Vienna, Austria 12-16 July 2017

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between researchers and practitioners

FINAL PROGRAMME

WORLD HEALTH DESIGN

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Message from the Austrian Minister of Health and Women's Affairs

Ladies and Gentlemen, Dear Participants,

I would like to welcome you to the beautiful city of Vienna! I am very pleased that this year the 12th Design & Health World Congress, the leading global forum for salutogenic design, is taking place in Austria.

Medicine has a very long tradition in Vienna. Today we have one of the world's leading medical universities and many research institutions of international reputation. However, healthcare in Austria also faces the challenges of the 21st century such as chronic diseases, an ageing population and ensuring fair and equal opportunities in health for all, irrespective of gender, socio-economic group, ethnic origin and age.

One of my goals as the Austrian Minister of Health is to increase the healthy lifespan of the Austrian population. While Austria has a high-quality health care system and life expectancy in Austria is above the OECD average, a comparison with other European countries shows that people living in Austria spend less years in good health and without disability.

In order to face these kinds of challenges, the ten Austrian health targets were initiated in 2011 by the Federal Health Commission, and a year later they were adopted by the Ministerial Council. The health targets focus on those areas where a positive influence on maintaining and improving population health can be achieved. Since the health of the population is profoundly influenced and determined by many sectors outside the health care sector, the Austrian health targets were defined in a broad and participatory process that involved more than 40 stakeholders from relevant institutions and civil society. The fact that all relevant political and social stakeholders were actively involved makes the Austrian health targets exemplary at an international level.

It is a great honour that so many experts of different disciplines from all over the world have gathered in Vienna to discuss how health can be improved through design and how salutogenic built environments and technologies can improve human health, wellbeing and quality of life. The wide range of keynote speeches, workshops and visits to Austrian healthcare facilities will give you many opportunities for discussions and the development of new ideas. I am convinced that scientific progress and the knowledge gained will be for the benefit of thousands of patients.

I wish all of the participants a successful conference and a pleasant stay in Vienna.

Yours,
Pamela Rendi-Wagner, M.D., MSc
Federal Minister of Health and Women's Affairs

Design &Health
International Academy for Design and Health

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Welcome to the 12th World Congress

Prof Alan Dilani
Founder,
International Academy for Design and Health

Prof. James Barlow
President,
International Academy for Design and Health

Gunther De Graeve
Chief Executive Officer,
International Academy for Design and Health

Dear Colleagues and Friends,

We are delighted to invite you to participate in the 12th World Congress on Design & Health (WCDH 2017) in partnership with the Austrian government and in collaboration with world-renowned academic institutions and healthcare industries.

The Congress host city, Vienna with music, art and architecture, is a multicultural metropolis and has been listed as top in the world for quality of living by the Mercer Quality of Living Survey.

The Scientific program will open with a welcome speech by the Honorable Dr Pamela Rendi Wagner, Austrian Minister of Health, on 13 July. Keynote speakers will present the most innovative research and practical findings in the field of design and health and the role of health infrastructure to promote safety, health and wellbeing.

Since 1997, the first Congress in Trondheim – Norway, many projects have been presented at our congresses, and researchers and policy makers from across the world have investigated and developed scientific evidence of salutogenic design. Collectively, this effort represents a powerful scientific platform for researchers, policymakers and practitioners to demonstrate and implement salutogenic design worldwide. Our congress is unique in that we celebrate these achievements and critically review the role of salutogenic approach in global healthcare design.

During the last two decades the IADH network members have been inspired by what they have seen and what they have learned, and have incorporated a salutogenic approach in their work and their lives. According to WHO, it is inevitable that the individual's lifestyle has an immense impact on health. Accordingly, health promotion is "the process of enabling people to increase control over and to improve their health" and the environment as a strategic, cost effective and enduring tool for improving public health.

The WCDH 2017 provides an opportunity to engage with the world's foremost interdisciplinary network of architects, designers, health planners, engineers, public health scientists, physicians, health administrators, psychologists, economists and other key decision-makers.

The pre-congress program will focus on leadership, governance and government healthy policy planning with global trends, and the post-congress study tour includes visits to Vienna's leading healthcare facilities and other innovative built environments.

The high quality of the research presentations in combination with a fascinating range of stimulating case studies, a trade show displaying the latest innovations and solutions in the field, and a varied social and cultural program, will ensure participants enjoy a remarkable experience in Vienna. A ministerial panel discussion concludes the Congress, with the participation of Health Ministers to discuss the challenges of investment for health promotion and the future of European Healthcare Design.

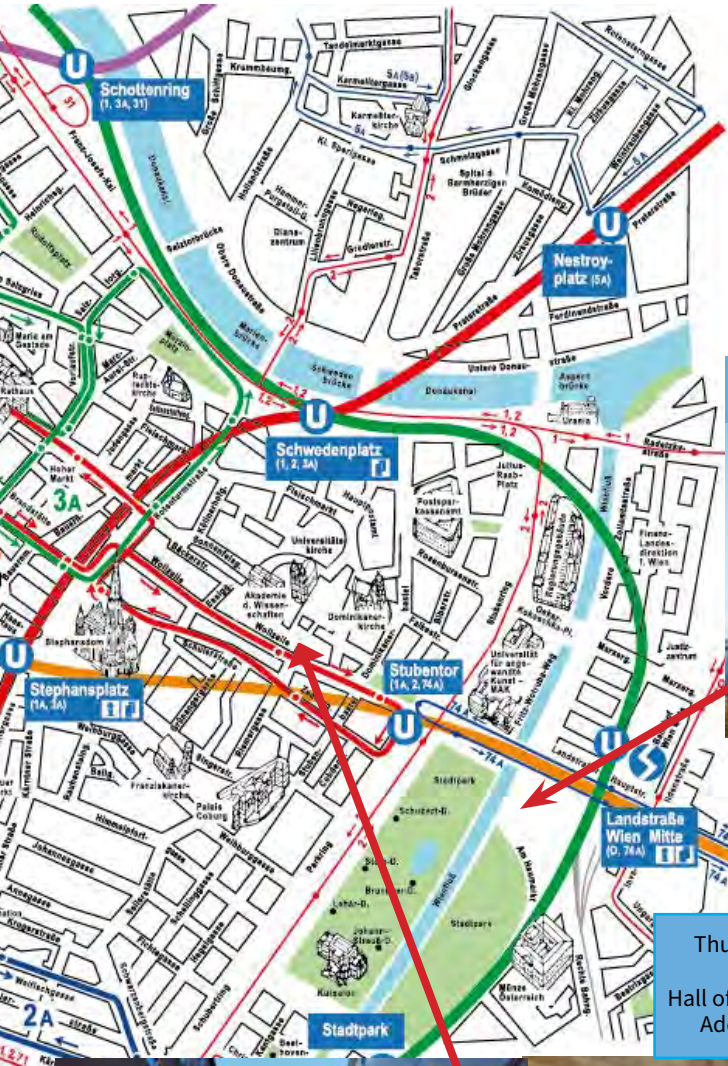
The annual Design & Health International Academy Awards will be presented with gala dinner at the beautiful and historical building of City Hall in Vienna. The awards will be supported by an international judging process. We wish you a rewarding and enjoyable congress in the beautiful historical and musical city of Vienna.

Venue

Wednesday 12 July 2017
Pre-congress symposium
College of Physicians
Address; Frankgasse 8, 1090 Vienna
10.00-18.00 Registration

Saturday 15 July
Academy Awards Gala Dinner at
City Hall

Pertschy Palais Hotel,
Habsburgergasse 5, 1030 Vienna



Hilton Hotel, Am Stadtpark 1,
1030 Vienna

Thursday - Saturday 13 -15 July 2017
Congress & Exhibition at:
Hall of Sciences (Aula der Wissenschaften)
Address: Wollzeile 27a, 1010 Vienna

Hall of Sciences (Aula der Wissenschaften)
Address: Wollzeile 27a, 1010 Vienna

Design & Health Pre-Congress Symposium

Day 1 – Wednesday 12th July, 2017 **(at Medical Society)**

10.00 – 18.00 **Registration at Medical Society, Address: Frankgasse 8, 1090 Vienna**

14.00 – 15.45 **Pre-Congress Symposium - Session 1**
Current Condition and Challenges in Austrian Healthcare

14.00 – 14.15 **Welcome Remarks**
Chair: Prof. Dr. Walter Hruby, President, College of Physicians in Vienna
Prof. Dr. James Barlow, President, International Academy for Design & Health (UK)

Music Performance No 1

14.15 – 14.35 **A Salutogenic Approach Towards Health Infrastructure**
Christina Dietscher, Ph.D., Ministry of Health & Women

14.35 – 14.55 **Hospital Design in Vienna - A Historical Review**
Architect Christoph Mayrhofer, Chairman of Architects, Vienna

14.55 – 15.15 **Lifecycle Hospital Concept**
Paul Wurth Geprolux / Heinrich Limacher

15.15 – 15.35 **Panel Discussion**

Music Performance No 2

15.45 – 16.15 **Coffee / Tea Break**

16.15 – 18.00 **Pre-Congress Symposium - Session 2**
Current Condition and Challenges in Austrian Healthcare
Chair: Prof. Dr. Sylvia Schwarz, MD, Head of Department, Hospital Hietzing, Neurological Center Rosenhügel Vienna

16.15 - 16.35 **Developing Elderly Care in Vienna**
Dr. Roland Paukner, MD, Former Director of Vienna Hospital Association for geriatric centers and nursing homes

16.35 – 16.55 **Health Policies Austria**
Dr. Magdalena Arrouas, Director General, Public Health & Medical Affairs, Ministry of Health and Women's Affairs, Austria

16.55 – 17.15 **The Viennese Concept of Shaping Future Hospitals**
Prof. Sylvia Schwarz, MD

17.15 – 17.40 **Panel Discussion**

17.40 – 17.50 **Closing Remarks by Prof. Dr. Alan Dilani,** Founder of Academy (Sweden)

Music Performance No 3

19:00 – 21.00 **Welcome Reception by the Mayor of Vienna, Dr. Michael Häupl**

Design & Health Scientific Programme

Day 2 – Thursday 13th July, 2017 **(at Hall of Sciences)**

08.00 – 09.30 **Late Registration, Address: Hall of Sciences, Wollzeile 27a, 1010 Vienna**

09.00 – 10.30 Opening Remarks: Visions, Challenges & Strategies **for Health Infrastructure**

Chair: James Barlow, (UK), President of the International Academy for Design and Health

Keynote Address
The Honourable Pamela Rendi-Wagner,
Federal Minister of Health and Women's Affairs

Keynote Address
Markus Müller (Austria), Rector of Medical University of Vienna
The Challenges of Health Sciences, Research & Innovation

Keynote Address
Alan Dilani (Sweden), Founder of the International Academy for Design and Health
Lifetime Developing Salutogenic Design Approach to Improve Public Health

10.30 – 11.00 **Coffee Break, Exhibition, Technical Showcases and Posters**

11.00 – 12.30 **Session 2: Healthcare and Health Promotion in Austria**
Chair: Wilhelm Marhold (Austria)
Claudia Stein (Denmark) Design and Health - more than merely the absence of disease or infirmity
Thomas Szekeres (Austria) The Challanges of Healthcare and Public Health
Albert Wimmer (Austria) Innovation in Hospital Design
Panel discussion

12.30 – 14.00 Lunch, Exhibition, Technical Showcases and Posters

14.00 – 16.00 **Session 3: Global Health, Build Environment and Urban Plannig**
Chair: Beate Wimmer-Puchinger (Austria)
Beate Wimmer-Puchinger (Austria),
Health in all Policies (HiaP.) - An Interdisciplinary Approach for Better Health
Joseph Falzon (Malta), Salutogenic Approach in Utilizing Building Information Modelling
Ikumi Nakanishi (Netherlands), Mobilising Healthy Living through the Built Environment
Walt Vernon (USA), Population Health and Implication for Health Facilities
Panel discussion

16.00 – 16.30 **Coffee Break, Exhibition, Technical Showcases and Posters**

16.30 – 18.00 **Session 4: Innovation in Healthcare Design – Case Study Projects**
Chair: Nicola Bertrand (Australia/Germany)
Bruce Crook, Aija Thomas (Australia), The Challenges of 21st Century and Acute Healthcare Design
Susan Black, Heather McPherson (Canada), Healing the World One Woman at a time
Annette Ridenour (USA), Salutogenic Approach to Design of Children's Hospital
Chin Young, Don Garner, Arthur Collin (Australia), The Case Study of Blacktown Hospital
Panel discussion

19.00 – 22.00 **International Academy for Design & Health Advisory Board Meeting**

Day 3 – Friday 14th July, 2017 **(at Hall of Sciences)**

08.00 – 09.30 **Late Registration**

09.00 – 10.30 **Session 5: Guidelines for a Sustainable Healthcare Enterprise**
Chair: Innocent Okpanum (South Africa)

Keynote Address
Monsignor Professor Dr. Obiora Ike (Switzerland), Executive Director of Global Ethics in Geneva

The Challenge of Global Health Inequities and Salutogenic Global Ethics

Yvonne Burdick (USA), Design Challenges in Developing Countries- The Case Study of Africa
Whitney Austin Gray (USA), Expanding Salutogenic Design with WELL Building Standard
Y. Zhang (UK), Interaction Built Environment and Health
Panel discussion

10.30 – 11.00 **Coffee Break, Exhibition, Technical Showcases and Posters**

11.00 – 12.30 **Session 6: Design Factors that Impact Health and Well-being**
Chair: Tye Farrow (Canada)
Katharina Nieberler-Walker (Australia), Green Spaces in Healthcare Facilities
Hessam Ghamari (USA), Wayfinding in Unfamiliar Indoor Healthcare Environments
Rotraut Walden, Yasemin Baz, Vanessa Grebe, J. Kuehner (Germany), The Impact of Colorful Spaces
Claudia Bianchi (Italy), The Impact of Building Materials
Panel discussion

12.30 – 14.00 **Lunch, Exhibition, Technical Showcases and Posters**

14.00 – 16.00 **Session 7: The Patient Experiences and the Quality of Healthcare Design**
Chair: Ian Forbes (Australia)

Keynote Address
Professor MD. Paul Barach (USA), Wayne State University School of Medicine, Chicago, Illinois,
Designing Hospitals and Healthcare Facilities Using High Reliability Robust Processes

Ian Sinclair (Canada), Human Empathy and Design Criteria
Louis A. Meilink, Eric Swanson (USA), A Closer Look at the U.S. Healthcare "Built" Environment
Anjali Joseph, Deborah Wingler (USA), Evaluation of Ambulatory Surgical Environment
Debajyoti Pati (USA), Preventing Patient Falls Through Physical Design
Panel discussion

16.00 – 16.30 **Coffee Break, Exhibition, Technical Showcases and Posters**

16.30 – 18.00 **Session 8: Advances in Global Hospital Infrastructure and New Vison for Academy**
Chair: Gunther De Graeve (Australia)
Jui-J. Chen, Hung. Yen, Yen-H. Chang, Shu-Hua Huang (Taiwan), Nuclear Medicine and Patient Safety
Walkiria Erse (Brazil), Surgical Hospital in Brazil - Productivity, Difficulties and Salutogenic Environment

Keynote Address
Gunther De Graeve (Australia), The Future of Academy as Global Knowledge Forum -
New Vision and Mission

Day 4 – Saturday 15th July, 2017 **(at Hall of Sciences)**

08.00 – 09.00 **Late Registration**

09.00 – 10.30 **Session 9: Health Infrastructure, Technology, E-Health and Innovation**
Chair: Albert Wimmer (Austria)

Keynote Address
James Barlow, President of Academy,
Chair of Technology and Innovation at Imperial College London,
Science and Technology in Future Health Infrastructure

Oksana Zelenko (Australia), What is Innovation in E-Health
Felipe Siso (Austria), The Salutogenic Center to Promote Health
Magdalena Maierhofer (Austria), The Hospital – City – Continuum
Panel discussion

10.30 – 11.00 **Coffee Break, Exhibition, Technical Showcases and Posters**

11.00 – 12.30 **Session 10: Designing for Mental Health**
Chair: Mungo Smith (Australia)
Mardelle M. Shepley (USA), An Empirical Study on Behavioral and Mental Health
Ian Forbes, Mary Potter Forbes (Australia), Benchmarking for Mental Health Facilities Design
Evangelia Chrysikou (UK), Improving the Social Integration of Psychiatric Wards
Vivien Mak (Hong Kong), Salutogenic Design to Relieve Stress
Panel discussion

12.30 – 14.00 **Lunch, Exhibition, Technical Showcases and Posters**

14.00 – 16.00 **Session 11: Salutogenic Solution in Built Environment**
Chair: Susan Black (Canada)
Anna Sillitti (Germany), Space Quality - Explorative Study of European University Hospitals
Willemineke Hammer, Liesbeth van Heel (Netherlands), Salutogenic Perspective Applied to Hospital Staff
Michel Nathan (Luxemburg), Innovation, Cost Efficiency, Patient Comfort in the New Hospital

Keynote Address
Dr. Aaron Motsoaledi,
The Honourable South African's Minister of Health
(to be confirmed)

16.00 – 16.30 **Coffee Break, Exhibition, Technical Showcases and Posters**

16.30 – 18.00 **Session 12: Panel Discussion with Health Ministers:**
The Role of Health Infrastructure in Health Promotion
Chair: Alan Dilani (Sweden)
Keynote Speaker: Ilona Kickbusch (Switzerland), The Future of the Healthy Society
Dr. Pamela Rendi Wagner, Health Minister of Austria
Mrs Lydia Mutsch, Health Minister of Luxembourg
Dr. Aaron Motsoaledi, Health Minister of South Africa *(to be confirmed)*
Prof. James Barlow (UK), President of Academy
Prof. Obiora Ike (Switzerland), Globethics

19.30 – 22.30 **International Academy Awards, Gala Dinner and Cultural Programme at City Hall**
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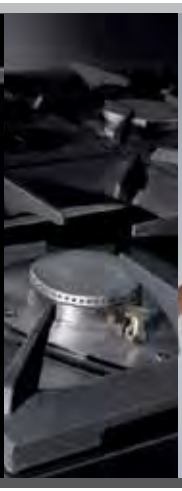
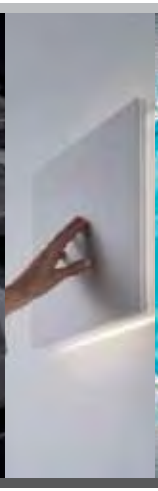


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Scientific Poster Gallery

P01 **Aija Thomas and Bruce Crook** (Australia)
Epworth Geelong Hospital: A Case Study: Integrated Healthcare, Research and Teaching, in a Regional Environment Adjacent to a University Campus

P02 **Elif Özgen, Bilge Sayil Onaran** (Turkey)
The concept of "healing places" from children's perspective

P03 **Chin Young, Don Garner, Arthur Collin** (Australia)
Inpatient innovation in the Clinical Services Building, Blacktown Hospital, Australia

P04 **Chin Young, Don Garner, Arthur Collin** (Australia)
Community engagement in the Clinical Services Building, Blacktown Hospital, Australia

P05 **Hessam Ghamari, Sarah Dickert, Eva Clauss** (USA) Wayfinding in Unfamiliar Indoor Healthcare Environments: A Research Based Design Approach Using Gaze-Tracking Technology

P06 **Walt Vernon** (USA)
New Approaches in Healthcare Sustainability

P07 **Walt Vernon** (USA)
What is a "World Class" Healthcare Facility?

P08 **Mardelle Shepley and Mané Mehrabyan** (USA)
Practitioner Focused Facility Evaluation of a University Health Service Clinic

P09 **SM.Tabaeian, H. Emam jome zade** (Iran)
Effective Factor Analysis in Form Design Reform of Training Center According to Karen horney's Psychological View

P10 **Stoyan R Stoyanov, Oksana Zelenko, Gavin Sade, Leanne Hides** (Australia)
The process of concept and content development for designing efficient web and mobile health promotion programs

P11 **Eliud Liku, Caleb Mutali, Michael Onyoyo** (Kenya)
Hidden salutogenic attributes of a dispensary in kenya's health service delivery system

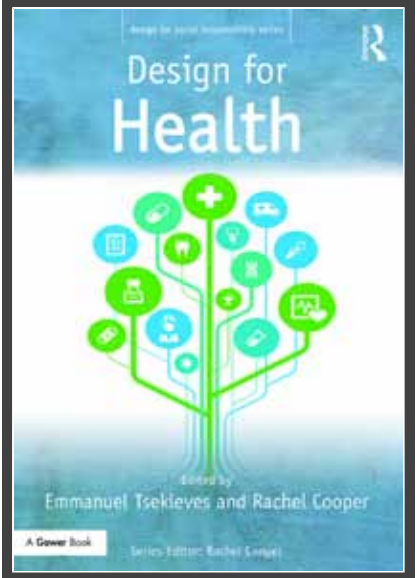
P12 **Susan Black, Heather McPherson** (Canada)
Healing the World One Woman at a time

P13 **Yeunsook Lee, Changhoun Ahn, Chohee Sung, Maria Victoria Paz, Minjoo Kim** (Korea)
Customized Appropriate Architectural Plan for Symbiotic Communal Housing - Transforming an Empty Building in Rural Area of South Korea

P14 **Yeunsook Lee, Changhoun Ahn, Miseon Jang, Jaehyun Park, Hee-eun Park** (Korea)
Design of a Supportive Housing Model for Healthy Independent Living of the Disabled - The First Supportive Housing for the Disabled Population -

P15 **Yeunsook Lee, Hyeyeun Kim, Jiwon Hyun, Chohee Sung, Haksung Lee** (Korea)
Housing Alternative Lifetime Selfcare Communal House for Vulnerable Population in Korea - Design for Healthy Living in Aged & Low Growth Society -

P16 **Annette Ridenour** (USA)
Salutogenic Approach to Design of Children's Hospital



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Thursday 13 July 2017, 12.55 - 13.25

"Invitation to design the world class salutogenic hospital in Korea"

Designing a National Salutogenic Hospital in Korea
Myoung-Ock Ahn, MD, PhD, DrPH, MPH, President & CEO, National Medical Center, Korea

Current State:
Founded in 1958 National Medical Center(NMC) in Korea has been playing its role as nation's guardian of public healthcare. And in 60 years after its first service the NMC is now planning to build a new hospital complex moved from downtown to the southern suburbs of the metropolitan Seoul. Target year of the opening is 2021 and the NMC plans to extend its current service as a health promoting hospital(HPH) to a salutogenic hospital for 50 million Korean population. What to do? NMC's approach to salutogenic hospital consists of two major aspects. First of all, we will not only keep maintaining our efforts in health promotion but change culture of its operating mechanism. We focus on seven aspects of well-being(I define rainbow health campaign), i.e. physical, mental, social, economic, intellectual, spiritual and cultural well-being meaning all levels of health promoting activities at the hospital. And HPH is currently our basic concept of service and supports patients and their caregivers as well as employees and whole populace of Korea. Secondly, we will apply salutogenic concept in every level of activities in our health related services. Moreover we will maintain the health promotion services and add salutogenesis not only to the design and construction of our new complex, but also to sustainability of its holistic service supported by cutting-edge technology. How we can apply salutogenic value to our new hospital complex in design and construction as well as its management (administration and governance) will be the great challenge we face. Furthermore our fresh approach to NMC's newly built hospital complex will pave the way for innovation of hospital and health services in Korea.

Dr. Myoung-Ock AHN, MD, PhD, DrPH, MPH

President & CEO of National Medical Center, Korea

Dr. Ahn is President & CEO of National Medical Center of Korea and Professor of Graduate School of Health and Welfare, CHA University. She is medical doctor specialized in OB & Gyn and preventive medicine, who holds public health background(MPH & DrPH, PhD). Prior to this position, she was the chairman of the Advisory committee to Speaker of Korean National Assembly, Future Vision committee for the Women and Children of Korea as well as Chairman of boards of directors, Women's Human Rights Commission of Korea. Before that she was Member of National Assembly, who was recognized as the best parliamentarian to propose the most bills and pass the most bills in the history during one term. Currently she is serving as a governance board member of International network of WHO-HPH (Health Promoting Hospitals & Health Services) as well.

