journalism and Media and of Film. Research architectural design, architectural acoustics. Publications on architecture, acoustics and music.

Joanne Lees

Joanne Lees qualified as an Architect in 1990. She has over 20 years' experience as an architect, development manager, housing and urban development specialist, for (mainly local) government, NGO's, Social Housing Associations, and the private sector. She has been a principal of Lees + Short Associated Architects for 18 years. Her experience has underlined the importance of integration across sectors, and of socio-economic concerns in the quest for sustainable cities and settlements.

Hannah le Roux

Hannah le Roux teaches, practices, curates and writes about architecture. Her current research, lived modernism, is being developed for a PhD candidate in the Faculty of Architecture and Art of KU Leuven. This project is based on the observation of change in time of modernist spaces, grounded in the 1950's model township, KwaThema, the 1950's to 70's fabric of Johannesburg's inner city and tropical architecture in West Africa. Her writing appears in Domus, uncube, the Journal of Architecture, Architectural Record and others.

Krishna Kumar Dhote

Working as Professor in Department of Architecture and Planning, involved in research and consultancy projects of urban renewal, social impact assessment and issues of housing for poor and presently guiding more than five number of doctoral candidates.

Chris Adendorff

Professor Chris Adendorff is an entrepreneur and academic who since 1985 built a substantial family business. He holds a double doctorate in commerce as well as future studies. He has a passion for future studies and the management of family businesses. His particular interest is in planning, governance and turnaround strategies. He lectures on future studies, entrepreneurship, construction management and research methodology. Professor Adendorff has since written various books and published extensively in international journals.

Nancy Clark

Nancy Clark is founder and Director of Global Lab research consortium, a cross-disciplinary research initiative with the University of Florida focused on the study of emergent global trajectories in architectural practice, building technology, and urban policy making. She is Co-Founding member of the Consortium for Hydro-Generated Urbanism (CHU) which proposes new paradigms for the evolution of water-based settlements. Ms. Clark is currently the Assistant Director at the University of Florida in charge of Graduate Programs at the University Of Florida School Of Architecture and serves as the Coordinator of the G|SoA Ivan Smith Endowment, a program dedicated to the advancement of graduate education.

Nhlamulo Ngobeni

Nhlamulo Ngobeni graduated with a master's degree in architecture from the University of Johannesburg, under the supervision of Amira Osman. In his master's dissertation, he looked at Kliptown informal settlement in Soweto, Johannesburg. He unpacked the area in search for design informants which were processed to feed his architectural proposal. He was recently invited by an artist to study a neighborhood and give advice which will be used to establish where the artist could install public art sculptures.

Clinton Aigbavboa

Clinton Aigbavboa holds a masters' degree in Construction Management and a PhD degree in Engineering Management respectively; with sustainable human(e) development being the theme of his researches. He recently completed a short learning programme in good governance in Africa from the Thabo Mbeki Africa Leadership Institute in the University of South Africa (UNISA). He is permanently employed at the University of Johannesburg's Department of Construction Management and Quantity Surveying where he lectures at both the undergraduate and postgraduate levels. He is the programme coordinator for the 2nd year level and facilitates an academic excellent/development programme to high schools in Krugersdorp- West Rand, through an NGO based in Krugersdorp. His research interest is in the economics of infrastructure development, sustainable human development, building information modelling, climate change and adequate housing development, green job creation, leadership in lowincome housing, building post occupancy evaluations, construction industry development, informal housing and infrastructure development and national economics. He has published articles in reputed journals and presented research findings locally and internationally. He is currently the editor of the Journal of Construction Project Management and Innovation.

Phil Astley

Phil Astley, UCL Bartlett School of Construction & Project Management, London, is involved in a number of cross-disciplinary research and health enterprise projects. He has developed briefing for medical respite care for the informally housed and single homeless with TB and HIV for London Pathway. He is involved with African Prisons Project and UCL Population Health. In 2014 he is working with the Aformal territories Studio, University of Johannesburg on briefing for healthcare systems in informal contexts.

Budoor Bukhari

An architectural and urban designer and urban development planning researcher, Budoor is a graduate of the Building & Urban Design in Development (BUDD) program at the Development Planning Unit, The Bartlett, University College London. She is a LEED Accredited Professional and an Estidama Pearl Qualified Professional, and has recently joined CH2M Hill as Urban Designer. With a background in architectural and urban design, Budoor's educational and professional journey thus far have stimulated a keen interest in the role and potential of community-based and participatory approaches to urban development planning and design.

Amanda Breytenbach

Amanda Breytenbach, has been involved in Interior Design Education for over 18 years and have also participated, over the past 12 years, in the development of the Interior Design profession. Apart from her participation in the Interior Design profession and education, she has also actively participated in including sustainable design issues within the education curriculum. She is currently Vice Dean at the Faculty of Art, Design and Architecture at the University of Johanneburg.

Gabriella Carolini

Gabriella Y. Carolini is the Ford Career Development Assistant Professor in the Department of Urban Studies and Planning at the Massachusetts Institute of Technology (MIT). Gabriella has studied and been an affiliated researcher in universities in Brazil, France, Mozambique, and the UK. She earned her doctoral degree in urban planning from Columbia University, where she also held a National Science Foundation IGERT fellowship in international development and globalization. She is also currently the co-chair of the Global Planning Educators' Interest Group within the American Collegiate Schools of Planning.

Nicola Darke

Nicola Darke holds a Masters in Conservation of the Built Environment from the University of Cape Town and currently heads the school of architecture at the Nelson Mandela Metropolitan University. In addition to her academic work she is also a Past President of the Eastern Cape Institute of Architects and a past member of the National Board of the South African Institute of Architects. Furthermore, Ms Darke is a member of the Provincial Heritage Resources Authority BELCOM and the convener of the Eastern Cape Institute for Architects Heritage Committee.

Noëleen Murray-Cooke

Noëleen Murray is an architect and academic. She is currently a Senior Lecturer at the University of the Western Cape (UWC) where she teaches courses in urban geographyand is convener of the Masters and PhD Programmes. She is the lead researcher for the project Cities in Transition. She serves as a member of the board of the Lwandle Migrant Labour Museum. Her research, writing and creative work considers spaces as diverse as the migrant labour compound, the suburban shopping centre, housing developments and most recently the shaping of the UWC campus.

Yusuf Patel

Yusuf Patel studied Financial Economics at the University of London, Development Planning and Quantity Surveying at WITS. He is a professional planner and a development specialist. He has a wide range of experience including Integrated Development Planning, Infrastructure Investment, Affordable Housing and Community Development. He is Executive Director at Basil Read and President of SAPI.

Finzi Saidi

Finzi Saidi is an architect and landscape architect. He completed his PhD at the University of Pretoria in 2004 on Architectural Education. He is currently the Head of the Architecture Department at the Faculty of Arts, Design and Architecture, University of Johannesburg.

Tariq Toffa

Tariq Toffa, Executive Manager at SHiFT, lectures in the University of Johannesburg's architecture department, and writes for www.Urb.im on social and urban topics. He completed his professional architectural studies at UCT, an architectural research Masters at WITS, and studied religious and constitutional law at UKZN.

Boban Varghese

Boban Varghese is an architect, industrial designer and an educator, with three decades of experience as a design studio leader. He has embraced a 'locally grounded-globally conscious' ideology in creating a contextually driven design in his teaching career. His studio based teaching is shaped by the experiences and exposure gained from working and teaching in India, Japan and South Africa. His academic and research pursuits are broadly categorized into sustainable architectural developments, architectural education for a changing world, bamboo as a material for economic activation, housing solutions in underdeveloped communities and media and branding in design engagements. He is currently the head of the department of architecture at the Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.

Sibusiso Sithole

Sibusiso is a qualified Candidate Architect from the University of KwaZulu Natal. He has a wide and varied mix of experience gained from working with a number of acclaimed architects from locally and abroad. With experience in design concept development, working drawings, presentation, documentation, digital and physical model realization. He joined Architects collaborative in 2012 where he is involved on a wide range interesting and ground breaking projects and now is a full time lecturer at the University of Kwazulu Natal while reading for his Doctorate Degree whilst still maintaining a strong working relationship with Architects Collaborative.

TOWARDS ENTREPRENEUR ACTIVIST ARCHITECTURAL PRACTICE

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Abstract

This paper explores how design education and practice can address informality and poverty. Student projects at the Cape Peninsula University of Technology (CPUT) often engage with informality and poverty, both in the studio and on site as design-build projects. However, in relation to professional values there is still a gap between what students are exposed to during their training and the opportunities which they have to act upon these values once they enter the profession.