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Thursday 13 July 2017, 13.25 - 13.55

Clinic for children and adolescents Freiburg: Hospital on a human scale

The new clinic for children and adolescents lies as an active part within the university hospital Freiburg. The hospital will bundle the hitherto dispersed departments and institutes at a central location. Typologically the clinic is divided in two layers: the ground floor accommodates the high-frequency area with outpatient clinics, day clinic as well as dialysis and emergency medicine wards. One floor above, on the main floor there will be located the middle frequency area with teaching and research institutions and medical services. The two upper floors are marked through a low frequency, accommodate the inpatient units and bed wards and provide a variety of resting and recreation zones as well as areas for encounters and interaction. The typology emulates the historic development and follows the unfinished neo-baroque structure of the university hospital and proposes to a conscious "low tech" construction method. The design ensures an intuitive comprehensibility and high readability that is furthermore supported by the clear visual connections. The first impression when entering the hospital is the open and light-flooded atmosphere filled with the sound of playing and laughing children that descends from the activity and entertainment zones in the REN-cluster located on the upper floors. Appealing views to the surrounding landscape supports the open and near-nature impression. The landscape architecture is meant to provide optimal prerequisites for the healing process. It furthermore plays an important role to improve the quality of work and acts as a distinguishing feature of the new clinic. The enhanced space between the existing hospital buildings and the new construction is formulated through trails, bridges, terraces and differentiated vegetation. In the eastern area of the clinic a therapy garden with a direct link to the physiotherapy unit will be created. The design is based on the principle of "inclusive play" and guarantees that all children, adolescents and visitors, regardless their age and their individual capabilities have the same access and chance to play and learn together and to experience joint enjoyment. Each of the 175 patient rooms is designed from the point of view of the patients; their needs and requirements stand at the centre of each draft

Andreas Frauscher

He finished his studies of architecture at the Technical University in Vienna, Austria in 1996. He worked for several architecture firms, such as Müller & Klinger Architects in Vienna, where he held the position Senior Architect from 1995 – 2002. After working as Project Manager for the Arge Architekten LKH Klagenfurt Neu Vienna from 2002 – 2006 he became Co-Founder and Managing Executive at Architects Collective ZT GmbH in 2006. Since 2007 Andreas Frauscher is registered as a Civil Engineer of the Austrian Chamber of Architects. Among his most significant projects are the Operngasse Office Town Vienna, the ZRS Office Complex Vienna, the General Hospital Klagenfurt, the Sudspidol in Esch-sur-Alzette (Luxembourg) and the Kinder- und Jugendklinik Freiburg (Germany).

CANNONDESIGN NEUF ARCHITECTES

Friday 14 July 2017, 12.55 - 13.25

The Centre hospitalier de l'Université de Montréal (CHUM) Montreal, Canada

Occupying two full blocks in the heart of downtown Montreal, the Centre hospitalier de l'Université de Montréal (CHUM) is one of the largest current healthcare projects in the world. Its first phase just completed, the CHUM teaching hospital is also the largest public–private partnership (P3) healthcare project in Canadian history, set to revitalize an entire sector of Montreal's urban core. The CHUM complex will include 772 single-bed patient rooms, 39 operating theatres and more than 400 clinics and examination rooms. Beyond the logistical scope of merging three aging hospitals under one roof, the CHUM project is a prime example of thoughtful architecture solving highly complex problems, with social infrastructure and urban renewal as integral components to its design. The 22-storey complex, spanning over 3 million square feet and encompassing two full city blocks, will play an important role in regenerating the neglected East-end of Montreal's downtown core, reconnecting the city's urban fabric, and anchoring the Quartier de la Santé, Montreal's new healthcare district. In addressing the totality of that task, the design team approached the project from all scales, including the large-scale urban element, the local neighbourhood context and the fine grain of a human component, central to its vocation as a place of healing.

Lilia Koleva

NEUF Architects, Montreal, Canada

Based out of Montreal and Toronto, Lilia brings a depth of experience to a range of projects with an emphasis on design quality and use of technology as effective communication tools within a large multi-disciplinary team. She has completed a number of challenging projects, from small urban interventions to the new CHUM hospital in downtown Montreal, where she was a key leader of the architectural team handling its Public Spaces. Whether she is sketching, presenting to the client or working with sub-contractors on site, Lilia ensures that quality of design is maintained through all phases of project delivery. She is the recipient of numerous prestigious awards such as The Royal Architectural Institute of Canada Medal, the AIA Certificate for Merit, an Architizer A+ Award, the Make it Right Post-Katrina Sustainable Design Competition, the AZURE AZ Award and others, recognizing the consistently high quality of her work and design approach.

JACOBS

Friday 14 July 2017, 13.25 - 13.55

Building Our Future Together- The Case of Blacktown Hospital, Sydney, Australia

Described by consumer advocates as "a benchmark for future hospital development in Australia", the multi-award winning Stage 1 of the Blacktown & Mount Druitt Hospitals (BMDH) Expansion Project is recognised locally and internationally as a leading example of consumer engagement in a health capital works project.

Completed in May 2016, the project delivered contemporary, patient-focused hospital facilities for the people of western Sydney, while also achieving significant innovations in design and service delivery. This was achieved through a program of genuine, meaningful and ongoing engagement with clinicians, patients, carers and the community.

This interactive presentation will describe the processes, outcomes and critical success factors of the successful consumer engagement approach employed by the project.

Peter Rophail

Blacktown Hospital, Sydney

Peter is a physiotherapist with over 20 years experience working in public hospitals in Australia and the UK.

Since 2012 he has had a lead role in the multi-award winning Blacktown and Mount Druitt Hospitals Expansion Project, for which he was named the NSW Health Collaborative Leader of the Year in 2016. Peter is currently the Director of Operational Design at Blacktown & Mount Druitt Hospitals.

white

Saturday 15 July 2017, 12.55 - 13.25

Aabenraa Psychiatric Hospital: Innovative design supporting the human treatment

Aabenraa Psychiatric Hospital in Southern Denmark was inaugurated in September 2015 and is now considered Denmark's most innovative psychiatric building. It replaces three existing psychiatric hospitals from around the region and merges their different specialities, cultures and procedures into one large open psychiatric facility. There are 18.000 m2 and 111 beds in 8 different wards including child, adolescent, adult and geronto psychiatry, distributed across a steeply sloping landscape adjacent to a collection of the region's somatic facilities.

Most innovatively, the fragmented form opens the entire facility to the world and rich architecture, natural light, fresh air, inclusion and social interaction are key healing ingredients. The overall concept has been to replace straitjackets, coercion, isolation and medical fixation with human treatment. The hospital is built in human scale, so instead of long corridors, an interesting spatial flow offers experiences in form of light, space and nature, which supports and stimulates the treatment.

For patients, there is less confinement and physical coercion, which provides for much more therapeutic living conditions. The building embodies a major step forward in psychiatric care, and as a result, there have been significantly fewer documented instances of physical coercion towards patients, and a lower rate of sickness, absence and reported injuries amongst personnel.

Mette Boye

Mette Boye finished her studies at The Royal Danish Academy of Fine Arts in 2005.
She has worked for White arkitekter in Copenhagen since 2006, and in May 2017 she was appointed Director of the Copenhagen office.

She has worked on several healthcare projects in Denmark. Among the most important projects are MANA - Nykøbing Falster Hospital in Region Zealand and Odense University Hospital.

Nickl & Partner

Saturday 15 July 2017, 13.25 - 13.55

Healing Architecture

The architecture of a hospital and its implementation into the urban context has always posed a special challenge for planners, designers and engineers. In the field of modern healthcare which is characterized by technical processes, perfect functionality and work-flows in a high-tech environment, the architect has to maintain a balance between the rational and the human aspects. Facing this challenge, the hand tool for the architect is the built space, starting from the smallest entity of a single room, up to the biggest scale on the urban level.

Furthermore, the delivery of healthcare has experienced significant change over the last decades. Due to rationalization and digitalization processes and economic pressure in an increasingly competitive healthcare market, healthcare facilities have become highly interconnected mega-structures.

The lecture will illustrate these thoughts by presenting a selection of ground-breaking built and planned architectural projects in Germany and Europe, among others the recently opened Mother-Child- and Surgery Center at Kaiser-Franz-Josef Spital in Vienna. Conclusively, future challenges in the design of healthcare buildings determined by medical and societal mega-trends will be discussed.

Prof. Christine Nickl-Weller

After graduating with a degree in architecture from Technical University of Munich, Prof. Christine Nickl-Weller joined the Munich-based architecture team of Nickl & Partner in 1989 and became Chief Executive Officer of the corporation in 2008. Prof. Christine Nickl-Weller is dedicated to the design and execution of healthcare, research and education buildings, development plans and masterplans.

In 2004, she was appointed Professor at the Technical University of Berlin and holds the only university chair for the design of hospitals and health care buildings in Germany.

Ngonyama Okpanum & Associates

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Salutogenesis

International Academy Awards

Book now for the Gala Dinner and Academy Awards on 15 July

Setting Benchmarks in Global Health Design

The 2017 Design & Health International Academy Awards is the leading advocacy programme recognising professional excellence in the research and practice of designing healthy built environments

The Design & Health International Academy Awards programme has a significant influence on the global design and development of humanistic environments that support health, wellbeing and quality of life around the world.

Awards will be presented in nine categories across the key areas of international healthcare delivery, including: International Health Project (over 40,000sqm); International Health Project (under 40,000sqm); Future Healthy Built Environmnet (Unbuilt) Project; Mental Health Design; Salutogenic Design; Sustainable Design; Use of Art in public and Priavte Spaces; Interior Design Project; and Reserch Project for Healthcare Application. The criteria and judging panel, as well as the finalists and shortlist for each award category are highlighted in the following pages.

The Academy will also present a Lifetime Leadership Award to a leader and visionary who has shown ongoing commitment to enhancing the health, wellbeing and quality of people's lives through research, education and the creation of healthy built environments.

Venue: Vienna City Hall

Date: Saturday 15th July, 2017

Time: 19.30 – 22.30

The recipients of this year's awards will be teams who, through unique and outstanding efforts, have demonstrated vision and leadership in exemplary initiatives and projects. Open to international organisations and individuals in both the private and public sectors participating in either research or practice, including the planning, procurement, design, construction and management of healthy built environments, only design projects or research programmes completed between 1 January, 2014 and 1 April, 2017 were eligible to enter. The exception was the Sustainable Design award which had a longer entry period.

The awards are chaired by Prof Alan Dilani, Founder of the International Academy for Design & Health, who approved the recommendations of the lead judges and their panels in each award category.

The awards will be presented during the Gala Academy Awards Dinner at Vienna City Hall on 15 July. If you haven't reserved your place at the Gala Dinner and Academy Awards Ceremony, we encourage you to book now at the registration desk to support the prize winners, recognise their unique work and enjoy a wonderful evening of music and entertainment with friends and colleagues.

Judging criteria

The decisions of each judging panel were based on criteria specific to each category, including design/creative approach and values; sustainability; planning and organisation; operational efficiency; stakeholder engagement; hospitality, wellness and culture; health promotion; innovation; accessibility and context; research methodology; and function and performance. The winners of each award were determined by a lead judge, supported by a panel of two or three judges with proven expertise. Each judging panel comprised experts in their field from multidisciplinary backgrounds, bringing with them a breadth of experience in their fields.

Lifetime Leadership Award Winners

Ian Forbes, Australia and Edwin Wong, Hong Kong

Design & Health
International Academy for Design and Health
International Academy Awards

Research Project

Criteria

International Research Award, Research Project Awarded for a completed, innovative, independently assessed, piece of research focused on a particular aspect of the design, function, construction, financing or maintenance of a healthcare facility or addressing a relevant topic concerning public health in the context of the working environment.

Lead judge

Prof. James Barlow
UK

Panel Judge

Prof. Paul Barach
USA

Assoc. Prof. Anjali Joseph
USA

Finalists

- **Prof. Mardelle M. Shepley**
  Design of Mental & Behavioral Health Facilities

- **Anna Sillitti, Arch. Ph.D. Candidate**
  Space Quality in Hospital Architecture

- **Dr Evangelia Chrysikou**
  The Social Logic of Psychiatric Space

- **Andrea Brambilla, Marco Gola and Stefano Capolongo**
  Open Room for Future Healthcare Environments

- **Sookyoung Lee, Habib Chaudhury, Lillian Hung**
  Exploring the Impact of Physical Environment on User in Dementia Care Setting

International Healthcare Project (Under 40,000sqm)

Criteria

Health Project Under 40,000sqm, An award for an outstanding healthcare building where human health considerations are as evident as clinical and managerial priorities. The project must demonstrate an understanding of the principles of salutogenesis, and show how innovative design permits ongoing flexibility of use and addresses issues of sustainable healthy building.

Lead Judge

Albert Wimmer

Austria

Panel Judge

Anna Sillitti

Germany

Adam Robarts

China

Finalists

- **CIBC Breast Assessment Centre**
  Commissioned by Hamilton Health Sciences Corporation
  Designed by Zeidler Partnership Architects

- **Radiotherapy Centre Haaglanden Medisch Centrum**
  Commissioned by Haaglanden Medisch Centrum
  Designed by de Jong Gortemaker Algra Architects and Engineers

- **Kaiser Franz Josef Hospital Vienna**
  Commissioned by Viennese Hospital Association
  Designed by Nickl & Partner Architekten AG

- **Blacktown Hospital in Sydney**
  Commissioned by NSW Health Infrastructure
  Designed by JACOBS Architects

International Healthcare Project (Over 40,000sqm)

Criteria

International Health Project (Over 40,000 m2), An award for an outstanding healthcare building where patient-centred considerations are as evident as clinical and managerial priorities. The project must demonstrate an understanding of the principles of salutogenesis, and show how innovative design permits ongoing flexibility of use and addresses issues of sustainability.

Lead Judge

Nicola Bertrand

Germany, Australia

Panel Judge

Nadia Tobia

Canada

Saiful Anuar Aziz

Malaysia

Finalists

- **NG TENG FONG General Hospital, Singapore**
  Commissioned by Ministry of Health
  Designed by CPG, HOK & STUDIO 505

- **Vienna North Hospital**
  Commissioned by Vienna Hospital Association
  Designed by Health Team KHN – Albert Wimmer ZT-GmbH

- **Gleneagles Hong Kong Hospital**
  Commissioned by NWS Holding Limited
  Designed by P&T Group

- **Women's College Hospital in Toronto**
  Commissioned by Infrastructure Ontario
  Designed by Perkins Eastman Black Architects

Mental Health Project

Criteria

Mental Health Project, An award for a mental health facility where an effective reconciliation between operational requirements for security and supervision and the imperative for a civilizing and humane environment that supports therapeutic intervention is evident. Submissions should show an understanding of the principles and practice of salutogenesis.

Lead Judge

Mungo Smith
Australia

Panel Judge

Semir Zubcevic
Austria

Prof. Gelun
China

Finalists

-Psychiatric Clinic, Radboud university medical center
Commissioned by Radboud university medical center
Designed by EGM architects and Suzanne Holtz Studio, The Netherlands

- Aabenraa Psychiatric Hospital
Commissioned by The Region of Southern Denmark
Designed by White Architects

Use of Art in Public and Private Spaces

Criteria

Use of Art in Public and Private Spaces, An award that recognizes the effective application of creative endeavor which further advances knowledge of the potential of the arts to support therapeutic outcome and impact the health process. Preference will be given to success in new and innovative approaches of using Art in public spaces to create mental process and thereby stimulate positive emotional experience.

Lead Judge

Vivien Mak

Hong Kong

Panel Judge

Prof. Stephen Verderber

Canada

Aija Thomas

Australia

Finalists

-Blacktown Hospital in Sydney

Commissioned by NSW Health Infrastructure

Designed by JACOBS Architects with HARC

-Lancaster General Hospital,

Commissioned by Penn Medicine

Designed by Ballinger

-Valley Children's Hospital

Commissioned by Valley Children's Hospital, Madera California

Designed by Aesthetics, Inc.

- Women's College Hospital in Toronto

Commissioned by Infrastructure Ontario

Designed by Perkins Eastman Black Architects

Future Healthy Built Environment Project

Criteria

Future Healthy Built Environment Project (Projects should be in design or under construction), An award for the design of a future any built environment that recognizes the changing role of the built environment in relation to health and wellbeing of people or local community. The project must demonstrate a 'Salutogenic' vision for healthy environments that addresses anticipated socioeconomic challenges of the future.

Lead Judge

Gunther De Graeve
Australia

Panel Judge

Prof. Ian Forbes
Australia

Susan Black
Canada

Finalists

-Shaare Zedek Cancer Centre
Commissioned by Shaare Zedek Medical Centre
Designed by Farrow Partners and RO Architects

- Le nouveau CHUM
Commissioned by Construction Santé Montréal
Designed by Cannon Design + NEUF

- Cancer Research & Treatment Luis Sarmiento Angulo
Commissioned by FLCSA Bogotá, Colombia
Designed by Rafael de La-Hoz Architects

- Hospital Südspidol Luxemburg
Commissioned by Centre Hospitalier Emile Mayrisch
Designed by Health Team Europe
Albert Wimmer ZT-GmbH / Architects Collective ZT-GmbH

Salutogenic Design Project

Criteria

Salutogenic Design Project, Awarded for the design of a completed project of any type of built environment, which clearly demonstrate that are comprehensible, manageable and meaningful, thereby fostering a strong sense of coherence amongst its users that promotes their health and wellbeing. Submissions must show how environmental, social and economic sustainability is improved.

Lead Judge

Dr. Innocent Okpanum
South Africa

Panel Judge

Katharina N. Walker
Australia

Prof. Debajyoti Pati
USA

Finalists

- **NG TENG FONG General Hospital, Singapore**
  Commissioned by Ministry of Health
  Designed by CPG, HOK & STUDIO 505

- **Vienna North Hospital**
  Commissioned by Vienna Hospital Association
  Designed by Health Team KHN –
  Albert Wimmer ZT-GmbH

- **Kindergarten im Stadtpark Wien**
  Commissioned by Magistratsabteilung 19
  Designed by Martin Kohlbauer Architects

- **Welfare Centre Onni**
  Commissioned by Pukkila Municipality, Finland
  Designed by L&M Sievanen Architects Ltd

- **Women's College Hospital in Toronto**
  Commissioned by Infrastructure Ontario
  Designed by Perkins Eastman Black Architects

Sustainable Urban and Built Environment

Criteria

Sustainable Urban and Built Environment, Awarded for a healthcare project or any type of health community and urban planning completed after 1 January 2008 that can demonstrate sustainability performance above the mandatory norm, satisfies legislative, technical, financial and moral imperatives, and shows understanding of the principles of salutogenic and ecological design.

Lead Judge

Prof. Mardelle M. Shepley

USA

Panel Judge

Donald Garner

Australia

Prof. Alan Dilani

Sweden

Finalists

- **Vienna North Hospital**
  Commissioned by Vienna Hospital Association
  Designed by Health Team KHN – Albert Wimmer ZT-GmbH

- **Reading Health Plex for Advanced**
  Commissioned by Reading Health System
  Designed by Ballinger

- **NG TENG FONG General Hospital, Singapore**
  Commissioned by Ministry of Health
  Designed by CPG, HOK & STUDIO 505

Interior Design Project

Criteria

Interior Design Project, An award to recognize a therapeutic space that enhances the health, wellbeing and quality of life of the patients, staff and visitors. Preference will be shown to innovative projects, which show understanding of the principles of salutogenesis, respect the privacy and dignity of patients, as well as provide a enjoyable experience that reduce stress.

Lead Judge

Tye Farrow

Canada

Panel Judge

Sylvia Leydecker

Germany

Liesbeth van Heel

Netherlands

Finalists

- Lancaster General Hospital

Commissioned by Penn Medicine

Designed by Ballinger

- Blacktown Hospital, Sydney

Commissioned by NSW Health Infrastructure

Designed by JACOBS Architects

- Women's College Hospital in Toronto

Commissioned by Infrastructure Ontario

Designed by Perkins Eastman Black Architects

Lifetime Leadership Award 2017

Criteria

Lifetime Leadership Award, awarded to a healthcare leader and visionary who has shown and ongoing lifelong commitment to enhancing the health, wellbeing and quality of people's lives through their dedication to health and design. The award recognizes the human and personal qualities needed to push back the boundaries of progress and inspire future generations.

Lead Judge

Prof. Alan Dilani

International Academy for Designand Health, Sweden

Panel Judge

Albert Wimmer
Austria

Wilhelm Marhold
Austria

Study Tours: Inspiring Places

Join colleagues on the morning of the Sunday, 16th of July for international benchmarking study tours of some of Austria's most impressive healthcare facilities and iconic architectural buildings.

There is no better opportunity to complete a memorable congress than to join friends and colleagues on the Design & Health Study Tours, which will be held on the morning of Sunday, 16th of July. This year, thanks to our local partners, there are two very impressive latest projects of hospital and elderly care facilities to visit and enrich your knowledge of design, health planning and service delivery in Vienna and Austria. To register for a tour, please visit the Congress registration desk.

Study Tours

Date: Sunday 16 July 2017

Time : 08.45 - 13.00

Departure point: Hilton Hotel, Am Stadtpark 1, Vienna

9.00	Departure for the first visit
9.30 - 10.45	Visiting the site
10.45	Departure for the 2nd visit
11.15 - 12.30	Visiting the site
12.30 - 13.00	Return to Hilton Hotel

Nursing home „Rudolfsheim-Fünfhaus“

The nursing home Rudolfsheim-Fünfhaus (also called Ingrid Leodolter Haus) is one of the newest nursing homes in Vienna, that came into existence through the geriatric reform in September 2015. The home provides care facilities for 324 patients. All single and twin rooms provide a bathroom and a barrier-free balcony or loggia. Medical and nursing care is available around the clock. The nursing home offers short-term and long-term care as well as care of people suffering from dementia.

Vienna North Hospital, 1210 Wien, Brünner Straße 68

Vienna North Hospital is an important step in reconstructing the Viennese hospital landscape. The hospital will be one of seven specialized hospitals in Vienna. Establishing a partly new set of priorities in the other hospitals combined with shifting existing hospitals and departments from their present location to the Vienna North Hospital is improving the health care services significantly.

The new hospital provides a light flooded atmosphere as well as an optimal solution for the workflow and organizational processes. The design combines the advantages of a pavilion-type hospital with those of a central hospital. The modular expandability ensures the state of the art for many years. The invitingly shaped foyer area featuring a spacious piazza connects the hospital with the urban space while at the same time providing optimal protection against noise on account of the building's position.

The rooms are designed exclusively as single and twin rooms, which reflect the high standard finish of the inpatient wards. Light-flooded atriums, roof gardens and extensive green spaces combine to make the hospital an oasis of well-being for patients and employees alike. The landscape design unites the ideas of well-being, healing, growth and recovery in a holistic overall concept. The overall concept provides clarity, optimal functional processes, a clear organization, short distances for the nursing staff to get to the patients, and complex networks. The 800-bed hospital will unite state-of-the-art standards with as much comfort as possible.

The guided tours through the "Krankenhaus Nord" and the "Pflegewohnhaus Rudolfsheim-Fünfhaus" are a service of the City of Vienna and the Vienna Hospital Association and are free of charge.

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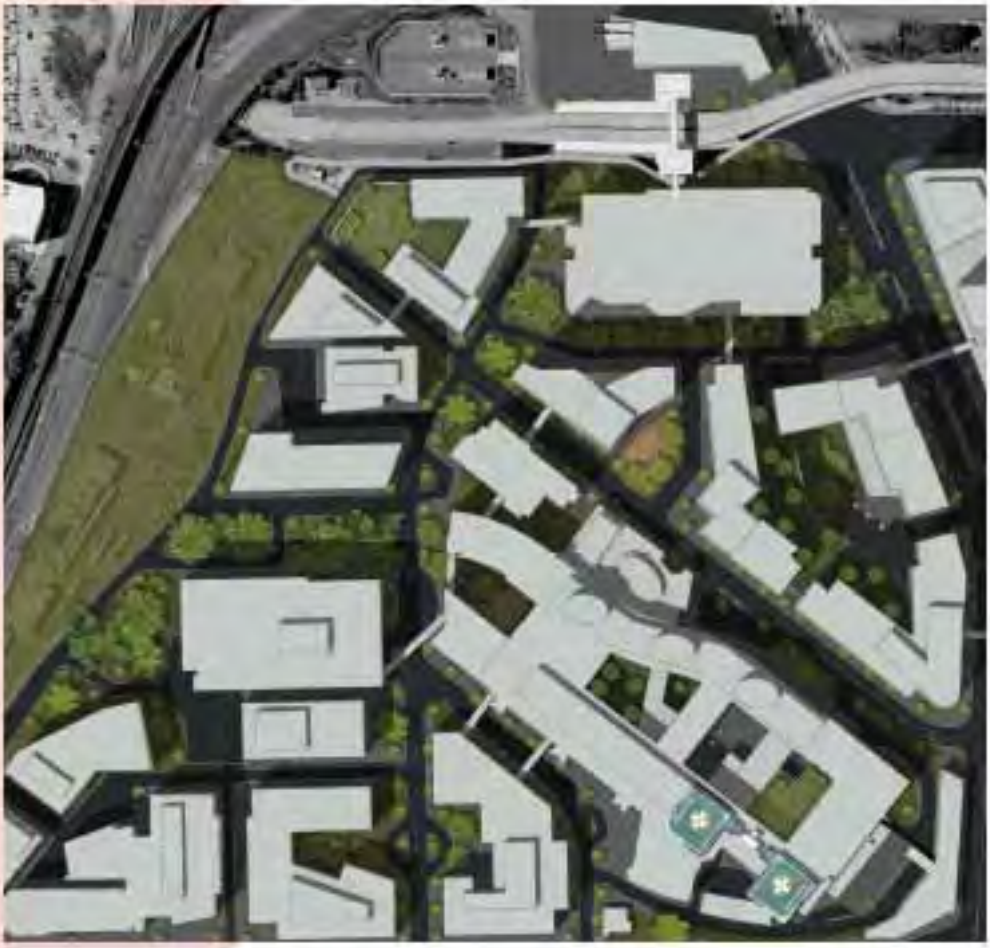
With a focus on the specialist industry, Destravis have the knowledge and ability to understand the issues faced by health service providers.