Since the promulgation of the Architectural Profession Act in 2000, the scope of professional registration in South Africa has widened. Graduates from CPUT can now enter the architectural profession as independent practitioners. This has an important implication for architectural education: Universities of Technology (UoT's) cannot focus only on providing technicians as employees in architects' offices; rather National Diploma and BTech graduates must be equipped with sufficient skills to start and manage their own practices. Due to an acute awareness of the socio-economic disparities in South African society, as reflected in our own student demography, the Design-Build Research Studio (DBRS) at CPUT is developing an alternative form of work integrated learning (WIL) pedagogy which prepares students to enter the profession as entrepreneur-activist architectural practitioners.

We will present a case study of one such project, focusing on a highly specific developmental problem: the upgrading of RDP housing through additions and alterations. The project explores professional engagement with low-cost housing on a one client, one practitioner basis. We conceive this as a hybrid practice: part entrepreneur, part activist. Such a hybrid practice requires a skill set much wider than what students are traditionally equipped with: knowing how to supplement extremely limited budgets through subsidies or sponsorships and designing to allow for a degree of informality while satisfying building regulations; amongst others.

Rudolf Perold and Hermie Delport-Voulgarelis are senior lecturers in the Department of Architectural Technology at CPUT. They coordinate the Design-Build Research Studio (DBRS), which provides students with learning opportunities in the real world through the design and construction of architectural interventions. Their work at the DBRS informs their respective doctoral research at the Hasselt University in Belgium and CPUT.

Keywords: education, design-build, alternative practice, entrepreneur.

INTRODUCTION

"For we may soon find that we have too many architects skilled at designing museums and mansions and too few able to work with indigent people and communities in need of basic housing, sanitation, and security" (Fisher 2008).

This research is undertaken in response to the pedagogy and curriculum of traditional architectural education; to the current architectural professional milieu in South Africa and to an international ground roots shift towards more meaningful architectural education and practice (Wu 2007).

Architecture is traditionally taught in the design studio. In the studio, project work is focused primarily around the design of fictional buildings. Although the projects might imitate real-life scenarios as far as possible or even be set in response to actual problems or opportunities, students very seldom (if ever) get to see the actual final product or meet a real client. In solving the design brief, there is a focus on showcasing individual creativity rather than collaborating with others, and often a lack of engaging with wider contemporary issues. Projects are often criticized for having little relevance to reality (Buchanan 2012).

Solutions to projects are most often communicated through graphic presentation, since it is obviously impractical, if not impossible, to build the actual designed buildings of a class full of students. A different approach to the traditional studio teaching environment, the design-build or live project, has been practiced increasingly during the past decade in various international and local architectural schools. Live projects are defined as "a type of design project that is distinct from a typical studio project in its engagement of real clients or users, in real-time settings. Students are taken out of the studio setting, and repositioned in the 'real-world'" (Sara 2006, p. 1). Design-build projects are essentially a sub-text of live projects and can be defined as "hands-on approaches [...] in the form of full-scale construction exercises" (Erdman, Weddle, & Mical 2002).

The live project and design-build teaching approach in part answers the criticism of the traditional studio and the search for a more meaningful curriculum in current architectural education literature. The introduction of a predominantly practice based architectural curriculum with the focus on interdisciplinary and live projects is prevalent in current discussions around architectural education and mention is made that "the live project is an excellent medium for imparting a sense of ethics and social responsibility and for exploring legal concerns in practical terms" (Jann 2009, p. 83).

THE PRACTICE FIELD IN SOUTH AFRICA

Since the promulgation of the Architectural Profession Act in 2000, the scope of professional registration in South Africa has widened. This has necessitated the rethinking of South African architectural education. Graduates from the Cape Peninsula University of Technology (CPUT) can now enter the architectural profession with the option of becoming independent practitioners. This has had an important implication for architectural education: Universities of Technology (UOT's) cannot focus only on providing technicians as employees in architects' offices; rather students with qualifications that lead to professional registration as Technologists and Senior Technologists must be equipped with sufficient skills to start and manage their own practices. Architectural education can no longer only focus on providing technicians that will work in somebody's office, but should focus on training individuals that can manage their own practice.

Universities of Technology, being born from the former Technikons, have a vocational practice orientated focus, which distinguish them from traditional Universities. The Universities of Technology to that end provided very specific "workplace learning" activities for students (Winberg, Engel-Hills, Garaway, & Jacobs 2011, p. 19), which in most instances means learning through working in a commercial architectural practice for an architect. However, there are other forms of practice that has not been used or explored extensively, either pedagogically or as workplace learning opportunities.

REDEFINING THE SCOPE OF PRACTICE

Internationally and locally, disparities between the affluent and the poor have become glaring and visible through open, accessible media and the easy availability information. The scope of this economic and social disparity, coupled with ever growing environmental problems can is part attributed to "infrastructure design that treats poor people as less valuable than their wealthier counterparts" (Cary & Public Architecture 2010, p. vi).

Design professionals in the built environment, including architects, mostly work for a client from the more affluent part of society, a client that can afford to pay for professional services. "Unlike law and medicine, which have developed strong programs to provide access to legal representation and health care for all members of society, for the most part, architecture is currently structured as a fee-for-service industry" (Pealer 2008).

The client sets a problem or brief, which the designer resolves and the client receives "in exchange, highly customized responses to their specific needs" (Fisher cited in Brigham 2009, p. 3) and the professional gets compensated for the service. In the milieu of clients with little money, design work becomes a luxury item, is therefore mostly non-existent and as a result leads to environments that simply "happen" without valuable professional input. The contemporary architect has very much become removed from the larger part of society, to such an extent that the notion of the architect as "civic champion" has been lost and replaced by the architect in glossy magazines featuring exclusive design work to a limited audience. (Cary & Public Architecture 2010, p. xv).

"In architecture, this form of practice has led to the design and construction of many visually powerful and functionally successful buildings, but it also greatly limits the number and types of people served by the profession" (Fisher 2008).

There are, however, architectural professionals that have re-defined the manner in which they work, and for whom they work, specifically addressing informality and poverty in their practice. These professionals are changing from being predominantly pre-determined problem solvers into a problem identifiers or project initiators (Cary & Public Architecture 2010, p. xii). This change in work approach asks of the architect to become an entrepreneur, identifying the project and problem and then finding the funding to pay for both the professional services and the execution of project. A place has opened, locally and internationally, for this new kind of professional – one that works on the ground, close to the needs of the broader community – and in South Africa the structure of the profession allows for Architectural Technologists and Senior Technologists to define themselves as such independent professionals.

EXAMPLES OF RE-DEFINED PRACTICES

One well known and by now rather big practice focusing on working directly with communities, is Architecture for Humanity. Founded by Cameron Sinclair and Kate Stohr in 1999 with two volunteers, a cellphone and laptop and zero beneficiaries to currently being located in over 20 countries where they are involved in designing, developing and managing and financing the construction of a variety of projects (Aaronson & Architecture for Humanity 2012).

The firm Public Architecture, established by John Peterson in 2002 in San Francisco defines themselves as "a new model for architectural practice. Supported by the generosity of foundation, corporate, and individuals grants and donations, Public Architecture works outside the economic constraints of conventional architectural practice, providing a venue where architects can work for the public good." They aim to identify and solve "practical problems of human interaction in the built environment and acts as a catalyst for public discourse through education, advocacy, and the design of public spaces and amenities" (Public Architecture 2014).

In South Africa, we have the likes of Jhono Bennett and Architecture for a Change. Jhono Bennett experienced live and design-build project during his architectural education and has since graduation engaged in community practice work in a variety of different manners. He has co-founded 1:1 Agency of Engagement, which aims to specifically "create a platform for spatial design academics, community groups and professionals to critically engage with and develop socio-technical solutions and methodologies in the developing sector of South Africa" (1:1 Agency of Engagement 2014). His personal aim is to "develop additional modes of practice for myself, and other spatial designers, to effectively support South Africa's redevelopment processes" (Jhono Bennett 2014).

Architecture for a Change is as close as one can get to a hands-on design-build practice that engages in meaningful work. They have done interesting experimental design-build projects that address alternative

human settlement strategies, such as the Tower Shack that is both a residence and internet café in Tarlton Informal Settlement and the Mamelodi Pod, which is a transition housing unit with sustainable ideas incorporated such as "insulated walls, solar electricity and rain water harvesting" (Architecture for a Change 2014). These three young architects "strive to create change through architecture. We strongly believe in our product and therefore developed our philosophy of MAD - manufacture, architecture and design" (ibid).