Our trans-disciplinary team of experts work collaboratively to develop feasible project solutions for clients often as service improvements, funding strategies or built environment changes.

Our in-house capability includes health planning, service planning, master planning, cost management, business cases and economic assessments for public and private health clients.



Christina Dietscher, Ph.D.
Austrian Ministry of Health & Women

Christina Dietscher is a trained sociologist with a specialization in the sociology of health and medicine. As a former team member of the WHO Collaborating Centre for Health Promotion in Hospitals and Healthcare in Vienna, she has more than 20 years of experience of research, project implementation and evaluation in settings-oriented health promotion, especially in the fields of health promoting hospitals and health care, and health promoting schools. Her areas of expertise include organizational health literacy and networks in the settings approach of health promotion. In 2015, Christina joined the Austrian Ministry of Health and Women's Affairs, where she currently functions as deputy head of department for Health Promotion and Primary Prevention. She is chair of the Austrian Health Literacy Platform, author of numerous publications and a frequent speaker at international and national conferences.

A Salutogenic Approach towards Health Infrastructure

The term "salutogenesis" was coined by sociologist Aaron Antonovsky. The concept focuses on factors that maintain and support human health and well-being, rather than on factors that cause disease (pathogenesis). Antonovsky was specifically interested in the relationship between health, stress, and coping. According to salutogenic theory, people continually battle with stressors and tensions to which they are constantly exposed. So as to maintain their health, they have to permanently and actively adapt to these triggers. What helps them cope and to effectively avoid or combat stressors and tensions are their so-called generalized resistance resources (GRRs). Examples of GRRs include resources such as money, ego-strength, and social support. "Salutogenesis" is however most widely associated with the concept of "sense of coherence" (SOC). Only if stress violates a person's SOC, will it cause harm, according to Antonovsky. He describes three dimensions of the SOC, namely comprehensibility, manageability and meaningfulness.

Against this background, the lecture will discuss the relevance of these concepts to healthcare and health infrastructure. It will be argued that, given the (clinical) evidence of the effects stress can have on the deterioration of health and as a trigger of dis/ease, it makes sense to pay attention to the stressors healthcare itself causes through its way of functioning, through its infrastructures and processes. Examples will be given of how stressors in healthcare can be reduced, and how healthcare and health infrastructure can be organized and designed in a resource-oriented way and in support of the sense of coherence. It will be suggested to understand salutogenesis as a dimension of healthcare quality, and to embed salutogenesis in healthcare management as an organizational principle. Relations between the salutogenic approach and other concepts, such as health promoting hospitals and health-literate healthcare, will be pointed out. Some attention will be given to the question how the built environment in healthcare can support a salutogenic orientation.

Architect Christoph Mayrhofer

Chairman of Architects in Vienna, Austria

Christoph Mayrhofer obtained his architecture degree from the Technical University of Vienna graduating at Professor Ernst Hiesmayr. Study visits in Italy and the USA with collaboration in various offices. Christoph Mayrhofer founded his first architecture studio in 1992. In 2000 he opened a branch in Volda, Norway. In 2004 Gernot Hillinger joined the company and in 2012 they established HILLINGER MAYRHOFER ZTGMBH. Christoph Mayrhofer has been involved in different stages and types of projects including urban design, commercial, residential and institutional buildings. Today Christoph Mayrhofer is chairman of the Chamber of Architects in Vienna, Austria.

Hospital Design in Vienna - A Historical Review

"Urban Development in the time of "Red Vienna" 1919-1934 - An early example of city planning in search for a healthy society"

In a very short period of about 14 years a unique experiment in socialist urbanism took place in this very city, the internationally acclaimed model of "Red Vienna". Only recently industrialized, Vienna after the First World War was a city of extreme inequality.

In the seek for a socially just society the focus was rather on quality of living than just on the number of apartments to be built. In the years of great economic hardship in particular the housing complexes built under the Social Democrats were more than just homes: they were social worlds, replete with kindergartens, shops, health care, libraries, laundries, lecture halls, theatres and parks. These provisions represented an ambitious attempt to empower the citizenry by offering them both material security and opportunities for self-improvement.

The urban development of "Red Vienna" was nothing less than a change of paradigm. For the first time, the human being and his needs, regardless of his social status, determined the design of the city.

At a time when cities worldwide are beholden to market forces – with the associated decline in democratic accountability, and grossly widening disparities between the richest and poorest – there is much to learn from this history if our focus shall be on building the environment for a healthy society.

Jean-Marc Zahnen and Heinrich Limacher

JEAN-MARC ZAHNEN, PROJECT MANAGER AT PAUL WURTH GEPROLUX

Jean-Marc Zahnen studied at the Karlsruhe Institute of Technology, where he obtained his diploma in civil engineering with his diploma thesis focusing on lean construction management. After his studies he joined Paul Wurth Geprolux where he took part in several developments of hospital projects and is now responsible for the development of healthcare related activities within the Group.

HEINRICH LIMACHER, HEALTHCARE CONSULTANT

After his engineering studies at the ETH Zurich, Heinrich Limacher worked in one of Switzerland's leading architectural offices in hospital design. He developed the basics for operational hospital planning according to the principles of industrial processes. After 6 years he took over the management of the Department of Planning in the Ministry of the Health of the Canton Zurich. In 1991, he founded H. Limacher Partner AG, a consulting company in hospital planning. After selling his company in 2015, he has been working as a freelance consultant.

Lifecycle Hospital Concept - Strategic Set-up for a "Life Cycle Hospital"

In general hospitals are divided in the following functional sections: care unit, examination and treatment unit, administrations and logistics. Each functional unit is characterised by a different technological and functional evolution due to new technologies, change of patient needs, etc.

These factors lead to different life durations for different functional units resulting in the necessity of renovating or replacing specific units at different intervals.

However, we observe that in current hospital buildings different units with different life times are merged in the same construction volumes. Renovation of units with a fast technical evolution which are adjacent to other units with lower technical evolution is therefore unavoidable including disturbances of their operation and expensive interim solutions. In addition, it is well known that the operational costs of a hospital far exceed the investment costs needed for its construction.

Therefore the fast evolution in medical technology combined with the growing tasks of hospitals requires a radical rethink of operation: the new hospital building is therefore only the special case of its rebuilding.

Planning a hospital from a "life cycle"-perspective requires a new approach to the design: while parts of the hospital require long-term investments with durable infrastructure and high quality, other areas quest for the greatest possible industrial flexibility and rapid replacement to react to change. The resulting challenge is the separation of functional units in different buildings according to their life time and the provision of empty areas for future re- & deconstruction. This requires the planning of necessary buffer areas, allowing the reconstruction of new structures without disturbing the ongoing operation and eliminating costs for inefficient interim solutions.

Dr. Roland Paukner, MD

Former Director of Vienna Hospital Association for geriatric centers and nursing homes

He studied medicine at the Medical University of Vienna. During his study he was a nurse in a children's hospital. After completing his studies he became a physician in the Wilhelminenspital of the City of Vienna. In 1983 he opened an ordination as general practitioner. He was consultant for Integration of Health and Social Affairs of the former City Council for Health and Social Affairs, Univ.-Prof. Dr. Alois Stacher. Between 2005 and 2015 he was director of the Division of Geriatric Centers and Residential Nursing Homes with social medical care in the Vienna Hospital Association.

Developing Elderly Care in Vienna

The City of Vienna started a reform of elderly care between 2005 and 2015. The Vienna Hospital Association erected eight new residential nursing homes all over the city; two have existed. They have the appearance of residential buildings, but all qualities of a hospital. Six of them were built in a Public-Private-Partnership-Program. At all locations we started an architectural competition; so we reached high qualities in architecture and town planning. In several houses we also have living areas for younger people who are care-dependent. Medical assistance in every house is obligatory. The new residential nursing homes are not situated on the outskirts but in urban areas, within easy reach by public transport. Every location has a garden for therapy and recreation inside or nearby. So patients can live their individual life although they are frail or sick!

Dr. Magdalena Arrouas
Ministry of Health and Women's Affairs, Austria

- *1978* *Graduation to Doctor of Medicine (Medical University of Vienna)*
- *1978 – 1982* *Training to General Practitioner*
- *Sept. 1984* *Date of joining the Ministry of Health*
- *January 1992* *Head of the Department "Non-communicable Diseases and Mental Health"*
- *July 2006* *Deputy of the Director-General for Public Health and Medical Affairs*
- *March 2017* *Acting Director-General for Public Health and Medical Affairs*

Health Policies Austria

Prof. Dr. Sylvia Schwarz, MD
Head of Department, Hospital Hietzing,
Neurological Center Rosenhügel Vienna

Univ. Dr. Sylvia Schwarz, born in Vienna, studied at the Matura Medical School in Vienna, trained as a specialist in anesthesiology and intensive care medicine at the Vienna University Hospital.

Scientific activity and habilitation in the field of new short-acting muscle relaxants, stays abroad at the pharmacological institute in Groningen, as well as post-graduate training in cardiac anesthesia in Cleveland, Stanford and Boston, USA.
1990 - 2017 Director of the Department of Anesthesia and Intensive Care at Hietzing Hospital with NZR, President of the Supreme Medical Council since 2014, interim. Medical director of the North Hospital 2010 - 2017, since 2/2017 project management clinical operation of the hospital North.

The Viennese Concept of Shaping Future Hospitals

The Honourable Pamela Rendi-Wagner

Federal Minister of Health and Women's Affairs, Austria

Professional experience

- *1998 – 2002: Institute of Specific Prophylaxis and Tropical Medicine of the Medical University of Vienna*
- *2002 - 2003: Department for Infectious Diseases and Tropical Medicine, Kaiser Franz Josef Hospital, Vienna*
- *2003 - 2007: Institute of Specific Prophylaxis and Tropical Medicine and Centre for Travel Medicine of the Medical University of Vienna*
- *2008 - 2011: Department of Epidemiology and Preventive Medicine, School of Public Health, Tel Aviv University, Israel (visiting lecturer)*
- *2011 - 2017: Head of the Division of Public Health and Medical Affairs at the Federal Ministry of Health and Women's Affairs; Chair of the Federal Office for Safety in Health Care (BASG) and member of the Federal Health Commission.*
- *2012-2017: Visiting lecturer at the Centre for Public Health, Medical University of Vienna*
- *Since 8 March 2017: Federal Minister of Health and Women's Affairs*

Academic record

- *1996: Graduation as a doctor of medicine, University of Vienna*
- *1996 - 1997: Master of Science (MSc) in Infection and Health in the Tropics, London School of Hygiene and Tropical Medicine, University of London, UK*
- *1997: Diploma of Hygiene and Tropical Medicine (DTM&H) The Royal College of Physicians, London, UK*
- *2001: Université Genéve & Fondation Merieux, Veyrier-du-Lac, France*
- *2005: Diploma as a specialist in Specific Prophylaxis and Tropical Medicine, Medical University of Vienna*
- *2008: Habilitation (university teaching qualification) for Specific Prophylaxis and Tropical Medicine, Medical University of Vienna*

Austrian Health Target 10 health targets

Markus Müller

Rector of the Medical University of Vienna

Markus Müller was born in 1967 in Klagenfurt, and received his doctorate "sub-auspiciis" from the Medical Faculty of the University of Vienna in 1993. After that, he completed training at departments of emergency medicine, oncology, endocrinology, infectious disease and chemotherapy, clinical pharmacology and angiology in Austria, Sweden and the USA. He qualified as a professor in the subjects of clinical pharmacology in 1998 and internal medicine in 2001. In 2004, Markus Müller was appointed as Professor and Head of the Department of Clinical Pharmacology at the Medical University of Vienna at the AKH Vienna. He gained an international reputation through his work on the development of clinical microdialysis and his expertise in the clinical development of innovative medicines and vaccines. Among other things, Müller was crucially involved in the clinical development of several vaccines, including those against influenza H5N1, -H1N1, borreliosis/lyme disease, and alzheimer's. He was appointed Chairman of the Data Safety Monitoring Board (DSMB) of the WHO Ebola vaccination program VEBCON in 2014.

Markus Müller has more than 200 original papers published in the field of internal medicine and clinical pharmacology and has won several awards such as the Tanabe Award of the American College of Clinical Pharmacology (ACCP) in recognition of his innovative approaches to clinical pharmacology studies.

The Challenges of Health Science, Research and Innovation

Professor Alan Dilani, PhD

Founder, International Academy for Design & Health, Sweden

Professor Alan Dilani is a founder of the International Academy for Design and Health (IADH), www.designandhealth.com and the Journal "World Health Design". Dr Dilani has been engaged worldwide in several universities in the field of Design and Health developing "Psychosocially Supportive Design Program", both in Medical and Design institutions. He holds a Masters of Architecture in Environmental Design from the Polytechnic of Turin, Italy and a Ph.D. in Health Facility Design from the Royal Institute of Technology, Stockholm. His research at Karolinska Institute, Medical University, developed a multidisciplinary research approach, leads to the new definition called "Salutogenic Design" that not only fosters functional efficiency, but also improves health processes. He has designed all kind of healthcare facilities and has been used as advisor for several ministries of health around the world. He lectures worldwide and is the author of numerous articles and 15 books in the field of Design and Health. Dr. Dilani received the Award 2010 from US Academy of Architecture for Health for his "intellectual honesty and promotion of high quality design research".

Lifetime Developing Salutogenic Design Approach to Improve Public Health

There is an urgent and ever-growing awareness world wide of the need to invest in healthy and sustainable infrastructure. By applying salutogenic design principles that seek to promote greater health, this landmark shift can begin to occur. The resulting and striking healthful outcomes of such existing structures bring these concepts to the forefront of global building opportunities. This approach nowcomprises the leading edge of change in our society. By embracing these precepts to shape our built environments and infrastructure, we engage in shifting the quality of such environments. Salutogenic architecture is taking its rightful place in the vanguard of preventative care strategies that have the potential to change our lifestyle for the better. Health has become a commodity that is not equally distributed within society. Certain groups of individualsare more successful than others in having access to proper health-related knowledge and information. This data gathering is very often supported by a healthier lifestyle, in combination with lower exposure to risk factors within the built environment. The author discusses the principles and ideas for a salutogenic design approach in planning future built environments with one simple goal: to create a healthier society. For design professionals (architects, planners, designers et al), the focus upon and concern for designing a sustainable healthy future society is the most compelling task to be addressed and implemented in all societal sectors where human beings live work and play. An increase in the consideration of the salutogenic design approach leads to social innovation and economical growth. It requires an interdisciplinary application of sciences such as architecture, medicine, public health, psychology, design and engineering with culture, art and music.

Keywords: Salutogenic Design, Stress Reduction, Health Promotion, Psychosocial Factors

Dr. Claudia Stein MD, MSc, PhD, FFPH

Division of Information, Evidence, Research & Innovation (DIR)
World Health Organization, Regional Office for Europe

Claudia Stein MD, MSc, PhD, FFPH is a German trained public health physician, epidemiologist and director with the World Health Organization (WHO). Claudia qualified from Essen University Medical School in Germany in 1989. She has post-graduate training in Internal Medicine, a Master's in Public Health, a PhD in Epidemiology and completed a residency in Public Health Medicine with Specialist Certification. Prior to her career at WHO she worked as public health physician and epidemiologist at country level in Europe, as well as for a few years in India and China, the latter two under the auspices of the Medical Research Council, MRC. Claudia first joined WHO in 1998, as a secondment from the United Kingdom. Claudia mainly in the area of health information, statistics and burden of disease. In 2010, Claudia took up her current position as Director of Information, Evidence and Research at the WHO European headquarters in Copenhagen.

Design and Health - More than Merely the Absence of Disease or Infirmity

- The Division of Information, Evidence, Research and Innovation provides knowledge for health and helps people use it.
- The Division comprises the following units:
  - The Health Information, Monitoring and Analysis unit regularly collects and analyses data to assess country and regional health trends and publishes the results primarily on line, provides guidelines and tools for countries to assess the quality of their health information, supports the integration of national health information systems and trains counterparts in countries in data standards to enhance international comparability.
  - The Evidence and Information for Policy unit comprises (i) the Health Evidence Network, a source of evidence that gives access to independent and reliable health information and evidence for policy-makers to build health policy; (ii) WHO/Europe's research for health functions, including the European Advisory Committee on Health Research, and the review of ethics and guidelines; and (iii) the Evidence-Informed Policy Network (EVIPNet), which is under development and aims to help countries build up local capacity to use research evidence in policy-making.
  - The Library, Languages and Publications unit ensures that WHO/Europe publishes high-standard, timely, reliable, user-friendly, multilingual knowledge for health, by editing, translating, refining and packaging it in a systematic way, by supplying tools and guidance for staff to use, and by providing a range of library services.

Prof. Dr. Thomas Szekeres

President of Vienna Medical Chamber

In 1988 Thomas Szekeres graduated as doctor of general medicine at the medical faculty of the University of Vienna. In 1994 he qualified as university lecturer at the medical faculty of the University of Vienna for clinical chemical and medical laboratory diagnostics and since then has been a consultant. In 2003 Szekeres received his PhD from the University of Trnava and subsequently a second consultancy in human genetics in 2005. Szekeres has been a consultant at the Clinical Institute for Medical and Chemical Laboratory Diagnosis of the Medical University of Vienna since 1997 where he studies the development of anti-tumour substances. He has been a member of the board of the Viennese Doctor Association since 2001 and became its president in 2012.

The Challenges of Health Care in Austria

In the near future Austria will face great challenges in its health care system. In the last few years, the number of doctors with public health contracts in Vienna has significantly decreased, while at the same time there is an increase in population. The plus in population and demand is juxtapose to a minus in the number of doctors. Furthermore, in the next future, the majority of general practitioners will be retiring and there are no successors in sight, as many young colleagues leave the country.

The situation in hospitals is similar, where insufficient personnel leads to shortages in patient care and the education of future doctors. The closing of outpatient-departments leads to even longer waiting times for patients and additional burden on doctors.

Since the so-called feminisation of the medical profession, the work-life-balance has become a theme. In the meantime, more than 50 percent of the medical professions is female. Female doctors aspire towards a flexible job with part-time possibility not only in hospitals but also as a practitioner.

Like most other European countries, the Austrian health system also faces financial problems. However, in order to achieve an optimal health care, health policy must assess priorities differently. Many studies confirmed the excellent quality of the Austrian health care system. Nevertheless, the difficult conditions with which we all have to fight every day cannot to be denied.

Architect Albert Wimmer

The "Atelier Albert Wimmer" was founded in 1977 and employs today about 70 people. Architecture can and is ought to contribute its part to create and support an open society. This central duty applies to residential buildings as well as to urban planning projects, leisure centres or health projects like the new Vienna North Hospital. At the beginning of each project is the task to identify the virtues of the place and its surroundings and to reinterpret it in a new way. The conviction to keep the spirit of a space or a site alive and to transform it is also the foundation for Architect Albert Wimmers working method. The atelier relies on the four pillars: intervention (to comprehend the aura of a space and to reinterpret it), articulation (to accept social responsibility), art (integration of emotions in the design process) and innovation (further development). Major competitive successes continue to define our scope of work: the Vienna Central Station, the Eurogate master plan, the construction of the new Vienna North Hospital as well as the new hospital Südspidol in Luxembourg and the clinics for children and adolescents in Freiburg, Germany. Through several decades of professional work and highly qualified co-workers, we have rich experience in the area of planning and implementation of construction projects in Austria and abroad. The acceptance of tasks in the field of general planning belongs to our entrepreneurial scope of work.

Innovation in Health Infrastructure to Revitalize Health and Tackle 21st century challenges - Case Studies from Europe

The salutogenic approach aims to create a highly efficient process-orientated hospital that places the patients with all their varied needs and requirements in the centre. The crucial point is the creation of a so-called "healing environment" that offers a health promoting atmosphere. In this respect people – patients, staff and visitors – do not stand at the edge of outstanding architecture but in the centre point of their environment. International role models for the practical application of salutogenic design principles are the new hospital projects Vienna North Hospital, the hospital Südspidol in Esch/Alxette, Luxembourg and the children's and adolescent clinics in Freiburg, Germany. All projects are designed based on the orientation on the patient's needs. The fundamental idea is to provide health care buildings on a human scale instead of confronting patients, staff and visitors with a mega structure. Through this the designs ensure an intuitive comprehensibility and high readability that is furthermore supported by the clear visual connections and logical zoning. The concept aims to create clearly and understandably segmented structures with high orientation and readability. Consequently all projects pursue a strategy that consciously exceeds the state-of-the-art. The proposed designs anticipate possible future developments and follow the strategic goal of patient-friendly and functional employee-friendly environments.Autonomy and self-determination, differentiated zones for conversation and retreat, as well as a clear and distinctive division between private and public interaction are at the focus of the projects. The designs support encounters and interactions, while ensuring that the human need for self-reliance and mutual respect is fulfilled. Bright, light-flooded rooms, the use of natural forms and "healing colours" such as can be found in nature as well as a leafy view contribute to a pleasant and relaxed atmosphere. Supplemented by a selection of suitable artworks and especially designed gardens and roof landscapes, the result is a holistic-spatial experience that optimizes the atmosphere and supports the recovery process. The nature-near atmosphere find it's continuation in the surrounding landscape that provides an important contrast to the clinic structures of the hospital and offers a wide range of possibilities to experience nature and supports the recovery process. For patients, staff and visitors alike the park is suitable for all fitness levels and provides leisurely and easy walking paths with high value of inhabitation.

Professor Beate Wimmer-Puchinger, Ph.D.

Clinical & Health Psychologist & Gender & Public Health Expert

Professor Beate Wimmer-Puchinger, PhD, University Professor of Clinical and Health Psychology at the University of Salzburg, was one of the pioneers of women's health research in Austria. Founder and director of Ludwig Boltzmann Institute for Women's Health Research for 15 years (1990- 2005). She led research programs on family violence and on reproductive health. She also was responsible for the Austrian women's health reports. She founded and directed both women's health care centers in Vienna within general hospitals for many years. She worked closely with the WHO, concerning women health issues and took part in WHO women's health agenda 2010. In 1999 she was appointed as the executive director for Women's Health by the City of Vienna responsible for realizing the Women's Health Program until 2015. Currently she offers her expertise as consultant in public health and gender issues for projects and to organisations. She is a permanent guest professor at different universities of psychology, public health & gender medicine. She published five books and countless scientific articles. Her main areas of work are maternity, psychology of pregnancy, eating disorders, teenager sexuality, sexual violence and gender perspectives of public health, etc..

Health in all Policies (HiAP): An interdisciplinary Approach for Better Health

As defined by WHO, public health refers to all organised measures to prevent disease, promote health, and prolong life among the population as a whole. This means to provide conditions in which people can be healthy and focus on entire population, not on individual patients or diseases. This is linked to relevant issues of Social Determinants of Health, such as living conditions,housing, social integration, environment, or working condition, but also to issues like accessibility, availability, and appropriateness of the Health System.

Facing the Future challenges of raising Health and Social Inequalities, combined with poor Health literacy and low social campacity in the Society, means, that almost all Fields of Policies are to be involved. An important key to ensure better Health lies in the Strategies of "health in all Policies (HiAP)", as a collaborative approach to improve population health by incorporating health considerations into decision-making across all relevant policy arenas. Elements in all relevant policies like Finance, Education, city planing, environment, Housing, Transport, Energy etc. are to support intersectional collaboration, benefit of multiple partners, Creation of structural change and promote health, equity and sustainability. All sectors should reflect an Health impact of their activities, (Health Impact Assesssment, HIAP). Facing this approach, the topics of salutogenetic Designs are of prominent importance.

Joseph Falzon

Design Architect & Ph.D. Researcher

Architect in private practice, graduated in 1997 from the University of Malta and final year PhD researcher at University of Bolton. During seventeen years of practice my architectural office has been involved in architectural design and restoration projects for infrastructural, commercial, residential tourism and leisure developments. Former member of parliament in Malta for ten years and member of the Parliamentary Assembly of the Council of Europe (CoE), Strasbourg between 2003 and 2013. Elected chairman of sub-committee on Sustainable Development and subsequently chairman of sub-committee on Culture, Diversity and Heritage (CoE). Former government representative on the Malta Environment & Planning Authority. Chaired Maltese parliamentary delegations in Europe and contributed in various academic and political conferences.

Salutogenic Approach in Utilizing Building Information Modelling

- Background: The building industry has been characterised by implementing BIM technology, in parallel noting that design for health and well being has increasingly attracted attention world wide. Sustainable principles in utilising BIM have optimised resources to provide better buildings, however it is argued that it still lack focus on end user contemporary challenges. This paper attempts to address this gap and examines how designers are incorporating the needs of the end users in utilising BIM strategies to provide salutogenic design environments for new and retrofitted buildings.
- Objective: The aim of this research was to determine how salutogenic design principles were being adopted in the design and construction stages to create healthy built environments and to determine how salutogenic design principles were being incorporated within the BIM process and supply chain.
- Research Design: Qualitative phenomenological focus groups comprised of stakeholders in the health and architectural professions, including academics, architects, interior designers, developers responsible for health and wellbeing related projects and end users. Audio recorded focus groups were transcribed 'intelligent' verbatim. Analysis was carried out using thematic analysis.
- Results: Advantages of utilising BIM for the design and construction of buildings were acknowledged. Though utilising BIM improved and produced better quality buildings with efficient use of design and efficient use of materials, thereby adopting sustainable construction techniques, this research revealed lack of input from health care professionals, researchers and end users in providing adequate data at the crucial initial stage of the supply chain. At various instances, end users are not invited to participate in the formulation of project design briefs. Other cases proved a lack of clear briefing and lack of quantitative and qualitative factors to adequately inform the design development process. This draws a degree of incongruence between the advancement of BIM use strategies and the salutogenic design principles. Participants also emphasised need of stakeholder participatory process in determining the external factors attributing that external spaces and outbuildings highly impact on the salutogenic approach of buildings under consideration.
- Conclusions: A clear need of knowledge transfer of research and evidance based salutogenic approach ino BIM development strategies is paramount together with good governance adopting a participatory approach. Salutogenic principles should be pursued at higher levels on the agenda by professionals in health care and well being to address this gap and produce research informed heathier environments.

Keywords: Salutogenic, Building Information Modelling (BIM), Governance

Walt Vernon
MAZZETTI + GBA

Walt is the CEO of Mazzetti, an international program management, strategic advisory services, consulting and engineering firm headquartered in San Francisco. Mazzetti creates technologically advanced buildings that are rooted in local culture, climate, and economy. Walt has been working with—partnering, consulting, advising---healthcare clients for more than 30 years. Walt serves on and is the former chair for the NFPA99 Electrical Systems Technical Committee. He is the former Electrical Engineer for the California Hospital Building Safety Board. He also served as one of the three co-coordinators for the Green Guide for Healthcare, the nation's first Green Healthcare rating system.

Population Health and Implications for Health Facilities

Objectives:

- Discover how policy makers are thinking about population health, in both developing and developed countries.
- Discover ways the ideas of population health is changing the way healthcare organizations need to plan and construct new facilities.
- Discover why the boundaries of healthcare increasingly need to extend beyond the built environment into communities.
- Discover ways designers and architects can continue to play an integral role in the delivery of healthcare.

Healthcare policy makers around the globe are struggling with similar problems. What is becoming increasingly obvious is the need to "double-down" on ways to eliminate needless costs in terms of preventable illness (usually life-style disease related and related to social indicators), ways to eliminate needless, (low or negative value) healthcare activities and expenses, and ways to improve the quality of services we do render (through elimination of error and improved outcomes measured in terms of patient quality of life changes). What is not so clear is how policy makers are groping for levers to use in moving organizations and cultures towards these new ideals, and, more important to designers, how healthcare organizations are groping towards solutions that might include the built environment. The FGI is a volunteer NGO in the US that has, for 30 years, focused on defining the fundamental requirements for effective healthcare facilities in the US. Responding to the seismic shifts in healthcare consciousness, FGI is seeking to broaden is focus by anticipating future trends in health delivery, and developing tools that help practitioners deliver both fundamental requirements and to go beyond fundamentals to new levels of performance; and, by broadening its viewpoint to understand emerging imperatives and opportunities created by needs for healthcare in a global context, including widely varying resource levels. These two perspectives meet, today, in understanding the drive towards population health, and developing thinking and tools that will help designers create relevant health promotion strategies including the built environment. This paper will explore the fundamental meanings of population health, and ways that policy makers are driving towards lower cost, but higher value health solutions. It will explore ways in which healthcare innovators around the world are creating new models of health, in which the healthcare organization becomes, effectively, the change agent for a culture of community health, and ways in which architecture responds by becoming the new civic architecture.

Keywords: community, technology, well-care

Ikumi Nakanishi
Arup

Ikumi is a designer and analyst and has worked on projects in Australia, Europe and the UK with Arup, a built environment consulting firm. Her key interest is understanding the relationship between people and their urban environment and creating better cities through evidence-based and user-centered design.

Mobilising Healthy Living through the Built Environment

Transport affects health and wellbeing through numerous pathways, resulting in a myriad of positive and negative impacts. Planners, engineers and design professionals are becoming increasingly aware of the relationship between transport and health as the body of research on this topic grows. Transport infrastructure can be the source of both solutions and problems around some of society's biggest challenges including climate change, increasing rates of chronic diseases and rising healthcare expenditure.

A partnership between Arup, BRE, University College London and Perkins + Will, research was undertaken to both understand urban mobility's impacts on public health and how to implement the knowledge to enable designers and decision-makers to deliver healthier environments. This was done through two steps: structuring the complex relationship between mobility infrastructure and health outcomes to create a framework and providing a 'protocol' to action the framework and help design for health using mobility infrastructure. The framework and protocol were developed through an assessment of current studies, literature and methodologies. Indicators and metrics were defined to utilise data to provide evidence based decision making processes.

The design protocol was tested on two case studies in Liverpool, UK and Louisiana, USA to demonstrate how it can be utilised and provide real life examples on how the built environment could be adapted to support health outcomes for a local community. This included the re-design of walking and cycling infrastructure and improvements in the efficiency of public transport to reduce standing traffic emissions.

It is believed that the research alongside the framework and protocol should be continually evolved and updated to include new findings and adapt to evolving technologies and information. Further research is currently being undertaken, evaluating the effectiveness of built environment projects designed for health outcomes. This is to help understand whether outcomes were met and the complexities of monitoring projects including how to promote effective evaluation in the built environment.

A report was published in the end of October with the aim to help decision-makers and designers deliver healthier urban environments through the opportunities provided by mobility infrastructure. It details the current research including the framework, design protocol and the development of the two case studies.

Keywords: built environment, mobility, health, healthy communities, urban planning

Bruce Crook and Aija Thomas, STH

BRUCE CROOK, DIRECTOR, SILVER THOMAS HANLEY

Bruce Crook is a Director at Silver Thomas Hanley (Aus) Pty Ltd, an international architectural firm specialising only in health care facility design. The firm is based in Melbourne and delivering major health projects across Australasia, Asia and North America. Bruce has been responsible for business cases, feasibility studies, masterplanning and health planning. Major projects include the Legacy System Integration, Portland, Oregon; The New Wellington Regional Hospital, New Zealand; Kasemrad Hospital, Thailand; the 375-bed St. Catharines General Hospital, Ontario, Canada; and Australian projects: the new 750-bed Fiona Stanley Hospital, Perth, Western Australia; the New Bendigo Hospital, Victoria; and Epworth Geelong, Victoria.

AIJA THOMAS, FOUNDING DIRECTOR, SILVER THOMAS HANLEY

Aija Thomas is a Principal and Founding Director of Silver Thomas Hanley (Aus) Pty Ltd, and, in this capacity, provides the lead in Health Facility Planning and in establishing the design philosophy for the professional development of the practice. Aija's expertise and experience in Health Facility Planning is extensive, commencing after graduation with international experience in Canada and New Zealand and continuing in Australia with a seamless record of specialist involvement in all areas of Health Facility Project Architecture for over 30 years. She has demonstrated continuously her dedication, skill and enthusiasm for planning solutions, illustrating understanding, lateral thinking and innovation in each project with which she has been involved. Her demonstrated skills in developing brief requirements ensure a high level of function and aesthetics.

The Challenges of 21st Century and Acute Healthcare Design

Objective: The objective of this presentation is to analyse the challenges of the 21st century as it relates to acute healthcare design and in particular the need for human interaction in the continuum of care. The increasing rate of new technologies for both clinical and support requirements in the healthcare environment has provided better health outcomes but is there a price to pay? The presentation will analyse the challenges and propose solutions by presenting case studies that reflect the current and impending issues.

Methodology : The analysis is based on the review of the patient, staff and family experience in the various facets of the healthcare environments in the acute care setting. Case studies will review facilities ranging from academic metropolitan, to regional and specialist hospitals. In presenting the case studies attention will be focused on;

- The ageing and other populations and their interaction with new technologies. Are people being left behind?
- The ageing nursing staff and the need to provide a safer workplace both physically and mentally
- Healthcare design and means by which it is responding to increased security and pandemic risks
- Is Technology the answer or simply a tool?
- Is the current workplace design promoting a healthy lifestyle?

The presentation will review those challenges and present case studies from Australia.

Results: "The future is upon us" and the challenges of the 21st century can be alienating for those that are forgotten in the rush to embrace new technology. The presentation will highlight those issues and findings from various projects including:

- Monash Children's Hospital, Melbourne, Australia
- New Bendigo Hospital, Bendigo, Australia
- Box Hill Hospital, Box Hill, Australia
- Victoria Comprehensive Cancer Centre, Melbourne, Australia

Keywords: Case Studies, Salutogenisis, Healthy Communities, Technology, Human interaction

Susan Black and Heather McPherson

SUSAN BLACK

Susan Black is a founding partner of Perkins Eastman Black Architects in Toronto Canada. Her work spans large-scale master planning, architecture and interior design - healthcare is a serious focus of the firm. Creative planning and innovation in design has resulted in new approaches for projects serving specialty acute and complex-continuing care hospitals, dementia-friendly and children-friendly environments, and ambulatory facilities throughout the world. Susan integrates culturally diverse design 'interventions' into her projects toward a vision to rekindle the notion of community, wherein families thrive in supportive environments.

HEATHER MCPHERSON

Heather J. McPherson, MSc, BSc, OT, CHE, Executive Vice-President of Patient Care and Ambulatory Innovation at Women's College Hospital, accountable for all patient care programs, has a clinical background as an OT with a Master's Degree in Rehabilitation Science while holding lecturer status at the Faculty of Medicine, University of Toronto. Involved in this redevelopment project from programming to activation as Executive Lead for Operational Readiness, Heather's clinical and research interests include women's health and health system solutions.

Healing the World One Woman at a Time

The largest pre-eminent academic ambulatory care centre and research institute in Canada, Women's College Hospital is dedicated to improving the health and lives of women and their communities. They aspired to build a new hospital with a design team who would identify with their vision and contribute unparalleled innovation to match their own.

Objectives:

- Harness the power of the feminine to create an environment that treats the 'whole' woman encouraging The Pink* Effect - healing from her to her family and into the community
- Generate innovative health system's solutions to keep complicated medical patients out of the hospital
- Measure how architecture, planning and design impacts the integration of academic research, education and clinical outcomes

Methods:

- Engaged in a pre-emptive quantitative and qualitative research study 'Voices of 1000 Women'
- Created inspired physically and socially supportive environments - beyond meeting ambulatory design norms
- Reinforcing The Pink* Effect when creating environments that support information sharing both internally and externally

Results:

An 'extraverted' architectural 'parti' ensures that The Pink* Effect penetrates every level of the facility and speaks to integration and collaboration with the community – while embracing a light-filled welcome box, with the addition of a cantilevered branding element glazed in the strongest pink. Concepts of welcome, choices, diversity, and quality of experience contribute to patient and staff self-empowerment and engagement. (i) Scalable clinical models of care prove innovations are successful; (ii) Innovations are shared across the country and beyond; (iii) Team learning spaces accommodated within each clinical pod; (iv) Integration of complimentary childcare lessens anxiety and respects women's time constraints; (v) Clinical neighbourhoods reimagined to incorporate screening and inter-departmental diagnostics for efficient patient flow; (vi) Team of healthcare specialists treats the whole person with multiple appointments; (vii) Wait times reduced to 20 minutes; (viii) Patient visits increased 1000 per month since 2013; (ix) Community participation in tapestry project!; (x) Conference Centre became a unexpected revenue generator and a hub for knowledge sharing; (xi) Satisfaction surveys including inclusivity ratings are increasingly positive; (xii) Reduction in emergency visits due Acute Ambulatory Care Unit; (xiii) Research Institute repatriated onsite.

Conclusions:

An architecture and design solution inspired by the 'soul' of the women incorporates strategies and innovative ideas to support healing on all levels - concepts which are sharable and scalable.

Annette Ridenour
President of Aesthetics

Annette Ridenour has invested over 35 years in creating nationally recognized and award-winning healing environments, programs in arts and wayfinding, interior design, and donor recognition systems for some of the best-known healthcare organizations in the U.S. and Canada. Annette is a founding board member of the National Organization for Arts in Health formerly the Society for the Arts in Healthcare. She's also a member of the Planetree Visionary Design Network, which provides holistic design services to its members. She co-authored, Transforming the Healthcare Experience through the Arts" with Blair Sadler and has written chapters in several text books, most recently "Managing Arts Programs in Healthcare". Annette has extensive success in collaborations with more than 200 medical facilities, and hundreds of major artists and architects from around the world. Numerous articles by and about Annette and her company's design work have appeared in publications such as Healthcare Design, Healthcare Facilities Management, Healthcare Building Ideas, and Spirituality & Health.

Salutogenic Approach to Design of Children's Hospital

Walk into a well-designed restaurant, retail store or hotel and you'll notice that every element of that interior – artwork, finishes, furniture, lighting, graphics, signage, sound – all relate to each other and somehow reflect that company's brand identity. The same can be said for innovative corporate offices such as Google and Apple. In the healthcare sector, a successfully branded environment designed with a salutogenic approach can translate into a highly valued positive patient experience that can contribute to the health and wellness of patients, families and staff. In 2012, Aesthetics began the task of creating a branded environment for Valley Children's Hospital in Madera, California. The 30-year-old, million-square-foot campus needed an interior design master plan that would thoroughly express the hospital's brand, communicate the healing and wellness nature of their medical practices, and provide a nurturing and inviting environment for patients and families. These salutogenic design standards would also apply to community outpatient facilities.

Objectives:
To create cohesive interior design standards that reinforce the brand of the organization while reducing stress for patients and visitors, by providing:

- Clarity: Define where you are and how to navigate where you are going.
- Comfort: Provide respite outside of the medical treatment aspect of the visit.
- Discovery: Provide positive distractions throughout the healthcare journey.
- Beauty: Access to nature, good design, and integrated art.

Method:
Aesthetics began with an intensive assessment of the existing facility, organizational marketing and growth plans, leadership's goals and objectives, and numerous interviews with staff and patients. This assessment, along with the application of evidence-based best practices, was key to developing a design that would support the health and well-being of patients and staff. Refining the design through collaborative workshops with stakeholders, the design team created master interior design standards, art program standards, wayfinding standards and graphic standards that were put into a phased implementation program.

Conclusion:
The redesign of the main campus public spaces is 70 percent complete. The design standards are currently being implemented within Valley Children's outpatient facilities, in new construction and remodeling projects. This presentation will demonstrate how a salutogenic environment encourages exploration throughout the building and campus, providing enriched environments that provide the variety and novelty that humans need. Before and after photographs of the facility will illustrate how a fully integrated branded environment was developed along with preliminary data of patient and staff satisfaction outcomes relating to reduction of stress and improved experiences.

Keywords: Customer Experience Design, Branded Environment, Fully Integrated Design

Chin Young, Don Garner and Arthur Collin

Jacobs Health Architecture Leadership Team, Sydney

- *Chin Young is the Health Section Leader, managing a team of 25 dedicated professionals. His experience covers all aspects of a project from inception to completion, and his leadership ensures successful delivery.*
- *Don Garner is the Health Planning & Design Sector Leader. 30 years specializing in the design and planning of healthcare facilities has given Don a reputation for delivering world class hospitals that achieve critical acclaim.*
- *Arthur Collin is the Lead Design Architect on the team's major hospital projects. He applies exceptional design skills gained from worldwide learning and practice with particular emphasis on cultural identity . Jacobs Health Architecture Leadership Team, Sydney.*

The Case Study of Blacktown Hospital

It is one thing to theorise about innovation in health design, and another to implement it, but the real test of success is evaluation in use. The Clinical Services Building (CSB) at Blacktown Hospital has been open for 6 months and some innovations are proving to be rather successful. Like most contemporary health projects, the CSB aspires to achieve: patient-focused Models of care, interaction and connections with intuitive wayfinding, both environmental and social sustainability, and flexibility for an unpredictable future. However, what really differentiates Blacktown Hospital is the creation of a new transformative identity that continues to engage the attention and participation of the community. "We wanted the engagement to be genuine, ongoing and meaningful so we decided on a systematic and comprehensive program of community and consumer consultation from the early stages of planning right through to the post occupancy period. "As a result, the facilities … really reflect the values of our local community", Peter Rophail, Hospital Transition Manager. The 32,000 m^2 CSB comprises 120 beds, outpatient clinics, pharmacy, pathology, and a Cancer Care Centre. The nine inpatient wards have a uniquely efficient arrangement comprising 2 pods with shared facilities between. Outboard double door ensuites and glazed bedrooms provide an unsurpassed level of access, patient observation and proximity to staff. With the patient beds inboard, ensuite access doubles as a "Carer Zone", the bed curtain creating a discrete area for the carer to sleep without impeding nursing access to the patient at night. It is a modest innovation with profound implications. "Last night I actually slept on a bed and I had a great, great sleep" Ruta Vatau, carer for her elderly mother Clinicians report that increased opportunities for communication with carers supports better discharge planning. The heart of activity is the Hospital Street atrium, lined in warm hardwood boarding. It links existing, new and future buildings into one unified facility, defines entries for each clinical service and accommodates a range of retail and interactive spaces. Two adjoining landscaped courtyards with giant coloured glass lanterns provide places for relaxation and reflection. The true context for the project is Blacktown's diverse immigrant and indigenous communities, and the CSB engages with a conception of blackness as a valid positive alternative to a clinical white hospital environment. Together the CSB and existing buildings create a new hospital of varying character, rather than homogeneity. The highlight of the facades is the rose coloured glass fins that glow in the sun, reflecting the diversity of the community and literally reflecting coloured light between exterior and interior - a warmth synonymous with a culture of healing and well-being. A dedicated cultural program integrates art with the building, not only consulting stakeholders extensively, but including them in the production of artworks. Each section of a 60m long mosaic bench was designed by a different community group, their diverse backgrounds clearly evident. "I love the way it doesn't really feel like a hospital" Anonymous You know the CSB at Blacktown is really integrating with a community when they suggest holding a market day in the hospital street atrium.

Keywords: Inpatient, Community, Culture

KEYNOTE ADDRESS

Monsignor Professor Dr. Obiora Ike

Executive Director of Global Ethics in Geneva

The Challenge of Global Health Inequities and Salutogenic Global Ethics

Reverend Monsignor Professor Dr Obiora Ike, born in Gusau, Northern Nigeria is a Catholic priest, teacher, scholar, social entrepreneur, publisher and author. He is an acknowledged and sought after public speaker and bridge builder across religions, cultures and continents and is a human rights activist and development practitioner. Dr Ike studied from 1975 to 1986 in Nigeria, Austria, Germany, France and UK, and holds degrees in philosophy, theology, economics, journalism and political science with doctorate specialisation in Ethics from the University of Bonn, Germany.

Professor Dr Ike has held several positions of service in Church, Society and State within Africa and in Europe. As founder of a number of educational and development organisations in Nigeria, including the Catholic Institute for Development Justice Peace and Caritas (CIDJAP), the Prisoners Legal Education and Assistance Scheme and the Small and Medium Scale Entrepreneurs Training Association. He has served as Chairman of the leading Umuchinemere Procredit Microfinance Bank Ltd in Nigeria as well as chairperson of 27 organisations and is Member of the European Academy of Science and Arts; New York Academy and Club of Rome.

Ike has held several academic posts as Professor at the Wolfgang Goethe University Frankfurt/German, the Theological Faculty Tilburg and most recently is Professor of Ethics and Intercultural Studies, Godfrey Okoye University. He is Chairman of the Enugu State Government Economic Advisory Committee and currently Executive Director of Globethics.net in Geneva, Switzerland, the leading applied ethics international NGO, an ECOSOC member of the UN.

Yvonne P. Burdick, MHA, FACHE, EDAC

Consultant with Joint Commission International

Yvonne P. Burdick has BSc in Biological Sciences with Honors in Physiology, University of Edinburgh, Scotland and MHA, Medical College of Virginia, Richmond, USA, Phi Kappa Phi with over 35 years of experience in health care and Over 17 years as consultant with Joint Commission International. She held leadership positions in hospital and ambulatory care settings, experienced in hospital operations including facility planning and construction. She Involved in the development and implementation of health service accreditation systems and quality improvement programs internationally with expertise in facilities management and emergency preparedness and design of health care facilities to promote patient safety and quality of care. Yvonne currently works with Joint Commission International as a field consultant and resides in NC, USA.

Design Challenges in Developing Countries - The Case Study of Africa

Designing for healthcare in developing countries provides some unique challenges. Many countries are investing considerable funds in building new hospitals. It is widely understood in these countries that current delivery models do not meet the requirements of the community populations served and new initiatives that optimize hospital design in terms of quality of care and patient safety are needed. Before designing new healthcare facilities, it is important to fully understand the challenges that existing hospitals face.

Case studies performed in East Africa revealed some significant challenges that must be overcome to improve patient safety and quality of care. These challenges include fundamental infrastructure requirements including the provision and maintenance of adequate water and power supplies as well as roads and transportation to meet the needs of patients traveling long distances to the hospital. Design of hospitals in this region must carefully consider access to and sustainability of these essential services. Other challenges reflect insufficient or ineffective structural and procedural elements relating to:

- Hand hygiene facilities
- Handicap access
- Instrument sterilization
- Laundry facilities
- Waste management
- Fire safety
- Food services
- Facilities for Family / Caregivers
- Staff support Areas
- Registration
- Patient triage
- Operating room design
- Infectious patient isolation

Keywords: infrastructure, safety, access, sustainability

Dr. Whitney Austin Gray, Ph.D.

At Delos, Dr. Whitney Austin Gray is responsible for the oversight of health research and the development of innovative design strategies and products that seek to improve human health and wellness through building design. Prior to joining Delos, Dr. Gray served as the Health Research and Innovation Director for Cannon Design, a global healthcare design firm, where she oversaw the company's primary and secondary research, prototyping and innovation platforms. During her tenure with Cannon Design, she delivered transformative projects to clients and worked to develop and promote new ideas that increased the impact of health research and innovation on the design industry. She holds dual appointments as an Adjunct Assistant Professor at the Georgetown School of Nursing & Health Studies, with research interests that include the development of innovative and sustainable design strategies, processes, and products that provide a safe and healing environment for patients and staff.