DIFFERENT SKILLS SETS

When students operate in the milieu of alternative practice it is important to understand and remember that although the live project can instill specific values, it is still an imitation of the real world and not entirely equal to the real world (Brown 2013).

The experience and development of a set of different values and skills occurring through the live project process can be attributed to the work of students not being judged "only according to the academic value systems of the university or the cultural value systems of the educators and practitioners who assess their work, but also by the value systems of the client and communities who receive it" (ibid.). These different experiences require careful integration into the curriculum and the "recontextualisation' of both academic and professional knowledge domains" to allow for "the alignment of workplace and academic interests" (Winberg et al. 2011, p. 13).

Some of the situations and experiences that students would need to develop values and skills for are pointed out by Ceridwen Owen (2012) from interviews held with a number or practices working within alternative practice principles. Practitioners stated that there is a transformed client-architect relationship, in which clients are primarily driving the design development process and the process therefore becomes much more collaborative. The contract existing between the client and architect is very different from that of a standard practice relationship and in the "absence of an economic contract, parties must renegotiate the basis of the exchange so that it is seen to be mutually beneficial". The extent of the services must also be carefully monitored and there are potential "complications in establishing boundaries around the scope of architectural service". The architect often does not have a choice in the professional team, who are mostly made up of professionals ready to be involved in an alternative kind of practice. It is also clear that when the practitioner plays a pro-active role and define projects and problems, they get to choose their clients as much as the clients choose them.

Callantha Brigham (2009, p. 30) highlights several practice management challenges that are present in live community projects which would be essential for students to understand before they get out in the practice world. Firstly, in order to facilitate engagement with a community, it is incredibly important that a director or facilitator within the community itself exists. The architect might need to assist in getting such a person selected. Secondly, very clear limitations about the extent of services should be in place. This can be aided by creating a very detailed design brief which goes beyond mere functional aspects but that includes operational and maintenance information. Thirdly, the challenge of maintenance gets special mention since in a project where "funding has to be secured in order to establish the facility in the first place, there is a good chance that money for ongoing maintenance will likely be an issue. An architect working on the project must be cognisant of this (if it is an issue) and design accordingly." Fourthly, the challenge of managing risks and liabilities, including for insurance purposes, is pointed out. Fifthly, the budget and project must be managed more rigorously than for a normal project, since community projects can put financial strains on a practice.

In the sixth place, the architect or practice engaging in community work has a great responsibility in ensuring that they have the necessary skills to engage in and complete the specific project, since the community is reliant on the practitioner in the sense that they do not appoint but rather receive the services. In the seventh place, these projects often are transferred from one goodwill practitioner to a next and some professional courtesy is important when taking and handing over the project. In the eighth place, careful control and protocol for payments and disbursement is needed if the practice does not want to bear additional costs. In the ninth place, Brigham points out that protocol around the architect's role in communications and any liabilities should be clearly established and managed to avoid problems and

dissatisfaction on both sides. The very specific and unique challenges for educational institutions that engage in this work, also gets a final, special mention.

Practices that engage in community work do so in a variety of manners. Of course the work cannot be exclusively pro bono, since a practice would not survive like that. These practices explore delivery methods and models that make business sense.

Some practitioners "who have engaged in community service also readily admit that the combination of creative opportunities and goodwill engendered on pro bono projects often lead to greater recognition both within and outside the profession, which in turn attracts media attention and translates into more paid work opportunities" (Brigham 2009, p. 5).

Other practitioners combine community work with teaching. Operationally, this could mean taking the project into the studio, where the educational institution would compensate the practitioner for the teaching value, the students do an essential part of the work and time is a bit more relaxed than in practice (Owen 2012). There are also practices that have established a place for project teams dedicated to community projects. Staff engaging in these projects feel rewarded in terms of experience, which in turn has positive spin offs in their other work (ibid.).

The variety of community practice modalities reflect the "nature and current state of professional practice", which is as important as the underpinning knowledge domain of the architectural discipline to include in the architectural curriculum, especially at a University of Technology. A responsive WIL curriculum also considers, amongst other aspects, "philosophies of education, theories of teaching and learning, and educational research findings; the role and forms of assessment and feedback; the practical, ideological and policy context of the academic department, institution, and higher education system; and the practical, ideological and policy context of the profession" (Winberg et al. 2011, p. 14).