Expanding Salutogenic Design with WELL Building Standard

We understand the need behind salutogenic design, but need a strategy to scale key principles across countries. Within two years, the WELL Building Standard has systematically translated these principles into practice with implementation in 25 countries. Salutogenic design research suggests that focus on positive health interventions, rather than just removal of negative elements, is a more effective path to achieving human health (Antonovsky, 1996). Positive environmental design elements such as exposure to natural light and greenery have been shown enhance occupant well-being, productivity, and overall satisfaction (Cooper & Browning, 2015), while often working synergistically with office environmental sustainability goals (World Green Building Council, 2016). Building professionals are therefore becoming recognized as some of the most influential actors in improving human health and well-being globally. Research linking design to health outcomes has notoriously been difficult for practitioners to access, however. Studies that might be useful or informative for designers are dispersed in a wide array of subscription based peer-reviewed journals ranging from environmental psychology to public health to organizational management. Even if a relevant study is found by a practitioner, academic jargon can prevent him/her from fully comprehending study results. The WELL Building Standard has aimed to address this design-research translation issue. Released in 2014, it is the first framework to integrate research and best practices into an accessible system that can be used by practitioners to guide, certify, and monitor design that enhances human health and well-being. As of 2016, over 260 projects are pursuing WELL certification. The standard is performance based and can be internationalized or localized based off of different countries requirements, codes, and strategies. In this paper we present preliminary findings of pre-post occupancy surveys conducted in one of the first WELL certified office buildings. These surveys are required as part of WELL certification in order to evaluate the effectiveness of implemented design interventions on physical and mental health, as well as workplace wellbeing. They were analyzed by the Delos Applied Research Program (DARP). An online questionnaire measuring impacts of perceived mental and physical well-being was distributed to 140 building occupants. The survey specifically measures occupant satisfaction in seven areas including acoustics, thermal comfort, furnishings, workplace light level, odors, cleanliness, and layout. Workplace well-being is also addressed through questions relating to healthy food, activity, empowerment, and social capital. Results of survey findings are discussed and benchmarked against existing data.

Keywords: Salutogenic design; Healthy workplaces; WELL Building Standard

Yufan Zhang

Research fellow at the School of Arts, Design and Architecture, University of Huddersfield, UK

Dr. Y. Zhang is currently working as a research fellow in Department of Architecture and 3D Design, University of Huddersfield. Her research focus is to take a holistic view of healthcare buildings and its impact on occupants' wellbeing. She has a strong research background and an excellent record of accomplishment of research in aspects of building design and its impact on occupants. She has conducted many live projects on the built environment design and its impact on occupants' performance. she was also a winner of the 2013 best paper award from the Journal 'Building and Environment'.

Interaction Built Environment and Health

The healthcare built environment supports the patients' health, comfort and wellbeing. Building and environmental regulations, recommendations and standards often address factors such as temperature, noise level, ventilation rate etc. separately. However, individual environmental factors have notable combined effects on occupants' sensation and comfort. ASHRAE Guideline 10 published in 2011 called attention to the need for further studies, understanding the interactions and their impact. This is especially important to hospital patients, who are more sensitive to environmental factors than healthy people. Only when the interactions between built environment factors and health outcomes is fully understood, will it be possible to improve the physical environment, not only to meet the required environmental standards, but also to achieve positive impact on patients' well-being. This article is an attempt to discuss this issue from a theory perspective. This research effort has focused on the healing built environment (HBE), which is described as healthcare buildings that (i) reduce the stress level for all healthcare building users; and (ii) promote health benefits for them as well. The article firstly reviews the existent evidence of relationship between buildings and environmental characteristics and its impact on health outcomes. Then, it explores the importance to take a holistic view of the HBE from basic environmental psychology theories. Finally, suggestions are presented on the design of a research experiment aimed at taking a holistic consideration of the HBE and its impact on health outcomes. This article provides initial evidence and useful information to support the argument that there is an interwoven relationship between environmental factors and patients' health outcomes and wellbeing.

It also highlights the importance of such holistic view for policy makers, designers and management. Moreover, suggestions proposed for future research experiment that focus on HBE from a holistic perspective will open up a new opportunity to examine the built environment around patient health outcomes.

Keywords: healing built environment, holistic

Katharina Nieberler-Walker

Principal, Head of Landscape Architecture, Conrad Gargett

Katharina Nieberler-Walker is a Principal and Head of Landscape Architecture at the multi-disciplinary design firm Conrad Gargett in Brisbane, Australia. Katharina is an industry recognised leader in landscape architecture who has been responsible for significant projects as designer and project leader both locally in Queensland and interstate. Katharina led the landscape team on the award winning Lady Cilento Children's Hospital. Katharina is an environmentalist and interested in fostering a closer link between academic research and industry.

Green Spaces in Healthcare Facilities

Objectives:
Research increasingly shows the significance of nature and the built environment (i.e. nature loving cities, or 'biophilic urbanism') on health and wellbeing. This calls for a holistic approach to designing buildings which goes beyond the immediate hospital-patient care, and on the practical importance of environmental design qualities that promote health and wellbeing. Currently, there is limited understanding of the effectives of green open spaces in promoting positive health on the users of the space.

This paper will build on the 2015 Design & Health World Congress presentation about the Lady Cilento Children's Hospital healing gardens, presenting a narrative of the industry-academia-hospital partnership working towards mainstreaming green spaces in healthcare facilities. Specifically the paper aims to draw attention to the lessons learned, and implications for learning, understanding and capturing knowledge about innovation in health infrastructure to revitalize health and tackle 21st Century challenges.

Methods used:
Led by Conrad Gargett, a multi-faceted partnership spanning Conrad Gargett, Queensland Health, Queensland University of Technology and Griffith University has emerged through a desire to further understand the role of green space in health care settings, and to capture qualitative and quantitative data on the performance of these spaces. Over the last several years this partnership has progressed to comprise several projects related to the hospital and its subtropical context, including an evaluation of end-user experience (reflective journals), a review of the design journey (archival analysis and interviews), and evaluation of micro-climate and appreciation of green space (monitoring and surveys).

Results:
The design of the newly completed Lacy Cilento Children's Hospital (LCCH) in Brisbane, Australia presents an excellent case study illustrating these health and environmental benefits that can be achieved through 'green salutogenic' design. Addressing the gap between research innovation and applied design, this paper present an evaluation of the emerging partnership, including lessons learned and implications for this hospital, other hospitals and the healthcare industry, in Australia and around the world.

Conclusions:
The findings of this paper have the potential to influence practice and partnering with academia to mainstream biophilic urbanism within other healthcare settings including senior living facilities, palliative care and mental health centres.

Keywords: Mainstreaming, Partnership, Biophilic Design

Hessam Ghamari, PhD

Assistant Professor at the Department of Applied Design, Appalachian State University, NC, USA

Dr. Hessam Ghamari is an assistant professor in the Interior Design program at Appalachian State University. He has more than ten years' experience of teaching, research, and practice in design and architecture in the United States and Iran. Hessam received his Ph.D. degree in 2014 from Texas Tech University. His works focus on understanding the relationship between the built environment and health outcomes. Hessam is interested in interdisciplinary approaches to improve health and well being outcomes in healthcare environments. He has published articles in peer-reviewed journals and presented at international conferences on environment psychology, evidence based design, and healthcare design.

Wayfinding in Unfamiliar Indoor Healthcare Environments

This study objectively identifies and ranks visual environment elements in hospitals that attract gaze fixation during wayfinding. This main objective of this study was to identify elements of the designed environment that attract eye fixation during wayfinding, by objectively tracking eye movements and fixation as healthy subjects navigate through a complex healthcare setting. EyeGuide® - Mobile Tracking Technology was used to capture data on gaze-fixation. Literature shows that disorientation due to wayfinding errors and navigation problems in healthcare facilities produce frustration, irritation, anxiety, and stress. It represents a critical concern for patients, employees, and healthcare organizations, thereby affecting both processes (efficiency and safety) and people. Recently, Pati et al., (2015), identified environmental attributes that affect wayfinding behavior in navigating healthcare environments. Ghamari et al., (2014) conducted a similar study in an educational facility and using the same sequential navigation task for the human subjects. The current study used eye-tracking technology, to capture physical design elements attracting human gaze during navigation in Watauga Medical Center. The sequence of the destinations was randomized for participants.

Twenty-four adult subjects in different age groups (young, middle age, and elderly) and both genders were asked to navigate five different routes. The eye-fixations on different visual environmental attributes were recorded and measured by Eye-Guide Analyze software. The time durations of each navigation tasks were also measured. The results of this study suggested that identifying signs, architectural features, informational signs, maps, and directional signs constitute the main environmental attributes that attract the attention of users. In total, signs constitute the major environmental information source among all classes of environmental cues, covering 54% of the time subjects sought information from the ambient environment. The results of the study also showed that architectural features (14.2%) and maps (8.4%) were the two other major environmental attributes that attracted gaze fixation. Other design elements (7.9%), interior elements pairing (5.3%), functional clusters (3.4%), and furniture (2.6%) covered the rest of the total time of eye-fixations. Additionally, the results showed that there is a significant difference between males and females on the time of navigation. Males were faster than females in navigation. The results also showed that young age group had the fastest navigation performance among the age groups. The findings provide triangulation data for previous studies, and were consistent with the earlier behavioral studies, thereby contributing to a robust set of empirical findings on wayfinding and building design.

Keywords: Wayfinding, Indoor Healthcare Environments, Eye-tracking

Professor Rotraut Walden, PhD

Yasemin Baz, Vanessa Grebe, J. Kuehner

University of Koblenz (Germany), Institute for Psychology

PD Dr. Rotraut Walden's major fields of research are Architectural Psychology. She holds a tenure position at the Institute for Psychology of the University in Koblenz, Germany. Her research focuses on Building Performance Evaluation, the development of questionnaires and systems to evaluate schools, universities, office buildings, and hospitals. She has presented her research results at International conferences on Facet Theory, and on EDRA, IAPS, IAAP, and at German Association of Psychology and School Conferences. She is the co-author of several German books such as "Psychology and the Built Environment", "Daycare Centers", and "Schools of the Future. Design Proposals from Architectural Psychology" (in English ed. 2015 Wiesbaden/Germany: Springer Publishers) and the author of the book on „Architectural Psychology: School, university and office "which was published in 2008.

The Impact of Colorful Spaces

The design of buildings and interior rooms measurably influences people's well-being. It can literally make people ill, or conversely even facilitate recovery processes. For this reason, architectural psychology plays an ever greater role in the planning and implementation of public buildings. It is not uncommon for the Institute for Psychology at the University of Koblenz to be involved. A recent study yielded some findings for the newly designed children's clinic of the Marienhaus Clinic St. Elizabeth in Neuwied. A hefty investment of nearly 21 million Euros had gone into the hospital's new bed area, which was planned by Koblenz architecture firm Naujack & Rumpenhorst. This area was used by the clinic for child and adolescent medicine in particular. Therefore, in planning the 72 new patient rooms and 53 new procedure rooms, it was not just about constructing a functional, cost-optimizing building. It was not enough to simply facilitate the ability of parents to spend the night at the hospital; child-oriented solutions with respect to the design, layouts, and color schemes of the rooms needed to be considered. The planners therefore consulted the Bonn-based "Little Patients" society. During the construction phase and immediately following the official opening in mid-2012, there was a desire on the part of the Marienhaus Consortium, the parent group of the hospital, to investigate whether the painstakingly coordinated renovation had in fact produced the desired result. Ultimately, the Institute for Psychology in Koblenz was given the task of administering the survey, which also fit within the framework of two large student projects.

A study was conducted in Summer Semester 2012, which focused primarily on the period before the construction of the new areas and before the renovation of the existing children's and adolescent's clinic, which was originally constructed between 1960 and 1964. The second project, conducted in Winter Semester 2012, examined the results of the newly constructed and newly renovated areas. "We were able to determine where the improvements were and answer the questions of what has stayed the same or even gotten worse," the researchers explain. The surveys, for which participating students received a grade, scrutinized various areas of the children's and adolescent's clinic, such as, for example, the new outpatient clinic. It became apparent from the survey results that the motivation of employees was considerably improved, and respondents furthermore lauded the improvements to the way the clinic was oriented. The new waiting rooms, which were negatively evaluated prior to the redesign, were now overwhelmingly viewed as positive. Even more notable was the result for the children's patient rooms. Despite the good evaluation overall, there were some points of criticism, such as the rather long distances between areas, the signage in the clinic, and the layout of play equipment. The students and lecturer have worked meticulously to gather these responses. Other clinics can use these results as a tool in their planning.

Keywords: Little Patients, Parents, Staff, University Students, Facet Approach, Questionnaires, Pre-, Post- Occupancy Evaluation, Children's Hospital in Neuwied/Germany

Prof. Claudia L. Bianchi
Università di Milano, Italy

Claudia Bianchi is associated professor and the leader of the Process and Plants Research Group for Industrial Chemistry at the University of Milan. Author of more than 200 papers on International Journals in the field of applied material science and environmental catalysis. The Group involves Master and PhD students interested in different chemical and engineering areas with precise focuses on a) the preparation of micro- and nanostructured materials active in photodegradation processes for pollution control and environmental compliance; 2) the modification of the surface properties of solids; 3) the conversion of waste streams to value-added materials.

The Impact of Building Materials

At the beginning of the industrial productions, porcelain grés tiles were considered as just a technical material, aesthetically not very beautiful. Today thanks to new industrial production methods, both properties and beauty of these materials completely fit the market requests. In particular, the possibility to prepare slabs of large sizes is the new frontier of building materials. Beside these noteworthy architectural features, new surface properties have been introduced in the last generation of these materials. In particular, deposition of TiO2 transforms the traditional ceramic into a photocatalytic eco-active material able to reduce polluting molecules present in air and water, to eliminate bacteria and to reduce the surface dirt thanks to the self-cleaning property.

Environmental purification is a necessary aspect of scientific research to improve human life quality. NOx and some VOCs were used as model pollutants (formaldehyde, for example) confirming the good performance of the slabs to tackle the environmental pollution. In the same way, tests performed on E. Coli and Staphylococcus aureus (even MRSA) demonstrate the antibacterial efficiency of the ceramic surfaces.

Active ceramics provide very good photocatalytic performance, but also meet standard requirements with respect to hardness, lack of porosity, vitrified surface and durability. The digital printing was exploited as a new tool to manufacture photocatalytic tiles even of very large size (150x300 cm). The micro- TiO2-based ink preparation was carefully checked in order to have a stable and reproducible product bringing advantages in terms of costs and process sustainability. A new material in the ongoing search for a symbiosis between the beauty and the pursuit of building healthy environments for the welfare of people.

Keywords: eco-active ceramic; large slabs; photocatalytic tiles

KEYNOTE ADDRESS

Professor Paul Barach MD. MPH

Wayne State University School of Medicine

Dr Paul Barach is driven by a personal and professional mission is to transform healthcare while optimizing the value of health care for physicians and patients. Paul is a Clinical Professor at Wayne State University School of Medicine, Children's Hospital of Michigan. Paul is a practicing double board-certified physician-scientist in Anesthesiology and Critical care, from the Massachusetts General Hospital affiliated with Harvard Medical School. He is a formally trained health services researcher, with advanced post graduate training in quality improvement and lean techniques at Intermountain Healthcare, and in advanced medical education and assessment methods from the Harvard Medical School Josiah Macy Program. He has had additional training in epidemiology and statistics including both methodological as well as applied HTA research. He is interested in the organization and delivery of healthcare services and in the development and application of strategies for improving healthcare quality and outcomes, guided by theories and insights from the fields of implementation science and healthcare quality improvement research. He is involved in a variety of efforts to further develop and strengthen the field of implementation science and to facilitate more effective collaborations between researchers and policy and practice leaders interested in improving healthcare delivery. Paul has advised the World Health Organization (WHO) and the World Bank and has served as a consultant on health care reform to governments in a number of countries focused on reducing burden of NCD's working in Asia and Africa. He has published over 400 articles, 5 books and his work has been cited over 7500 times.

Designing Hospitals and Healthcare Facilities Using High Reliability Robust Processes

The framework of health care delivery is shifting rapidly across US. Capital budgets and operational efficiency are critical in this time of shrinking reimbursement, increasing share of risk, and evolving models of care delivery. Getting the best value for your capital expenditures is key to your success. Capital projects that are informed by high-reliability organizational (HRO) initiatives can help your clients respond effectively to current pressures to reduce cost and improve quality. This keynote can assist you in creating a strategy for the future with experimenting with new methodologies and thinking processes that will be essential in the design of future healthcare facilities.

Facility design affects the design of how people work, and what processes, systems and technologies they will require to support the functioning of the work environment. Different ways of working and different configurations of clinical teams will emerge to ensure appropriate acquisition and use of new skills and competencies to produce quality outcomes. Higher reliability comes from authentic conversations, bold leadership and an organizational culture that enables staff to be fully present and honest in their feedback on better design, harm prevention and process improvement. Reliability principles — methods of evaluating, calculating, and improving the overall reliability of a complex system — have been used effectively in industries such as manufacturing to improve both safety and the rate at which a system consistently produces appropriate outcomes. Even the most advanced healthcare organizations acknowledge that they are on a journey to achieving high reliability and need to address four essential building blocks: (1) a culture devoted to quality; (2) responsibility and accountability of staff; (3) optimizing and standardizing processes and (4) measurement of performance. The talk will review the foundational concepts of evidence-based quality, safety and population heath and develop a better appreciation for the forces and pressures clients are facing. Engaging clinicians in the design and operational process remains the biggest obstacle in addressing the growing implementation gap in providing cost effective and reliable care.

Ian Sinclair, MHA, CHE

Principal, Vice President, Kasian Architecture

Drawing on over 25 years of hospital operational, strategic and capital planning experience, Ian brings a unique "owner's perspective" to projects. With experience in both healthcare and design organizations, Ian has led some of Canada's most creative hospital projects including Bridgepoint Health's $1.3 billion campus redevelopment and the award winning planning, design and delivery of the Peel Regional Cancer + Ambulatory Care Centre at The Credit Valley Hospital in Mississauga. Leveraging his capital planning and hospital operations experience (most recently as Vice President of Operations at the Sinai Health System), Ian integrates hospital operating best practices with facility design to ensure clients do not simply put yesterday's organization into today's buildings.

Ian an Honors degree in Sociology and Political Science from Western University and a Masters Degree in Health Administration from the University of Ottawa

The Case for Empathy-Informed Design

Analysis:
A Cancer Centre is not just another health care building. It is a place for those with a very unique disease - unlike any other illness. Perceived often as a death sentence, cancer has no bias to age, ethnicity or gender and levies a catastrophic impact upon the normal life of patients and families. Unlike other diseases, no single care provider "owns" it. Treatments often feel worse than the disease itself. For cancer patients, the treatment journey is an emotional roller coaster of progress and setback that evokes a loss of control, uncertainty and fear. Unlike other illnesses, the emotional connections made between cancer caregivers, patients and their families can become unusually strong. Hypothesis: If one agrees that cancer patients are different than almost any other patient and that the relationship between caregiver, patient and family is unusually close, then the criteria typically used to inform cancer centre design, must be different. This paper argues that the most important and appropriate design criteria for a cancer centre, above and beyond form and function, are human empathy.

Research:
Various studies have demonstrated that patients and families are overwhelmed by emotions of devastation characterized by pain, loneliness, worry, anxiety, helplessness, anger, dread, despair, darkness and unfairness. It is an evil and insidious disease. What, therefore, are the design responses that will serve as a counterpoint to these powerful emotions? What are the design reflections for fairness, openness, clarity, honesty, safety, security, blamelessness, hope and joy? As designers, therefore, are we not compelled to place ourselves in the shoes of patients, families and caregivers, to feel these emotions, to truly be empathetic, in order to be able to design a facility that truly responds to these powerful human emotions?

How can design best offer a counterpoint to fear, anxiety, loss of control and loss of dignity? How can design offer simplicity and clarity in the face of care system characterized by an unfamiliar medical language within a system whose navigation is an anxiety provoking experience? How can design respond to the patient's insatiable thirst for information on their disease and treatment options? How can design counteract the extreme interface with imposing technology faced by most patients? How can design "heal the healers"?

Conclusion:
In order to respond to the needs of these three groups, (patients, families and caregivers) this paper argues, that empathy and compassion must be the drivers to inform design… above all else. Efficient, flexible, and operationally sustainable design should simply be a given. If we get that right, we will succeed in affecting patient outcomes.

Louis A. Meilink, Jr. and Eric Swanson

LOUIS A. MEILINK, JR., AIA, ACHA, ACHE, PRINCIPAL AT BALLINGER

Since joining Ballinger in 1987, Lou Meilink's design solutions have helped shape the future of healthcare at academic medical centers, regional and community hospitals and healthcare delivery systems. His approach to each initiative is comprehensive and his professionalism is consummate. He works closely with clients to develop facility solutions and translate highly complex project concepts into simple terms. His orientation toward client service and delivery of high-quality, cost-effective projects has brought him recognition from healthcare institutions as well as his peers. Lou is an author and speaker for organizations such as the Center for Health Design, the American Institute of Architects, the Association of American Medical Colleges, and Tradeline. He is a member of the American College of Healthcare Architects and the Academy of Architecture for Health. Lou earned a Bachelor of Architecture from Kansas State University, USA.

ERIC SWANSON, AIA, PRINCIPAL AT BALLINGER

Eric Swanson is a Principal and Senior Designer for Ballinger where he has practiced for over 30 years. Eric's career has focused on the planning and design of healthcare, research and educational facilities. His experience includes numerous master planning commissions, major campus additions and complex renovations. His designs seek to understand and incorporate physical attributes, the cultural values and core missions of these unique entities, and their diverse contexts. Eric earned a Bachelor of Building Science and a Bachelor of Architecture from Rensselaer Polytechnic Institute, USA. He also studied at the University of Copenhagen in Copenhagen, Denmark.

A Closer Look at the U.S. Healthcare "Built" Environment

100 kilometers west of the city of Philadelphia, USA, the Reading Hospital Medical Center has served the local community of Berks County since 1867, and in its current location since 1926. On 10 October 2016, Reading Hospital Medical Center leapt into the 21st Century with the opening of its new state-of-the-art Healthplex in West Reading, Pennsylvania. The Reading Healthplex for Advanced Surgical & Patient Care is a 44,000 square meter (476,000 square foot) showcase for technologically-advanced medical care, the patient/family experience and integration of green space. This Ballinger-designed surgical tower complex consolidates campus-wide surgical services including pre-admission testing, an eight-room procedural suite, and the addition of a surgical center with 24 operating rooms including four hybrid rooms and two daVinci System invasion robotic surgery rooms. Co-locating all surgical services on one ground floor level provides a more efficient patient drop-off and check-in. The facility includes seven patient-care levels and adds private patient rooms. The 150 new patient rooms are equipped with sophisticated smart room technologies that will improve the quality of patient care. As an example, all doors feature wave-motion operating control to prevent the spread of germs.

Maximized daylighting and views of the environmentally-friendly Green Roof – at 8,175 square meters (88,000 square feet) it is Pennsylvania's largest green roof – and views of neighboring public gardens and nearby art museum contribute to the healing nature of the space. The Healthplex tower integrates with the existing Hospital campus by taking advantage of opportunities for connectivity and paves the way for the existing Emergency Department and Trauma Center to be expanded by 1,625 square meters (17,500 square feet). With over 130,000 patient visits each year it is the busiest Emergency Department in Pennsylvania.

Anjali Joseph and Deborah Wingler

ANJALI JOSEPH, Ph.D., EDAC, CLEMSON UNIVERSITY

Dr. Anjali Joseph is Assoc. Professor and Director of Center for Health Facilities Design and Testing at Clemson University School of Architecture and Assoc. Professor at Department of Public Health Sciences. Anjali obtained her Ph.D. with a focus on Architecture, Culture and Behavior from the Georgia Institute of Technology, master's degree in Architecture from Kansas State University and bachelor's degree in Architecture from the School of Planning and Architecture in New Delhi, India.

DEBORAH WINGLER, MDS-HHE, EDAC, Ph.D. CANDIDATE

Deborah Wingler is the President of Healing Design Integration and a Doctoral Student at Clemson University in Architecture + Health under the supervision of Dr. Anjali Joseph. Deborah's research focuses on improving the patient and staff experience within the ambulatory care environment through design solutions that support emerging models of care. She holds a master's Degree in Healthcare Design Research from Arizona State University.

Evaluation of Ambulatory Surgical Environment

Background: Ambulatory surgical environments are complex work systems that require numerous handoffs of information across multiple groups of care providers, patients and care partners. While the number of ambulatory surgery centers (ASCs) being built in the United States has dramatically increased over the last several decades due the benefits associated with expanded accessibility for patients, reduced costs and increased efficiency, a paucity of research exists examining how the built environment of ASCs impacts critical interactions between care team members, patients and care partners that occur during the ambulatory surgical process.

Objectives: This study examined the relationship between spatial layout and nursing behaviors such as face-to-face communication in preoperative and postoperative workspaces of ambulatory surgery centers to identify how the spatial system impacts crucial interactions between care team members, patients and care partners.

Methods: Comparative case studies were conducted in the preoperative and postoperative areas of two ambulatory surgery centers with varying spatial configurations. A multi-method approach was used in this study consisting of space syntax, shadowing and semi-structured interviews.

Results: The majority of patient-care activities such as bedside care and charting were done directly with the patient in the patient bays or rooms. Although both sites had a range of technology to support synchronous and asynchronous communication between staff, the most frequently observed mode of communication between staff was face-to-face. A higher frequency of face-to-face interactions between staff members took place in more integrated spaces such as corridors. More staff to patient interactions took place in the less integrated and more private patient bays. Issues around patient privacy were also critical for staff to patient interactions and included visual privacy and auditory privacy. Visual proximity between the central nursing station and individual workstations in the patient bays and rooms was also found to impact interactions between staff. Physical proximity between preoperative and postoperative areas was found to impact modes of communication between staff.

Conclusion: Designing work systems requires a human factors approach to design that examines the range of activities and interactions care team members are involved in, as well as the configuration and design of the space and its elements. Considering the factors identified in this study can help in developing design solutions that facilitate optimal workflow for care team members, as well as support vital communication between all stakeholders. Thus, increasing the quality of care delivery in ambulatory surgical environments.

Keywords: ambulatory surgery centers, spatial configuration, communication

Professor Debajyoti Pati

Rockwell Endowment Chair, Texas Tech University, USA

Dr. Debajyoti Pati is currently serving as professor and Rockwell Endowment Chair at the department of design, Texas Tech University. He has researched, published, and presented, internationally, on the interactions and intersections among physical design, people, and processes, in healthcare settings. He was twice voted among the 25 most influential people in healthcare design in the United States, and has received more than ten national and international awards for research excellence. He serves on the board of the AIA-NIBS BRIK program, is on the editorial board of HERD, and a Fellow of the Indian Institute of Architects.

Preventing Patient Falls Through Physical Design

Background:
Patient fall is a serious adverse event reported in hospitals, affecting patient, family, and staff well-being. Falls among hospitalized patients are complex events associated with multiple intrinsic and extrinsic factors. While a large body of literature exists on intrinsic factors, those on extrinsic factors, which includes the physical design, are relatively rare. [Note: this study received two funding – one from the National Patient Safety Foundation, and one ongoing from the Agency for Healthcare Research and Quality. This proposal describes findings from the first study. The AHRQ-funded study is currently being conducted, some findings of which may be included in the presentation].
Objective: To identify specific decisions pertaining to patient room design that may contribute to fall events?

Method:
A physical mock-up of a representative patient room was built in a lab space equipped with motion capture technology. A script was developed by the Falls Committee of a large tertiary care hospital. Subjects matching fall-risk patient profile undertook scripted tasks in the mock-up. Activities were captured using motion capture technology and digital video recording. Data was processed in three stages: Cortex marker labeling, Visual 3D Center Of Mass tracking, and jerk calculation in MATLAB. After biomechanical data processing, video clips associated with fall initiation moments were extracted, and then examined and coded by a group of registered nurses and healthcare designers. Exploratory analyses of the coded data were conducted followed by a series of multivariate analyses using regression models.

Results:
In multivariate models with all personal, environmental and postural variables, only the postural variables demonstrated statistical significance - turning, grabbing, pushing, and pulling in the bathroom, and pushing and pulling in the clinician zone. The physical elements/attributes associated with the offending postures include bathroom configuration, IV pole, door, toilet, flush, grab bars, over-bed table, and patient chair, among others.

Conclusion:
Postural changes, during interactions with the physical environment, constitute the source of most fall events. Physical design must include simultaneous examination of postural changes in day-to-day activities. Testable recommendations for specific design standards will be discussed in the presentation. Two broad design strategies include: (a) designing bathrooms to reduce turning as much as possible; and (b) designing to avoid motions that involve two or more of the offending postures, such as turning and grabbing or grabbing and pulling, etc. A prioritized list of design interventions, which is the expected outcome of the AHRQ-funded study, may be presented.

Keywords: Fall Prevention, Patient Safety, Physical Design

Professor Jui-Jen Chen

Department of Nuclear Medicine,
University College of Medicine, Kaohsiung, Taiwan

Nuclear Medicine and Patient Safety

Purpose:
According to 2015 annual statement for Taiwan patient-safety reporting system, 7899 cases in the possible cause of event occurrence relating to "communication factor", in which "lack of communication in between medical team" is the highest relative frequency ratio.

Method:
The concept of TRM (Team Resource Management) is used to integrate nuclear medicine inspection warning cloud constructed on the basis of cloud computing technology into a system, including scheduling collection agent cloud, patient scheduling search cloud, patient registration information cloud, patient registration warning cloud and nuclear medicine data cloud.

Result:
Service cloud provides cross-platform alert service anywhere and anytime, integrating examination scheduling data into patient registration alter criteria in comparison with lateness, early arrival and on time represented red/yellow/green warning light, respectively, so that personnel do not have to repeatedly pick up the interphone to ask the patient condition for not only decreasing patient's waiting time but also increasing medical care quality.

Conclusion:
Daily waiting time before/after the assessment from 2013 to 2015 may reduce about 60.5 minutes and increase service of about 16 patients. We'll take this research result as the basis to plan the theme of iodine-131 treatment and actively promote nuclear medicine SDM tool.

Keywords: Patient Safety, Medical Quality, Nuclear Medicine

Walkiria Erse

UNICID, São Paulo Brazil and ABDEH - Brazilian Association for the Development of the Hospital Building

Walkiria Erse is Healthcare Architect graduated by University of São Paulo and Post Graduated by University City of São Paulo- Brazil in 2014 with MBA in Hospital Management by São Camilo Hospital College in 1990. She is also Consultant Member of IPH-Jarbas Karman Institute for Hospital Research and Brazilian Representative at Union of International Architects – Public Health Group. Her professional development has gone through the courses at Harvard University Graduate School of Design. She created and developed research in dehospitalization and mini hospitals and, for eight years, worked as CEO of the Healthcare Architecture Department for Hospital Perola Byington in São Paulo. She created and works for Erse Consultoria s/c as principal and healthcare designer.

Surgical Hospital in Brazil - productivity, difficulties and salutogenic environment

In Brazil sixty eight per cent of all performed surgeries are classified as low and medium complexity procedures. Meanwhile the supply of beds in big hospitals where all kind of surgeries happen does not match with the demand for surgical beds needed in patients admission. Anticipated discharge based on strict medical criteria is one of the alternatives accepted by big hospitals to shorten the patient stay. This solution was not enough to increase the necessary release of beds. As well, beds management has not been successful yet. Surgical Hospitals constructed outside of big hospitals, some with only five beds and good productivity, tend to collaborate to that release of beds. With the advance of medical science and technology, Brazilian institutional regulations come up to define, inside the law, the small surgical hospital. Small Surgical Hospital is an ambulatory facility with a complete operating theatre that can receive patients for maximum 4 days stay. This quali-quantitative study presented here has the focus on the performance of this kind of hospital, with an intense view on the central activity of the institution, the Operating Theatre and its productivity. This research tells about an existing Small Surgical Hospital with the diagnostic hypothesis that, in the context of the hospital total attendance, patients will have a salutogenic environment where their surgery will be developed with security in a suitable operating theatre. The study has been guided mainly by the survey on productivity, performance, and characteristics of the Operating Theatre. After the due updating revue of bibliography, it has gone to define concepts, to compose a brief general hospital history and, to notify its complexity and consequently its division into independent specialized medical units. Those units, although independents, work together as an united system. Methods to develop this study are the analysis of documents and charts of surgeries, visits according to walkthrough system, photos, interviews with the four most important actors inside the hospital, and the post occupancy evaluation now on going. This presentation will show the architecture of existing Small Surgical Hospital, their qualities and difficulties, their salutogenics characteristics, costs, and how it promotes the credibility and approval of physicians and patients.

Keywords: small hospital, surgical hospital, operating theatre

KEYNOTE ADDRESS

Gunther De Graeve

Managing Director of Destravis Group, Australia

Gunther De Graeve is an international health strategist with a reputation for delivering quality solutions for the complex issues facing health service providers. He is recognised as a thought-leader within the industry for his innovation in operational models and infrastructure solutions, his sustainable approach to planning and for his attention to detail; promoting and enabling flexibility and future trends. Gunther is Managing Director of Destravis Group, the specialist consulting firm he founded to bring expert advice to clients in the health, higher education and research industries. Destravis brings a cross fertilisation of expert skills through a diverse in-house capability including service planning, health planning, master planning, cost management, business cases, economic assessments and operational optimisation. Gunther delivers advice to health service providers – both public and private – designers, and financiers and policy makers including Health Ministers and senior members of government. Gunther is a proactive member of the health facility community, participating and speaking at international conferences and study tours. He values the translation of research and frequently engages in research studies which realise system improvements.

The Future of Academy as Global Knowledge Forum - New Vision and Mission

Gunther De Graeve, Managing Director Destravis Group appointed as CEO to lead the International Academy for Design and Health The Founder and AIA Award winning Alan Dilani, to Retire

As the founder of the Academy, Dilani has greatly impacted the world of Design and Health. Over the past 35 years, his esteemed international career has included: founding the Design and Health Research Centre at Karolinska Institute Medical University in Stockholm; developing research on elderly care, correctional institution, office design, healthcare design, and learning environments; and advocating for healthy built environments across the world from Australia to Canada and USA, South Africa, China, south East Asia and the Middle East.

> *"I'm honoured to lead the Academy forward alongside many of the committed and passionate colleagues. We are building on the legacy that Alan Dilani nurtured his entire career to foster innovation in society and excellence in design to transform the future of the healthcare environment."*
> *- Gunther De Graeve.*

"There is an urgent need to develop a global science that will allow professionals to accurately measure the impact of built environment and technologies on health and wellbeing. This will allow us to truly design a healthy environment with global recognition through a defined healthy infrastructure index."

The Academy is now ready to embrace the next exciting phase. The ideals and expertise that our colleagues and our partners bring to the future discussion will be vital to continuing the Academy's success with new vision and mission.

KEYNOTE ADDRESS

Prof. James Barlow, Ph.D.

President of Academy, Chair of Technology and Innovation at Imperial College London, UK

Professor James Barlow has held a Chair in Technology and Innovation Management (Healthcare) at Imperial College Business School since 2003. From 2006-2013 he led HaCIRIC, a major programme of research on the adoption, implementation and sustainability of innovation in healthcare infrastructure systems. In September 2014 he was appointed President of the International Academic for Design and Health. James was educated at the London School of Economics and has previously held appointments at the Science Policy Research Unit (University of Sussex), the Policy Studies Institute and the University of Westminster. He has published widely and has been a member of many expert panels on healthcare innovation, both in the UK and internationally. He has worked extensively with industries involved in the healthcare sector, including pharmaceuticals, medical devices, ICT and construction.

Science and Technology in Future Health Infrastructure

Introduction:

Neuroscience research shows that environmental-related activity such as wayfinding, perception, cognition, and their behavioral consequences—anxiety, stress, and happiness—are both reflected in our brains' neural structures and electro-chemical processes (Eberhard, 2007; Mallgrave, 2011; Swanson, 2011; Zeisel, 2006). Behavioral evidences indicate that fluorescent lighting among the indoor environmental variables plays a critical role in facilitating or hindering daily activities for the neurotypical population (Rashid & Zimiring, 2008). For a neurodiverse population, this becomes more complex. Specifically, ADHD subjects become more distracted under fluorescent lighting, which generates agitation, hyperactivity, stress, and weaker cognitive skills, hence contributing to negative health and performance effects. The purpose of this research is to explore and compare the behavioral and neural responses and their impact on cognitive processes of twenty ADHD subjects, when exposed to 3 types of fluorescent lighting: a) Warm White WW with a 2800 CCT, b) Cool White CW with a 4100 CCT, and c) Daylight DX with 6000 CCT (see figures 1, 2, and 3) while each category is represented in three types of applications— healthcare, commercial, and educational.

Methodology/Procedure:

A purposive sampling was used to generate twenty subjects; taking into account gender, age, ethnicity, brain lateralization, as well as the exclusion of color blindness. The participants underwent 1) an anatomical scan and 2) a functional scan, using Functional Magnetic Resonance Imaging fMRI technology, while a random sequence of three types of illustrations from the aforementioned categories were projected by a computer controlled visual presentation system. Concomitantly, the participants were asked to respond to each image by fiber optic button devise, rating each image on a seven-point Likert satisfaction scale of 1=very dissatisfied and 7=very satisfied. Behavioral data was analyzed using t-test factor analysis and oneway analysis of variance, while the neural data maps were analyzed using FSL Neuroimaging Software.

Findings/Outcomes:

Neural and behavioral findings indicate dissatisfaction with the White Warm Spectrum (2800K). Under the Cool White (4100K) and the Daylight (6000K) findings indicated better satisfaction, particularly that Broadmann areas--Angular Gyrus, Middle Frontal Gyrus, and Cerebellum—areas associated with cognitive processes, have been activated. Other findings will be shared with the conference attendees. These finding, with further studies, may provide behavioral and fresh neural benchmark data for designers, architects, planners, and industry professionals to plan and design interior and architecture salutogenic environments.

Dr. Oksana Zelenko

Queensland University of Technology, Brisbane, Australia

Dr. Oksana Zelenko is Head of Interactive and Visual Design at QUT School of Design and Research Program Leader of Design for Health & Wellbeing, QUT Design Lab. Her area of expertise is in interaction and visual design for strength-based e-health applications with a specific focus on using participatory design for developing health-promoting resources for youth mental health and wellbeing. Oksana is currently leading a Federally-funded nation-wide study into designing better technologies that assist young people in help-seeking, in collaboration with Australia's largest youth counselling service, KidsHelpline. She has presented her work nationally and internationally, and is the editor of Design and Ethics: Reflections on Practice (Routledge 2012).

What is Innovation in E-Health?

Background:
Design of environments for health and wellbeing increasingly involves technology-enabled innovation, impacting how health services are accessed and utilised. Approaches to innovation in eHealth range globally from digitization through to design of new forms of digitally-enabled health communication. A review of approaches to eHealth strategy (UK, USA, Australia) shows a clear distinction in these approaches embedded within policy and practice. Australia is among global leaders of in e-mental health where latest research and development has the potential to offer insights into best innovation practices in the sector.

Aims:
The paper aims to identify and map the types of technology-based innovation through the following questions: What constitutes innovation in eHealth design? What are the types of technology-enabled innovation? What are the drivers of innovative technology application in health? The paper further argues that design-led innovation in e-mental health is an essential strategy for generating engaging and efficient forms of health communication, grounded in deep user engagement and Participatory Design (PD).

Methods:
The paper presents a literature review, which identifies and maps existing types, principles and drivers of innovation in eHealth pertaining to technology use. It further proposes a definition and a framework of the types of innovation enabled by technology and impacting health service design. The framework is then applied to review and evaluate types of innovation within existing prominent Australian-based mental health services that utilize technology.

Results:
The resulting framework presents a number of distinct types of innovation involving digital service delivery, including technology-led, design-led and health-led. The paper demonstrates that each model contains unique drivers shaping service design, leading to a diversity of outcomes. It is suggested that design-led innovation, presents a unique potential for increasing the quality and potential of eHealth programs through the development of new forms of digital health communication. Discussion: The role of technology in shaping new health service design is increasing exponentially. Each type of innovation approach identified presents its own strengths, advantages and considerations with potential to impact future innovation in the sector. Integral to all innovative practice is a transdisciplinary approach, necessary for the development of effective eHealth programs.

Keywords: eHealth, innovation, Participatory Design (PD)

Dr. Felipe Siso

Felipe Siso was born in Caracas in 1971, graduated as a medical doctor at the age of 24 at the Central University of Venezuela (UCV), postgraduate studies in the specialty of Ophthalmology at Augenklinik, Medical University of Graz, Austria, as well as postgraduate studies in Public Health at the Faculty of Social Sciences (FACES) of the (UCV), Founder and first Director of the National Visual Health Program of Venezuela (2002-2006) and later Medical Director of the project of six large hospitals in Venezuela, he also participated in more of twenty hospital projects, he holds a Doctorate in Architecture (UCV), worked as General Director of Research of the Venezuelan Ministry of Health until 2015. Currently dedicated to research (Architecture and Health) and since 2016 living in Austria.

The Salutogenic Center to promote Health

The definition of the Architectural Program for the design of buildings destined to the provision of health represents a challenge with particular difficulties; The historical trend in infrastructure and technology management has essentially focused on finding solutions to problems related to the increase of capacity or modernization of existing establishments. These solutions have often proved to be inappropriate and inefficient, significantly altering the systemic approach to service delivery, both because of uncontrolled and unorganized growth in the number of health facilities (such as network units) and service environments (as parts of a functional unit) that are in operation. In addition to the natural changing trend that these centers have in their main aspects: hospital, diagnosis and treatment, determined by three causes that we identify: Technological Causes, Epidemiological Causes (including demographic) and Economic Causes. It is for this reason that a detailed study of these causes would generate "macro" guidelines, the observance of which could be useful. Our objective was to identify the greatest number of system components and particular requirements that constitute the Architectural Program. In order to clarify future architectural programs, through the use of a qualitative method of the "Interpretive Turn", called "grounded theory" through the systematization of the data we were able to finally "theorize" about the architectural program in health care buildings. We have also made an extensive historical study of the evolution of Hospital Architecture, which has allowed us to establish that this evolution has NOT been parallel to the history of medical science, so we dared to develop a novel classification of " Hospitals "or" health care centers ", according to their location during the history and architectural type.

These were classified in five hospital generations that are:

1. First generation: u Theurgical Hospitals or Places to "avoid" (until the eighteenth century)
2. Second generation or "Sanitary" Hospitals (19th century)
3. Third generation or "Scientific" Hospitals (late nineteenth and twentieth century)
4. Fourth generation or Ambulatory Centers (second half XX century)
5. Fifth generation (21st century)

This study leads to the very revision of the term "Hospital", closely related more to the preponderance of the disease, than that of HEALTH and which also highlights its capacity of "Lodging", which has been progressively disused. In view of this fact, it is proposed a "terminology" in line with the paradigm shift in health and that identifies the Fifth Generation centers facing the XXI Century, within which the relevance of the term SALUTOGENIC (health-promoting) as a possible denomination of the future health care centers.

Keywords: Architectural program, building health provider, technology, epidemiology, economy, hospital, salutogenic

Magdalena Maierhofer
Technical University of Vienna

Magdalena Maierhofer has studied Architecture and Urban Design in Vienna and Hamburg. She concluded her Master studies with a thesis on the re-integration of hospitals in the urban grid during her residency at future.lab, a research-oriented transdisciplinary platform. Her main theory explains the overlapping interests in health promotion and urban planning.

During her stay with IBA Hamburg, Magdalena Maierhofer gathered valuable experience in community development and engaged in the University of Neighbourhoods (UdN), a project on intercultural learning and dwelling supervised by Bernd Kniess. Further, she conducted field research in Italy, Macedonia and Turkey.

The Hospital-City-Continuum

The design of hospitals is radically changing. The number of beds is being reduced, patients get redirected into primary care units or the like, while ever-improving medical engineering contributes to the erosion of the „big hospital". Against this backdrop I conduct a comparative analysis of historical tendencies regarding the conjunction of the hospital and its (urban) neighbourhood asking what can be learned from the organisation of the latter for the planning of the first. Opening up these closed or semi-closed entities can only proof beneficial when merging one into the other.

Starting from this assumption, the paper introduces a new notion of explaining these areas along the lines of Aaron Antonovsky's idea of the health-ease / dis-ease continuum (HEDE). Differentiating between a place for the ill (hospital) and one for the healthy (neighbourhood) is both exclusive and outdated as they clearly develop into a hospital-city-continuum (HCC). The hospital of the future will be built (or remodelled) to fulfil its so-called core functions as the city will gradually absorb the health machines' former duties. This process will not take place abruptly, but gradually. Today's mission is to plan health infrastructure which serves its purpose now and will still do so in 40 years from now. The paper follows the hypothesis according to which the hospital itself mutates into a salutogenic environment. The HCC helps to accompany the patients from their treatment (as "ill" persons) towards the normal, "healthy" life. Just as the HEDE dissolves the hard narrative of a world in black and white, the HCC allows for a gradual return to the "outside" setting. The HCC's second implication concerns the planning and building of hospitals, their physical aspects. Just as in any good community, the borders between "in" and "out" must be torn down. When the medical service spreads over the neighbourhood, the physical structure has to follow. We do not need an intermediate space between two worlds helping to comfort patients, relatives and staff. The solution for the modern hospital lies within an analogous continuum of treatment structure (both physical and organizational), from primary care at the rim to the hot floors at the core. With a shrinking hospital, the neighbour (the city) is ready to take over and reanimate the abandoned structure.

Keywords: hospital-city-continuum, salutogenesis, urban planning, hospital

Professor Mardelle McCuskey Shepley

Dr. Mardelle McCuskey Shepley, B.A., M.Arch., M.A., D.Arch., is a professor in the Department of Design and Environmental Analysis and associate director of the Healthy Futures Institute at Cornell University. She is a fellow in the American Institute of Architects and the American College of Healthcare Architects. Dr. Shepley's most recent books are Health Facility Evaluation for Design Practitioners (2010) and Design for Pediatric and Neonatal Critical Care (2014). To enhance the link between research and practice, Dr. Shepley has worked in professional practice for 25 years. She is founder of ART+Science, design research consultants.

An Empirical Study on Behavioral and Mental Health

Objectives: This research describes an empirical study on behavioral and mental health facilities. The purpose of the study was three-fold: to develop a tool for the evaluation of mental and behavioral health facilities, to identify design features that are believed to positively impact staff, patients and families in psychiatric environments, and to evaluate the quality and presence of these features in existing facilities.

Methods: This research project consisted of four primary methods: snowball search, interviews, focus groups and surveys, which were implemented in seven phases. A draft version of the Psychiatric Staff Environmental Design (PSED) tool was developed based on the previous literature and used as the topic of discussion for the interviewees (N=19) who were identified via a snowball search process. The interviews were followed by a focus group. The interviews were transcribed and analyzed using Naturalistic Inquiry. Based on those conversations, the survey was revised and distributed to psychiatric nursing organization members (N=134) to evaluate its appropriateness and the quality of the facilities in which they currently treat patients. Care staff from four psychiatric nursing organizations participated, representing Europe and the UK, the United States, and Australia, in addition to staff from a large behavioral and mental health organization in New York City.

Findings: Interviews and focus group. Interview and focus group participants reviewed the proposed survey in detail and requested that we expand the survey to include outpatient facilities, add four new questions (e.g., preference for free-standing versus hospital-based facilities) and greater clarification regarding the demographic background of our survey subjects and the type of patients they serve (e.g., drug rehabilitation). The proposed survey tool was modified as a result of the interviews and focus groups.

Survey: Subjects evaluated the effectiveness and importance of the following categories of environmental features: deinstitutionalized and homelike environment, orderly and organized environment, well-maintained environment, visual or physical access to nature, damage-resistant furnishings, maximum daylight, staff safety/security, private/low density rooms, patient-staff interaction/observation, and social interaction/community. The results of the revised survey regarding the above topics were extensive, but among the most interesting findings was the support for private patient rooms, the critical role of positive distraction, and differing definitions of homelike/deinstitutionalized environments. Another significant result was the extreme disparity between the perceived importance of specific environmental qualities (e.g. access to nature), and the presence/quality of these attributes in existing facilities.

Practical Implications: Guidelines for mental and behavioral health facilities were developed using the categories summarized above. These recommendations are prioritized relative to the level of need expressed by the subjects.

Professor Ian Forbes and Dr. Mary Potter Forbes

PROFESSOR IAN FORBES, UNIVERSITY OF TECHNOLOGY, SYDNEY

Ian Forbes is the General Manager of the Aged Care division of Argyle Hotels & Resorts and Director of Forbes Associates International in Sydney, Australia, being the firm's Principal Health Architect and Health Planner. Mr Forbes has been involved with development of health facilities including planning, designing and construction for over 40 years in Australia, Asia, Canada and the Pacific region. He is currently involved with the development of a several retirement complexes and is involved with a major research project involving the design of supportive spaces in dementia facilities. He is an Adjunct Professor in the Faculty of Design, Architecture and Building at University Technology, Sydney. He has taught final year Design Students in Dementia Design at UTS and at Yonsei University in Korea. He was awarded the IADH lifetime leadership award in 2013.

DR. MARY POTTER FORBES

Mary Potter Forbes development of an acute care facility at Sha Tin in Hong Kong and on Asian Development Bank funded master planning projects in Malaysia. Mary has presented at conferences in China, Malaysia, United States, Italy and Australia. Mary sits on the State Branch Council of the Australasian College of Health Service Management and is a member of the interview committee for selection to the undergraduate medical program at UNSW. Mary is a Registered Nurse and a Registered Australian Legal Practitioner admitted to the Supreme Court of New South Wales. Mary holds degrees in law, commerce and health administration.