DESIGN BUILD RESEARCH STUDIO AT CPUT

The Design-Build Research Studio (DBRS) at CPUT was founded by the authors in 2011. The DBRS researches alternative architectural education through the introduction of live and design-build projects into the curriculum. "The spirit of design/build programs can be summarized as vernacular, technically sustainable, and community-empowered. These qualities together form the soul of a design/build program, making it a pioneer in sustainable discourse. Such qualities and methods of teaching should play an important role in the future of architectural practice and education" (Wu 2007, p.9).

The live project also re-introduces the client to students as a real entity, where the client is not a passive partner in a live project, but an active and engaged participant in the process who has a vested interest and expects value in the project's outcome (Brown 2013).

The DBRS is currently engaged in formalising a collaborative, professional projects office, which will focus on making the practice experience for students and clients a reality. Through introducing students to a different way of practicing architecture as part of their education, the DBRS hopes to influence future practitioners to engage in meaningful practice and a new way of generating both project work and income (Design Build Research Studio 2012). The live project "reintroduces to architectural education's simulation of professional practice the contingency of a client" (Brown 2013) and at the DBRS the traditional definition of client is challenged.

"Design-Build Studios have become an exemplary way to combine teaching, research, practice, and development cooperation. Although they remain a young and almost unexplored field, a strong demand is emerging to build up an innovative network that stimulates international and interdisciplinary knowledge-transfer related to design-build studios, promoting research and cooperation among the participants involved" (Correia, Carlos, & Rocha 2013, p. 796).

AN ONGOING PROJECT

The DBRS is currently involved in a project that deals with the upgrading of an existing RDP house. This house is part incremental house, in the sense that it has been added to already a number of years ago. The client, who is also the owner and occupant of the house, has been saving some money towards the upgrade of the house. Since the owner could contribute financially to the project it seemed to be the perfect case

study for DBRS to engage with and to establish ideas around the upgrading of low cost housing and to, through simple and effective design interventions, set an example for the upgrading of houses in the immediate and broader community and investigate the manner in which a professional practice could engage with such a project.

Housing subsidies in South Africa are structured in the form of a lump sum or capital subsidy, which is allocated to individual households. This subsidy covers the purchase of land, the cost of necessary planning procedures, infrastructure development as well as the house itself (Huchzermeyer 2006, p. 35). These houses, referred to as RDP (Reconstruction and Development Programme) houses, are usually between 36 to 40 square meters in size on sites of 350 square meters or smaller (Campbell 2008, p. 6). Extensions to these freestanding houses are generally in timber and recycled corrugated sheeting, making it clear that households received financial assistance only in accessing the completed standardised core dwelling unit. For extensions and improvements, households are left to their own devices (Huchzermeyer 2001, p. 4).

The Reconstruction and Development Programme was introduced in 1994 to "address the immense socioeconomic disparities brought about by the consequences of apartheid" and although the intention of the programme was that of reform and redress the legacy it has left in the housing provided has not been overly successful. The housing has been critised as being "cheap, dreary and ugly, resembling the bleak building programmes of the apartheid state Madiba fought his whole life to bring down" (Lokko 2008).

The upgrading project that the DBRS is involved with initially involved only the replacing of the current roof. After careful consideration, simple interventions made it possible to create both a small loft space within the roof area and a small additional bathroom that could be rented out for extra income upon completion. There are many owners of RDP houses that have some finances available which can be used towards the upgrading their existing house. If they could utilize these funds with proper design input, they could benefit from a design that might serve a broader purpose than simply replacing or fixing of the existing structure. We believe that there exists substantial opportunities for architectural practitioners to become involved in this under-explored area of the housing market.

CONCLUSION

We simply cannot say it better than Thomas Fischer: "the challenge lies in creating a pipeline for our graduates who want to make this their career. There are still too few internship opportunities and no clear route for those who want to do this work for a living. I do think we can solve this problem – in part because the demand for this work remains enormous – but we still need to figure out the educational requirements, the career path, and the financial support for public interest designers. Although, as long as we stay focused on the work that the world needs us to do, I do believe that the rest will eventually fall into place" (Riddle 2013).

The opportunity exists to make a profound contribution to architectural education, practice and social sustainability in South Africa. By identifying and implementing projects that introduce students to a new and different aspect of practice, the doors are opened to wide possibilities. We need to research and practice alternative strategies to support and facilitate the improvement of the living environment for the non-traditional client in South Africa by stepping out of our traditional practice modality.

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