Benchmarking for Mental Health Facilities Design

Objectives: This paper arises from continuing work done by the University of Technology, Sydney in the area of evaluation for health facility design. Research undertaken for a PhD in Mental Health Facilities has shown that many aspects of the current designs of new inpatient mental health units are failing to provide physical environments that support the good intentions of clinical staff and are too focussed on the custodial models of care in attempts to provide safe environment's.

Paper: In this paper the researchers have developed a tool that uses the detailed international literature to develop a benchmarking tool for good design and have tested it on 5 case studies in NSW Australia. There are a number of guides presented in the format of Christopher Alexander's pattern language with validation as to the problem being solved and the reasons why the solution will help in developing supportive environments. The philosophy for the planned treatment solution is displayed and the findings shown where the design intention went wrong and what is the best way to solve the problem.

Conclusion: The benchmarks described are intended to be used to guide future designs in the context of prevailing Mental Health Polices. The format provides future researchers with a series of hypothesis that can be tested for further validity and hence build the tools. Also discussed are the problems planners have in complying with NSW Health Facility Guidelines, Medical/Architectural Briefs (programs) that have been poorly prepared especially with regard to developing Models of Care.

Dr Evangelia Chrysikou, Ph.D.
Faculty of the Built Environment,
Bartlett School of Architecture UCL, London

Dr Chrysikou is a medical planner holding a rare PhD on psychiatric facilities. She is currently Visiting Lecturer/Researcher at the Bartlett Real Estate Institute, UCL and Commitment leader on AHA, Action Group D4 by EC. She has won 9 prestigious grants including a Marie Curie Horizon 2020 IF from the EC. She has received 7 international awards for her research and has been involved in policy making. She authored 2 books, 89 scientific and professional publications. She has been teaching medical architecture in medical and architectural schools. Since 2005, she is the founder of the multi-awarded SynThesis Architects.

Improving the Social Integration of Psychiatric Wards

Background and Problem:
The pluralism that characterized the development of mental health services around the world created a rich variety of mental health provision. This variety of care models and building types in combination to policies encouraging diversification such as the principle of sectorisation, prevented the development of well-established typologies for mental health facilities. A result of this plethora, combined to limited interdisciplinary relations between architectural education and practice and health sciences promoted an experimental, as opposed to evidence-based, approach regarding the architecture for mental health facilities. All these, combined to the increased complexities of psychiatric care, institutional remnants, the stigma attached to mental illness and the limited diagnostic and interventional accuracy of psychiatric treatments resulted in an array of institutional behaviours still surviving in newly built facilities. This gap of knowledge on how psychiatric space operates became more obvious when research combining methodologies of medical sociology and architecture found that even awarded psychiatric facilities might operate as institutions.

Objectives:
The inadequacy of buildings that were designed according to the then architectural state of the art, as an award would imply, generated the question of the relation of the layout itself to psychosocial performance. Translated to research aims, this research has the following objectives: (i) to explore the mechanisms with which the built environment influences the personal and social milieu of psychiatric space and (ii) to identify the environmental requirements of mentally ill people according to their needs.

Method:
The locus of the research comprised two acute psychiatric wards in London, belonging to different Mental Health Trusts, all part of the public healthcare sector. Each was evaluated using the SCP model, a tool that has been developed specifically for the evaluation of mental health facilities, to identify the relation between policy, care regime and patient-focused built environment. This involved data collection from plans, visits and detailed staff and patient interviews. As a juxtaposition mechanism, a syntactic analysis was conducted using the plans of the two wards, to identify the social logic of their layout.

Result and conclusion:
The experience of people living or working in psychiatric facilities, their interpersonal relations as well as their health and wellbeing, all are influenced by the lack or presence salutogenic qualities in design and from the wards layout. The findings provide the ground for an integrated design framework for evidence-based mental health architecture to serve as a design and evaluation tool, immediately accessible to architects, planners and stakeholders.

Key words: Mental Health facilities, space syntax, health and wellbeing

Vivien Mak

Director of P&T Architects and Engineers Ltd

Vivien Mak obtained her architecture degree from the Chinese University of Hong Kong. Graduating in 1997, she began her career at P&T and is now a director. She is a member of the Hong Kong Institute of Architects and a registered architect. With more than 17 years' experience in architectural practice, Vivien specializes in hospital and health care projects. Besides, she has been involved in different stages and other types of project including commercial, residential, institutional and industrial buildings. Her experience includes extensive coordination and supervision of design and site work for various projects.

Salutogenic Design to Relieve Stress

Background and Problem:
Stress is a common source of un-wellness. Health problems related to stress include emotional disturbance and worse conditions such as depression, obesity, heart disease, Alzheimer's disease, diabetes, gastrointestinal problems and asthma. The built environment, being an inevitable part of modern human life, not only houses people but may also play a role in producing and reducing stress.

Objectives:
The key objective of this paper is to study whether and how the design of built environment contribute to worsening stress and relieving stress. Selected projects in Hong Kong, a city well know of high density, fast pace and intensive lifestyle, will be used as case studies. Factors of these designed or built environment that may induce stress will be examined. Opportunities that the projects capture to make efficient, user friendly and humane places and its effect in relieving stress shall be identified.

Methods:
The paper addresses the design process and result of the projects in dealing with stress with regard to the following parameters:

- Effect of building mass and density
- Topographical effect
- Site planning and effect to and from community
- Desirable provisions versus minimum standards
- Architectural articulation and spatial quality

Results & Conclusion:
Comparison studies of several projects will illustrate opportunities and results of stress-relieving design in the given contexts in Hong Kong.

Keywords: Stress, city, design of built environment

Anna Sillitti, M.Sc., Ph.D. Candidate

Anna Sillitti is Architect and Ph.D. Candidate at Hafencity Universität of Hamburg as member of the Research group DFG-Graduiertenkolleg Kunst und Technik. She had her Architecture Degree in Rome and a Postgraduate Master on Hospital Design in Polytechnic of Milan. She is member of the Architects Association of Rome and worked in Italy for Pirelli Real Estate and the engineering companies Progetto MCK and Bortolazzi Consulting as hospital planner of healthcare projects in Italy and abroad. She has been project manager and jury committee member of renovation and new hospitals' projects at Lombardia Region Council. Within the Erasmus-Mobility-Teaching-Program, she holds lectures at Polytechnic of Milan.

Space Quality- Explorative Study of European University Hospitals

Introduction:
Research and teaching hospitals constitute the highest element of the healthcare infrastructure and are one of the most challenging cases in terms of complexity in architecture. They represent a relevant example of mixed-use buildings, with their extremely various combinations of users and their multiple and overlapping structural layers: functional, technological, social and medical.

Objectives:
University hospitals represent an interesting opportunity to investigate complexity and space quality in architecture. Environment can play a key-role supporting the therapeutic process and can offer positive stimuli to medical staff and researchers in their workspace. Technology, that contribute to the negative hospital setting, has nowadays a potential in performing environmental qualities.

This study aims to explore recent European facilities, analyzing how different architectural typologies and innovative technological solutions may implement space quality. Different groups of users, with different environmental requirements, are coexisting in the same complex and high-technological building.

Methods and field of the study:
The study starts with a review of architecture theory, environmental psychology and research-based-hospital design literature. Then defines the theoretical hypothesis and, through a deductive process, the analytical criteria necessary to conduct the critical review. The case studies have been selected among recent European medical research facilities with different typological settings. The (ongoing) explorative study, through study visits, interviews, diagrams and tridimensional models, investigates the architectural solutions in terms of space quality for the different groups of users.

Results and Conclusions:
Distinct and complementary theoretical assumptions - space perception in the peculiar hospital environment, hybrid buildings theory and the role of architecture and design in the healing process are supporting the central thesis of the hybrid character of the university hospital. The explorative study and the comparative analysis focus on typological models and design solutions that can sublimate the negative nature of medical environments. Although certain examples still present a pathological character, several salutogenic design solutions have been developed at different scales. In addition, when design succeeds to promote hybrid synergies, architecture achieves not only to mitigate and to overturn the pathological space, but can also assume a new determinant and revitalizing role on an urban, social and community level.

Keywords: European University Hospitals, Complex Architecture, Healing Environments

Willemineke Hammer and Liesbeth van Heel

WILLEMINEKE HAMMER, MSC

Since joining EGM architecten in 1998, Willemineke Hammer MSc (1971) has been involved in the development of large academic institutions, general hospitals, residential care projects and initiatives in which living as normally as possible and welfare are central themes. In the overall spectrum of Cure & Care she searches, in dialogue with clients and (end)users, the appropriate connection between people, processes and physical environment. Willemineke is also responsible for scientific architectural research, which is considered part of EGM's core activities. Before joining EGM architecten, she worked on retail, private housing and small business buildings. Willemineke Hammer studied Architecture at Delft University of Technology and Art History at Leiden University.

LIESBETH VAN HEEL, MSC

Liesbeth van Heel (1964) was trained in Facility Management and Business Economics before joining Erasmus MC as a management trainee. Since the late '90 she has been involved in the Erasmus MC redevelopment project as project secretary, and manager within the directorate of Corporate Real Estate. She has gained expert knowledge on the cutting edge of developing a good new university hospital and an innovative, sound and robust new building. Recently she focusses on a safe transition to the new facility, but is still involved in national and international orientation and knowledge sharing. She is also responsible for PR on the Erasmus MC project.

Salutogenic Perspective Applied to Hospital Staff

In any hospital design the patient should come first. This perspective is rightfully presented most often at conferences. But what if the salotugenic perspective is applied to hospital staff? Which environment supports their healthy lifestyle and prevents illness for them as well? What would help them cope with a stressful job and stay healthy and happy? How do we attract and retain staff members and make them ambassadors for our healthcare and health promoting organizations? With growing staff shortages, this could be one of the 21st century challenges in health infrastructure. Starting the redevelopment of a tertiary care hospital and medical school, staff was explicitly included in the definition and ambition of creating a healing environment. Looking at this case study, involving 13.000 staff members, we would like to show how a high tech environment can also encompass 'soft touch' elements. Helping staff battle with the effects of hardship and coping with work-related stress. How did salutogenic architecture help us in this respect? What efforts did we undertake to create an environment that is comprehensible and manageable for staff, supporting the meaningfulness of their efforts towards our patients? In order to create a comprehensible, manageable an meaningful 200.000+ m^2 healthcare city within one of the major cities of the Netherlands, it is necessary to design at all levels. Comprehensible with easy wayfinding. At the scale of urban planning, on to the out patients clinics and clinical wards. Manageable with separated front-office and back-office spaces – to accommodate revitalizing after being in stressful situations – and daylight accessibility in deep plan lay-outs. With short traveling distances in a ward with 100% single rooms and fixed ceiling hoists to prevent back injuries due to heavy patient lifting. Meaningful with adequate bicycle parking and attractive stairways to stimulate movement. And with stress reducing outdoor parks, green atria and accessible roof-gardens close at hand. In this presentation we will show these and other examples, using illustrations and photographs of the old, design and new situations. The importance of applying the salutogenic perspective to hospital staff is supported by the outcomes of our formal Pre- and Post-Occupancy Evaluation of the first 100.000 m^2 of the new hospital. In this study staff appreciation of the designs for lab and research environments were measured. We found significant positive effects on several outcomes related to specific design choices, for example: perceived safety and well-being, indoor climate and the support to work requirements.

Keywords: Staff coping, Prevention, POE

Dr Michel Nathan, MBA,
CEO of CHEM

Dr Michel Nathan, born in Luxemburg is medical doctor from the university of Strasburg and a trained urologist. Since he was elected President of the doctors counsel by his pairs, he realised the necessity of a profound education in management for deciders in hospital organisations witch he continued with an MBA at he university of Nancy and several grades in medical management as well as quality and risk management at the universities of Brussels, Boston and London. in 1994 as a young hospital director of the former Hôpital de la Ville d'Esch his energy went in improving medical quality and completing several hospital mergers with success, creating the Centre Hospitalier Emile Mayrisch in 2007. The new structure enabled the team building for an ambitious vision for the future of hospitals in Luxemburg and in 2008 he presented the idea of a complete new hospital facility, starting from scratch, based on the concepts of lean management and franc innovation. Besides CEO of the CHEM, Dr Nathan is President of the national radiotherapy and oncology centre François Baclesse, vice president of the Action pour le Développement de la Santé active in humanitarian surgery in Laos, member of the board of the Red Cross Luxemburg, member of the board of the Institut Universitaire Luxemburg, the Fédération des Hôpitaux and represents public hospital in official commissions. He is active for hospital management teaching in Vientiane - Laos and is regularly lecturing at the University of Brussels in quality and hospital management and organisation strategy at the Institut Universitaire International of Luxemburg.

Innovation, Cost Efficiency, and Patient Comfort in the New Hospital

The CHEM is a hospital organization with 640 beds. We are facing the common challenges every hospital has to overcome for its future evolution - if not its independent existence. Our main goals intend recruiting and keeping the best staff while staying focussed on our strategy ahead for an uncertain future with two opposing constraints becoming more and more internationally evident: the necessity of ensuring the highest service quality and the obvious tendency to spend less for more. The equation can hardly be solved by classical strategies without creating difficulties in hospital processes, quality or satisfaction. Hospital deciders are profoundly conservative thinkers, but the real challenge though would mean to face the equation with new ideas from a different perspective. Debating and clarifying our visions and concepts before letting architects do their conceptual job. Indeed, our industry encounters these challenges daily - so why not learn from them instead of thinking in dimensions which as we know cannot solve the problem. That implies beginning from scratch and admitting conceptual errors or misleading directions we chose in our management and in designing in our buildings. We started with a clear objective: the new hospital "facility" should be completely built around a lean process management model and generate at least 15% less costs for the same activity while implying a clear comfort gain for the patient. The second objective strived to reach a maximum of patient satisfaction by means of comfort, design and healing environment- the last consideration remaining equally important, in order to guarantee the wellbeing of our staff. Innovation also involves taking risks. After long and controversial discussions and analysis we put together an international team of industrial engineers who had actually never dealt before with hospital planning- a process pillared by experienced hospital designers, doctors and nurses to outline the principal objectives of our vision which resulted in an international architectural contest. Our goal was to provide a private room for every patient. We were planning a healing environment combined with an ambitious architectural design concept and based on stringent productivity constraints for our "production" process. The longer distances resulting from the private room floors needed different outlines for the hospital wards to comply with our objective of better working ergonomics and high staff productivity.

Ilona Kickbusch

Director of the Global Health Centre and Adjunct Professor in Geneva

"A new perspective on how we govern health and wellbeing is gaining ground. Health has become a critical macro-economic and political factor throughout societies; the result is that governments, businesses, communities and individual citizens are changing the way they act in relation to health. In the 21st century health and wellbeing are key features of what constitutes a successful society and vibrant economy – they are also critical assets for individuals in their everyday life."
- Ilona Kickbusch

Ilona Kickbusch is the Director of the Global Health Centre and adjunct professor at the Graduate Institute of International and Development Studies in Geneva. She has been deeply involved in the development of the Health 2020 European health policy framework. She was a member of the independent Ebola interim assessment panel of the WHO. She has recently been awarded the Cross of the Order of Merit of the Federal Republic of Germany (Bundesverdienstkreuz) in recognition of her invaluable contributions to innovation in governance for global health and global health diplomacy. She is a senior advisor to the Regional Directors of the WHO Regional Offices for Europe and the Eastern Mediterranean and has advised many countries on their global health strategies. In Switzerland she serves on the executive board of the Careum Foundation and on the expert panel advising the Federal Councillor responsible for health. She has contributed to innovation in health in many ways throughout her career and has a strong commitment to the empowerment of women. She has worked with the WHO at various levels and in academia as professor at Yale University. She has published widely and has received many prizes for her work. Her key areas of work relate to Global Health Governance, Health Security, Public Health, Health Promotion, Health Literacy and Health in All Policies.

Aija Thomas and Bruce Crook
Directors at Silver Thomas Hanley

Epworth Geelong Hospital: A Case Study: Integrated Healthcare, Research and Teaching in a Regional Environment Adjacent to a University Campus

"The Epworth Geelong Hospital will create a healthier local community and a healthier economy for the people of Geelong," Peter Ryan, Deputy Premier and Minister for Regional and Rural Development, Victorian Government (Australia)

The not for profit Epworth Geelong Hospital represents a new paradigm in the provision of healthcare, research and teaching in a regional environment adjacent to a University campus. Fundamental to the design approach was a salutogenic approach that focussed on community and public health considerations. The project, from the outset, established a focus group that consisted of: Healthcare representatives; Community representatives; University representatives; and Design and Urban planning consultants.

The outcome provided the community and University with a fully integrated regional hospital that recognises the value of community involvement, public health and teaching, training and research integrated into the campus on every level. "I am delighted that Epworth Geelong is on the brink of becoming a wonderful reality for the wider Geelong and regional Victoria community. The partnership between Deakin and Epworth will enable excellent education for nursing, medical and allied health students, encourage research collaboration between staff and provide additional health choices for the community," Jane den Hollander, Vice-Chancellor of Deakin University Professor.

His case study will look at the entire design process and from a community, academic, healthcare and architectural point of view.

Opened in 2016 the first stage of this project consists of:
302 ds (254 inpatients, 8 special care nursery cots and 40 day suites); nine operating theatres; two catheter laboratories; two procedure rooms; more than 2,400 square metres for lease to retail, pharmacy, consulting, pathology and imaging services; and 382 car parking spaces.

The outcomes of the project include:

- A solutogenic solution that partners (and physically connects) Epworth Geelong with a Deakin University with a medical and nursing teaching facilities;
- The integration within Epworth Geelong of dedicated teaching space for medical and nursing graduates;
- The application of Salutogenic principles including genuine access to day light, natural surroundings and quality amenity;
- A piece of architecture that sits comfortably and responsibly within its precinct and regional setting;
- A logical and practical expansion pathway for future developments, technology advances and changing "model of care"; and
- A commitment to sustainability including the efficacy of utilities usage and an innovative ward design that supports a commitment to single bed room, whilst optimising operational performance and education implementation.

Keywords: Case Studies, Salutogenisis, Healthy Communities, Integrated Healthcare, Research and Teaching

Res. Asst. Elif Özgen and Assoc. Prof. Bilge Sayil Onaran

The concept of "healing places" from children's perspective

The most detailed and known definition of wellness has been provided by WHO; state of being in good condition biologically, physiologically and psychologically [2]. Positive emotions like excitement and hope that architecture can provide to the human's soul can be regarded as the basis of health philosophy which is founded on state of "well-being"[1]. In this perspective, considering the historical process.A transitiobe seen could from the concept of hospital with its universal features to a perception which can be mentioned as a factory. This situation indicates the fact that holism of the state of "well-being" is deteriorating and its adoption by the users is diminishing. In order to understand the quality of concept, this transition should be followed through a chronological research.

Among the healing places, the first developments regarding the hospitals which were serving to the society to a great extent were seen in the Ancient Greek and Roman civilizations. Doctor houses were the healing places for patients in Ancient Greek. Healing places start to change when specialized hospital began to occur like children's hospital. The first findings on children's health date back to the times of Egypt civilization [3].During the Middle Ages, the notion of healing lost its significance. Within the Renaissance era, charity organizations and care facilities for children were formed under the umbrella of religious bodies and their significance was realized in the society.

Healing places started to change with the efforts of British Nurse Nightingale in the modern sense. However, a pediatrician put forward the fact that organization and design features of healing places should differ for children than that of the adult users. With this development, children's healing places are expected to satisfy the requirements of game, gymnastics and psycho-therapy together [4].During the 20th century, children's hospitals provide not only treatment but also regular psychologic needs like. In today's; technical, psychological and aesthetic requirements should cover for children.

Finally in this study; healing places will be examined from historical framework and separation process of children's hospitals will be evaluated. It will also be carried out in an attempt to form the basis by means of child users' needs, their developments and perception of place with correct analyses. At this point, healing places were inspected through the eyes of 50 students at the age of 10 in order for proper analysis of today's perception to shed light on possible improvements for future's designs. From this point of view; 4th grade students at a public school of Hacettepe University, were asked to express memories and feelings regarding health organizations through picture works. The picture works of these children will be analyzed and more innovative and user centered design recommendations for child users will be created via this method.

Keywords: recovery, healing, hospital, hospital design, place design, health construction, children's places, experience

Chin Young, Don Garner and Arthur Collin
JACOBS

Inpatient innovation in the Clinical Services Building, Blacktown Hospital

Upon entering I am struck with the perception that this is different to any inpatient unit I have seen before. Natural light pours in from the glazed bedrooms. The welcoming staff station is low, open and rounded. The staff have uninterrupted views into the bedrooms and all the patients in their care. Even the staff work area has floor to ceiling glass which to me says 'we are here to help you'. Great care has been taken configuring the bedrooms to view patients, but also for patients to see staff. Patients say this is reassuring, knowing staff are constantly looking out for them, rather than being down a corridor out of sight.

The proportion of single rooms may be relatively low at 40% but it feels like all the rooms are singles because the two bed rooms are 'book ended' in each corner for optimum lines of sight, where they are also quite unobtrusive. Two special rooms, one negative pressure and the other for bariatric patients are twinned with a write up bay, providing excellent observation for at-risk patients. Wards are configured with two identical pods of 13 beds. Each pod is self-contained so that everything the staff need for great patient care is close at hand, whether it be the dirty utility or discreetly placed linen and equipment bays. An interconnecting clean utility 'galley' and consumable store with smart storage links the two pods. The medication room is here too and this shared resource is a great opportunity for informal staff interaction. The central location keeps staff travel to a minimum so they can spend more time in direct patient care.

Single bedrooms have a 'carer zone' with a lounge that converts to a bed at night. A curtain is provided for privacy, enabling staff to observe patients without disturbing the carer. The hospital's 'caring for the carers' program is so popular it has recently won a state wide health award.

> *"Last night I actually slept on a bed and I had a great, great sleep"*
> *- Ruta Vatau, carer for her elderly mother*

The carer zone has been made possible by subtle changes to the conventional placement and design of the en suite. Double doors improve access, allowing staff to use the space outside to wheel the patient's bed into the best position.

> *"A patient become hypoxic last week and was unconscious on the toilet. We were able to wheel the whole bed into the bathroom and very quickly stabilise the patient. Designing these bathrooms with access in mind was greatly appreciated"*
> *- Nursing Unit Manager*

Space leading to the fire stair hasn't been wasted either. Instead it has been widened into a welcoming sun room for patients and their visitors to enjoy the view with a cup of tea.

Keywords: Innovation, Pod, Patientcare

Chin Young, Don Garner and Arthur Collin
JACOBS

Community engagement in the Clinical Services Building, Blacktown Hospital

Sometimes consultation can feel like war, a battle between conflicting agendas. Health providers can use consultation as a fig leaf for expediting controversial approvals, and designers seem to think that stakeholders are going to drive that stake right through the heart of their precious creation. Is it possible that engagement can really improve outcomes? Can consultation avoid 'design by committee' and reach a level significantly above the lowest common denominator? If so, what is the secret to success and where has it worked? The answers to these questions are 'yes, 'yes', 'it's no secret' and 'Blacktown Hospital in Australia'. The not-so-secret ingredients of consultation success are time, empathy and teamwork. Consultation must be more than asking people what they want and then providing it. Full engagement is a time consuming process of discovery, developing an understanding of the issues by all involved, providing alternatives based on expertise and then evaluating them jointly.

User group consultation at Blacktown was comprehensive and many modest innovations are proving to have profound effects. For example, single bedrooms have a 'carer zone' with a lounge that converts to a bed at night. A curtain is provided for privacy, enabling staff to observe patients without disturbing the carer.

> *"Last night I actually slept on a bed and I had a great, great sleep"*
> *- Ruta Vatau, carer for her elderly mother*

At Blacktown consultation was not limited to the hospital staff or users:

> *"We wanted the engagement to be genuine, ongoing and meaningful so we decided on a systematic and comprehensive program of community and consumer consultation from the early stages of planning right through to the post occupancy period. "As a result, the facilities … really reflect the values of our local community."*
> *- Peter Rophail, Hospital Transition Manager*

Blacktown has diverse immigrant and indigenous communities, and at first it seems the only thing the community has in common is disadvantage. Look a little closer though and there is great opportunity. A major driver for investment in health infrastructure is population growth and Blacktown's population will double by 2030. A new community is being formed and funding is in place for new public hospitals. Consultation revealed a desire for a new transformative identity that would engage the attention and participation of the community. The designers proposed a concept of blackness as a valid positive alternative to a clinical white hospital environment. What was seen initially as controversial required significant engagement before proceeding, but now, six months after opening, it feels right: "I love the way it doesn't really feel like a hospital" Anonymous Together with the older buildings, the new 32,000m2 Clinical Services Building (CSB) creates a new hospital campus of varying character, rather than homogeneity. The rich black facades are highlighted by rose coloured glass fins that glow in the sun, reflecting the diversity of the community and literally reflecting coloured light between exterior and interior - a warmth synonymous with a culture of healing and well-being. A dedicated cultural program integrated art with the building, not only consulting communities extensively, but including them in the production of artworks. Each section of a 60m long mosaic bench was designed by a different ethnic community group, their diverse backgrounds clearly evident.

Keywords: Consultation, Community, Culture

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Wayfinding in Unfamiliar Indoor Healthcare Environments: An Evidence Based Design Approach Using Gaze-Tracking Technology

This study objectively identifies and ranks visual environment elements in hospitals that attract gaze fixation during wayfinding. This main objective of this study was to identify elements of the designed environment that attract eye fixation during wayfinding, by objectively tracking eye movements and fixation as healthy subjects navigate through a complex healthcare setting. EyeGuide® - Mobile Tracking Technology was used to capture data on gaze-fixation. Literature shows that disorientation due to wayfinding errors and navigation problems in healthcare facilities produce frustration, irritation, anxiety, and stress. It represents a critical concern for patients, employees, and healthcare organizations, thereby affecting both processes (efficiency and safety) and people. Recently, Pati et al., (2015), identified environmental attributes that affect wayfinding behavior in navigating healthcare environments. Ghamari et al., (2014) conducted a similar study in an educational facility and using the same sequential navigation task for the human subjects. The current study used eye-tracking technology, to capture physical design elements attracting human gaze during navigation in Watauga Medical Center. The sequence of the destinations was randomized for participants.

Twenty-four adult subjects in different age groups (young, middle age, and elderly) and both genders were asked to navigate five different routes. The eye-fixations on different visual environmental attributes were recorded and measured by Eye-Guide Analyze software. The time durations of each navigation tasks were also measured. The results of this study suggested that identifying signs, architectural features, informational signs, maps, and directional signs constitute the main environmental attributes that attract the attention of users. In total, signs constitute the major environmental information source among all classes of environmental cues, covering 54% of the time subjects sought information from the ambient environment. The results of the study also showed that architectural features (14.2%) and maps (8.4%) were the two other major environmental attributes that attracted gaze fixation. Other design elements (7.9%), interior elements pairing (5.3%), functional clusters (3.4%), and furniture (2.6%) covered the rest of the total time of eye-fixations. Additionally, the results showed that there is a significant difference between males and females on the time of navigation. Males were faster than females in navigation. The results also showed that young age group had the fastest navigation performance among the age groups. The findings provide triangulation data for previous studies, and were consistent with the earlier behavioral studies, thereby contributing to a robust set of empirical findings on wayfinding and building design.

Keywords: Wayfinding, Indoor Healthcare Environments, Eye-tracking

Walt Vernon
MAZZETTI+GBA

New Approaches in Healthcare Sustainability

Objectives:

- Discover how the US-India Alliance is developing new insights and opportunities for more sustainable healthcare facilities.
- Discover how the International Federation of Healthcare Engineering (IFHE) is fostering collaboration across countries to develop new ventilation and other solutions at the nexus of healthcare sustainability and quality.
- Discover how ideas of Reverse Innovation are expanding the palette of sustainability options for health facilities of all resource levels.

The idea of defining "Sustainability" emerged in the form of the US Green Building Council, and its successor organizations, in an attempt to respond to Greenwashing, where organizations claimed to be pursuing green solutions that were more show that substance.

This movement had the effect of helping to shape the consciousness of a generation of building designers, all focused on delivering more sustainable buildings – as defined by the LEED family of tools developed over time by the USGBC.

The Buddha once said, "if you see the Buddha walking towards you, kill him." By that, he meant that a slavish devotion to dogma would blind a person to greater possibilities. And, in much the same way, the very success of the LEED model has carried within it the seeds of its own obsolescence. That is, sustainability is now all too often equated with checking the boxes of well-understood pathways.

But the world is becoming aware of the growing urgency for more substantial measures. The world is becoming aware that solutions must be cultural and behavioral, as well as technical. The world is becoming aware that human health issues are pressing, and demanding of new resources, and new models. All of these forces will converge in one way or another, and the community of healthcare designers has the opportunity to help to shape that conversation in a productive way.

This paper will examine the directions of these megatrends in the context of very real and concrete solutions and approaches being developed to these various issues. Readers should gain new resources and new ways of thinking.

Keywords: International, sustainability, energy

Walt Vernon
MAZZETTI+GBA

What is a "World Class" Healthcare Facility?

As healthcare becomes an increasingly global enterprise, issues of "best in class" and standardization become relevant topics for discussion.

In the US, in response to findings of substandard care, the Department of Defense has undertaken an effort to ensure that facilities in the US are "World Class"; begging the question, what is a definition for a world class health facility. Other international organizations, such as ASHRAE, try to define "high-performance" health facilities from a very US-centric point of view, yet these views become the de facto norm for lack of competing expressions of what facilities should be.

At the same time, the WHO is performing research into the impacts of Energy Poverty on access to care, and is imminently publishing Guidelines for Healthcare in the Green Economy, intended to be internationally and universally relevant – and which look remarkably different from the above-cited US Standards. Some US healthcare systems (Ascension) have begun to create facilities outside of the US in conjunction with international partners, using evolving methods for healthcare delivery to drive healthcare buildings that could not built in the United States. Even some US Guidelines (FGI and its Guidelines for Healthcare Design and Construction; another de facto global standard) are beginning to recognize the resource-intensity of their historic requirements, and are working to scale them back, balancing a growing need for economic consideration to counterbalance strength of evidence and evidence of how much benefit (or prevention of harm).

This paper will explore emerging notions of what it means to be a "world class" medical institution, drawing upon lessons from the author's work around the world, including his work with the WHO.

Keywords: facility, world-class, equity

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Practitioner Focused Facility Evaluation of a University Health Service Clinic

Objectives:
Health services are a crucial amenity provided to students in university settings and the quality of this service may greatly impact the overall student experience. In spite of this, very little research has been conducted on the physical environment of university clinics. The purpose of this research project is to address this shortcoming by evaluating the new Cornell Health Services building at Cornell Universitiy.

The post-occupancy evaluation of the outpatient facility, the Cornell Health Service, tested whether the primary design goals, creating a welcoming, integrated, private, collaborative, and transparent environment, were met. The researchers evaluated the 25,000 square foot building by testing the primary design goals on the staff and students.

Methods:
The research team conducted five interviews of facility administrators and managers which helped to construct the 12-item questionnaire that was distributed to the staff through a link on e-mail and to students on paper while seated in the waiting rooms. The survey defined the design goals, asked about each goal using a likert-scale, then asked subjects to rank goals and physical elements on importance and effectiveness.

Results and Discussion:
Data from the surveys will be collected and analyzed in November.

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Effective Factor Analysis in Form Design Reform of Training Center According to Karen horney's Psychological View

Objective:
In order to have a well developed society, all members need to grow in all aspects among those, for criminals and out laws getting away from crime is of great value. This study aims to analyze Karen Horney's psychological views and to find practical solutions for criminals to return to society after passing their period.

Method:
Studying Karen Hodney's psychological views in details and observing people's behavior with different ages and aociety class and interviewing them in 7 years, the researcher obtained some useful data and analyzed the participants' answers based on their personality traits.

Results:
According to the conducted interviews and analysis, there is a direct relationship between the environmental conditions of prisons and the amount of anxiety and relaxation the people feel. These feelings differ for different people in the same place and it is also possible for a place to make a person feel stressed out and at the same time it can relaxe someone else or even be ineffective on another person.

Conclusion:
If people are exposed to their proper situations based on their idealselfs, they may reach relative peace. Under such sircumstances the people's capabilities to adapt to scientific and educational concepts will increase.

Keywords: Karen horney, Training center, Neurotic, Idealself

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The process of concept and content development for designing efficient web and mobile health promotion programs

Background:
Mobile and web health (eHealth) promotion programs and applications offer affordable, non-stigmatizing, 24/7 access to prevention and treatment. Yet, 26% of health apps are used only once and 90% of them are deleted six months after download. For example, resources available on the website of Australia's largest child and adolescent support service – Kids Helpline – appear largely underutilised by youth, while about 40% of users' calls remain unanswered. Considering the rapid development and increasing technological capacity, it is surprising that health experts struggle to design engaging interventions and achieve better reach and adherence amongst end-users.

Aims:
This paper presents a recommended process for the contextual research, conceptualisation and design decision-making necessary for the development and optimisation of high-quality eHealth resources.

Methods:
Kids Helpline website usage data were analysed to develop an understanding of the underlying issues and features requiring design innovation. Two systematic literature reviews and a contextual review of eHealth websites were conducted. All websites were scrutinised and quality-rated using an adopted version of the Mobile App Rating Scale (MARS). Thereafter, a series of participatory design workshops was conducted to engage existing and potential service users and arrive at the concept for an innovative and youth-friendly website promoting autonomy, wellbeing and self-care.

Results:
Website usage data suggest that demands for quality eHealth resources increase yearly, while necessity for clinician contact decreases. User needs are geographically and socially influenced. Literature reviews suggest that young Australians prefer to access health information late at night, in private, using their mobile phones or tablets. MARS ratings suggest that existing mHealth websites in Australia are generally unengaging and of low design quality and often not optimised for mobile platforms. Participatory design workshops reveal numerous salient areas of consideration in the development of quality eHealth resources.

Discussion:
Modern technological advances present an unprecedented opportunity for health and wellbeing promotion. Novel design approaches are essential for generating adequate response to the increasing demands and developing quality eHealth resources. Best practices and approaches to development and optimisation will be outlined. The advantages of participatory design practices as a pathway to optimisation of eHealth resources will be discussed.

Keywords: eHealth, critical quality analysis, concept development

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Hidden salutogenic attributes of a dispensary in kenya's health service delivery system

In Kenya, Public Health service delivery is structured and arranged into a stratified referral system. The system is made of five distinct hierarchical categories of health facilities namely: Dispensary, Health Centre, Sub-county Hospital, County Hospital, and National Referral Hospital. The Dispensary unit is a health care facility that serves as the first point of call by health seeking rural population.

The Dispensary serves the largest number of people than any other category in the entire referral system. It is an important unit in delivery of health services in the country. Although normally faced with a myriad of challenges, the unit is has a unique way of delivering essential services to the many Kenyans. Despite its limited resourcing in terms of personnel, supplies and equipment, it turns these challenges into opportunities. With passage of time, it can be argued that the kind of services it delivers have evolved to be less pathogenic and more salutogenic. It has inherent salutary attributes in its health delivery processes which has gone unnoticed by healthcare practitioners and policy makers. These important but covert practices that have remained understated and thus unexploited can be enhanced to provide full-fledged salutogenic services. This paper will seek to demonstrate that though the delivery systems were not initially consciously designed to be salutogenic, the dispensary is a healing environment by default. It will further illustrate that the interplay between rural social culture and the dispensaries bears unique resistance resources that make the units efficient in serving their respective communities.

Susan Black, Heather McPherson and Lori-Jai Colucci

The Pink Effect ; Healing the world one woman at a time

Introduction:

The largest pre-eminent academic ambulatory care centre and research institute in Canada, Women's College Hospital is dedicated to improving the health and lives of women and their communities. They aspired to build a new hospital with a design team who would identify with their vision and contribute unparalleled innovation to match their own.

Objectives:

- Harness the power of the feminine to create an environment that treats the 'whole' woman encouraging The Pink* Effect - healing from her to her family and into the community
- Generate innovative health system's solutions to keep complicated medical patients out of the hospital
- Measure how architecture, planning and design impacts the integration of academic research, education and clinical outcomes

Methods:

- Engaged in a pre-emptive quantitative and qualitative research study 'Voices of 1000 Women'
- Created inspired physically and socially supportive environments - beyond meeting ambulatory design norms
- Reinforcing The Pink* Effect when creating environments that support information sharing both internally and externally

Results:

An 'extraverted' architectural 'parti' ensures that The Pink* Effect penetrates every level of the facility and speaks to integration and collaboration with the community – while embracing a light-filled welcome box, with the addition of a cantilevered branding element glazed in the strongest pink. Concepts of welcome, choices, diversity, and quality of experience contribute to patient and staff self-empowerment and engagement.

- Scalable clinical models of care prove innovations are successful
- Innovations are shared across the country and beyond
- Team learning spaces accommodated within each clinical pod
- Integration of complimentary childcare lessens anxiety and respects women's time constraints
- Clinical neighbourhoods reimagined to incorporate screening and inter-departmental diagnostics for efficient patient flow
- Team of healthcare specialists treats the whole person with multiple appointments
- Wait times reduced to 20 minutes
- Patient visits increased 1000 per month since 2013
- Community participation in tapestry project!
- Conference Centre became a unexpected revenue generator and a hub for knowledge sharing
- Satisfaction surveys including inclusivity ratings are increasingly positive
- Reduction in emergency visits due Acute Ambulatory Care Unit
- Research Institute repatriated onsite

Conclusions:

An architecture and design solution inspired by the 'soul' of the women incorporates strategies and innovative ideas to support healing on all levels - concepts which are sharable and scalable.

Keywords: Women, Pink, Scalable

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Yonsei University, Seoul Korea

Customized Appropriate Architectural Plan for Symbiotic Communal Housing - Transforming an Empty Building in Rural Area of South Korea

There are thousands of decaying areas in Korea which have been accumulated through the fast industrialization and urbanization especially in demographic changes, and empty buildings are waiting for revitalization accordingly. The project is intended to create a livable housing community which can be maintained sustainably by utilizing existing empty buildings. It is planned as a composite of supportive housing for vulnerable population who has lived at scattered site in the community and in the existing institutional residence. Since the shortage on healthcare and social service providers is expected in the future, ever increasing single vulnerable population will be in welfare blind spot, and a congregate housing is considered as ideal type to deliver the service easily. Completely different from conventional, this innovative approach was planned to develop public rental housing both to accommodate socially disadvantaged population and to revitalize the housing community sustainably. The project is not only to develop locally appropriate plan through community participation, but also to create communal culture, a social capital for livable community under a very limited construction budget. To address the processes, local governance is established first, community residents participate in various planning stages, and diverse gathering such as meetings, hearing, workshops, education and other empowerment opportunities are provided. While architectural planning was evolved through community participation, prospect residents have been empowered to actively participate in community activities. It is the main test-bed of Government R&D Housing Welfare System for Future Korea, and the site is located in a decaying area of Youngwoel county, South Korea. This testbed is expected to be completed in December, 2017, including both construction and residents moving in. It is 4 years project. After 1 year of basic research period, the testbed site was decided. Thereafter, the local culture specific model was developed, and new concept of building and housing welfare service delivery are to be rented empirically. To implement the plan, lots of guidelines and manuals were developed. The results are expected to disseminate throughout the country as a new alternative housing solution for future Korea. Prospect residents include mentally disabled people, complicated disabled, orphans, single elders, economically vulnerable young peoples, elderly couples, middle-age singles, family with children, multi-cultural families, and extended families. Especially, the project pursues symbiotic living among residents and between residents and community neighbors. Communal community spaces are emphasized throughout the proposed building. Rooftop garden, greenhouse, and ground floor community spaces are provided for communal culture, income generating activities, and holistic health.

Acknowledgement:
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Yeunsook Lee, Changhoun Ahn, Miseon Jang, Jaehyun Park and Hee-eun Park
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Design of a Supportive Housing Model for Healthy Independent Living of the Disabled - The First Supportive Housing for the Disabled Population

The project is intended to create a supportive housing model in Korea to promote the supportive housing across country and enhancing the life quality of developmentally disabled population. The site is located next to the existing welfare facility for disabled, thereby service can be provided easily for its necessity. The project model itself is a cluster of small supportive housing models that each can be adapted depending on the different situations of other foundation with same vision. Clients of this project are Angel's Heaven, a leading non-profit social welfare foundation. The site of the project is 5th floor of a parking building which was going to be built prior to the project at the time of decision. Behavioral freedom, privacy and independence are considered in priority. It is designed like a small village with wide street and green landscape. Besides its form, common spaces are provided in a way to promote communal culture. The community space is designed to accommodate various functions and events like an urban plaza for the disabled who have mobility limitation. For maintenance reason, the space can store various living goods and can be cleaned easily. Also, it is important to create bright and pleasant atmosphere. The wide street in the center joins together with front gardens of each household that the residents could feel expansion just like other normal outdoor streets, thus make this living space pleasant. Moreover, this neighborhood like space is friendly to the disabled who needs activity space. It is important to maintain the street pleasant like other living support in the houses. The health condition of the vulnerable has important impacts on both individual's life quality and the country in terms of welfare budgets. In global society, architectural planning guidelines concerning the vulnerable have been particularly developed recently. To create comfortable and pleasant environment, the preferential criteria are as follow. This supportive housing is planned for the expansion to 2nd story in future. The major planning key is the central street with natural lighting with ceiling window. The roof is designed with gable form. All the houses are intended to have natural light and the space could be maintained bright and clean. The natural light directly influences physical and psychological health and indirectly influences social health. The initiative planning can be done but the sustainable maintenance and management are different problems when the socially vulnerable live together in the house. It is hard to find well planned spaces, and extremely hard to find examples of well managing ideal cases. Without support from government or social organization it seems more impossible. The architectural plan should consider these sustainable maintenance and management aspects in future. For safe and active management of the supportive housing, family of the disabled and local volunteers can make cooperatives and run diverse programs to support everyday life. This could make synergies to both residents and parents who worry about their children after their death. The public spaces and street are subjected to be managed by decided organization. The service programs include dining, events, leisure, healthcare, rehabilitation, and living support to provide customized support service on site.

Acknowledgement:
This is research was supported by a grant (17AUDP-B068892-05) from the Architecture & Urban Development Research Program funded by the Ministry of Land, Infrastructure and Transport of the Korean government and the Korean Agency for Infrastructure Technology Advancement (KAIA).

Yeunsook Lee, Hyeyeun Kim, Jiwon Hyun, Chohee Sung and Haksung Lee
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Housing Alternative Lifetime Selfcare Communal House for Vulnerable Population in Korea - Design for Healthy Living in Aged & Low Growth Society

Ever increasing vulnerable population, even accelerated by fast aging society requires an architectural intervention which can break the current norm of housing type which is a stereo type of housing such as dominant mass housing and under-developed independent detached houses. Furthermore, Korea land has been developed unbalanced, ignoring rural area behind new development with fast industrialization. There are also growing number of returned population and baby boomers that have limited financial resources and explore second life possibility. Returning to farm & rural area will be more common. However, it has been difficult for them to settle down in the rural area with limitations on the budget for the house and income generating opportunity. The project is a communal housing for dwellers returning to rural area, can safely find their second life with relatives, friends, and neighbors. Since the model is both test-bed of Government R&D Housing Welfare System for Future Korea, and a public asset of the local prefecture after the Testbed period (Hamyang county, Korea), possibilities of utilizing the space needs to be considered both. The design of the house is, therefore, considered to be used for multiple functions. Supportive House was first developed as a housing alternative for homeless in the USA & Europe. Since the concept on Integration of Housing & Service is promising to solve various problems in future, a unique Korean Supportive Housing is developed in a way beyond the existing concept of supportive housing. It is based on small community and diverse population who need relevant services. Unlikely the supportive housing of western society which also includes individual detached house, communal living culture is expected be promoted through well designed shared living house. Community is used as a tool to solve problems. This alternative house is composed of several individual residential units, and 3 types of universal designed community space. There are community space for everyday living, community space for job training and education, and community space for income generating productive activities. This spatial model allows unspecified residents to cope with the situation flexibly. Since the proposal is targeted to wide range of groups, the plan is designed for the maximum flexibility of the so-called universal design in space composition aspect.

Acknowledgement:
This is research was supported by a grant (17AUDP-B068892-05) from the Architecture & Urban Development Research Program funded by the Ministry of Land, Infrastructure and Transport of the Korean government and the Korean Agency for Infrastructure Technology Advancement (KAIA).

Annette Ridenour
President, Aesthetics, San Diego, CA

A Salutogenic Approach to Design - A Case Study of Valley Children's Hospital Masterplan and Remodel

Walk into a well-designed restaurant, retail store or hotel and you'll notice that every element of that interior – artwork, finishes, furniture, lighting, graphics, signage, sound – all relate to each other and somehow reflect that company's brand identity. The same can be said for innovative corporate offices such as Google and Apple. In the healthcare sector, a successfully branded environment designed with a salutogenic approach can translate into a highly valued positive patient experience that can contribute to the health and wellness of patients, families and staff.

In 2012, Aesthetics began the task of creating a branded environment for Valley Children's Hospital in Madera, California. The 30-year-old, million-square-foot campus needed an interior design master plan that would thoroughly express the hospital's brand, communicate the healing and wellness nature of their medical practices, and provide a nurturing and inviting environment for patients and families. These salutogenic design standards would also apply to community outpatient facilities.

Objectives:
To create cohesive interior design standards that reinforce the brand of the organization while reducing stress for patients and visitors, by providing:

- Clarity: Define where you are and how to navigate where you are going.
- Comfort: Provide respite outside of the medical treatment aspect of the visit.
- Discovery: Provide positive distractions throughout the healthcare journey.
- Beauty: Access to nature, good design, and integrated art.

Method:
Aesthetics began with an intensive assessment of the existing facility, organizational marketing and growth plans, leadership's goals and objectives, and numerous interviews with staff and patients. This assessment, along with the application of evidence-based best practices, was key to developing a design that would support the health and well-being of patients and staff. Refining the design through collaborative workshops with stakeholders, the design team created master interior design standards, art program standards, wayfinding standards and graphic standards that were put into a phased implementation program.

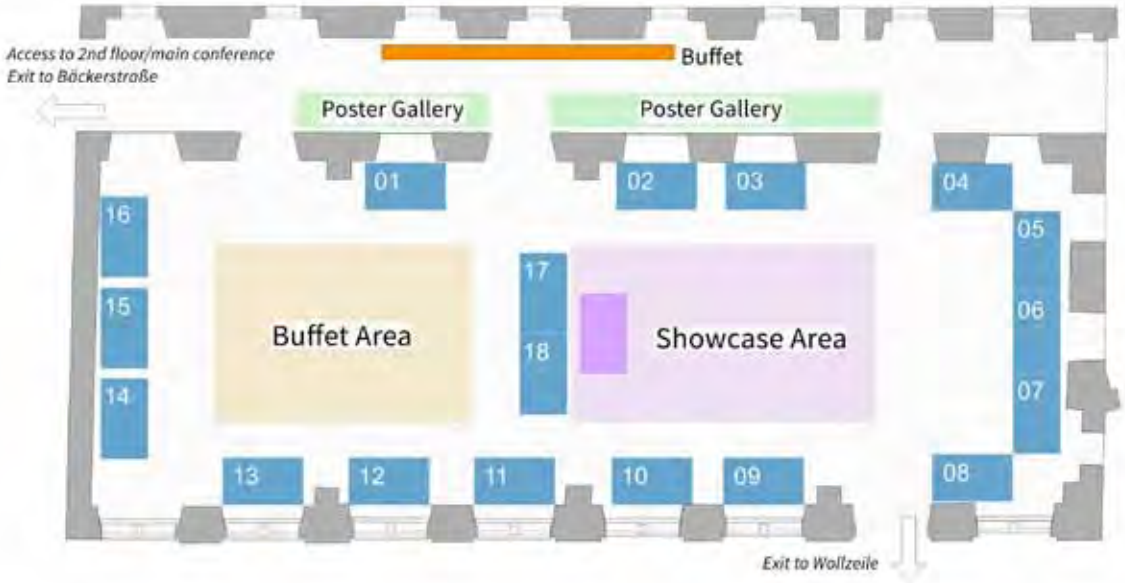
Conclusion:
The redesign of the main campus public spaces is 70 percent complete. The design standards are currently being implemented within Valley Children's outpatient facilities, in new construction and remodeling projects. This presentation will demonstrate how a salutogenic environment encourages exploration throughout the building and campus, providing enriched environments that provide the variety and novelty that humans need. Before and after photographs of the facility will illustrate how a fully integrated branded environment was developed along with preliminary data of patient and staff satisfaction outcomes relating to reduction of stress and improved experiences.

Keywords: Customer Experience Design, Branded Environment, Fully Integrated Design

Exhibition Hall, Poster Gallery and Showcase Presentation Floorplan

Industry exhibition with poster gallery displaying with shortlisted winners of this year's Design & Health International Academy Awards 2017, as well as a gallery of scientific research posters ensures that the learning experience of the congress continues outside of the conference hall, at the same time as providing a platform for networking with colleagues and clients to develop business and marketing opportunities. Please also take the opportunity to enjoy our special showcase presentations during the lunch, which will take place in the central area of the exhibition hall.

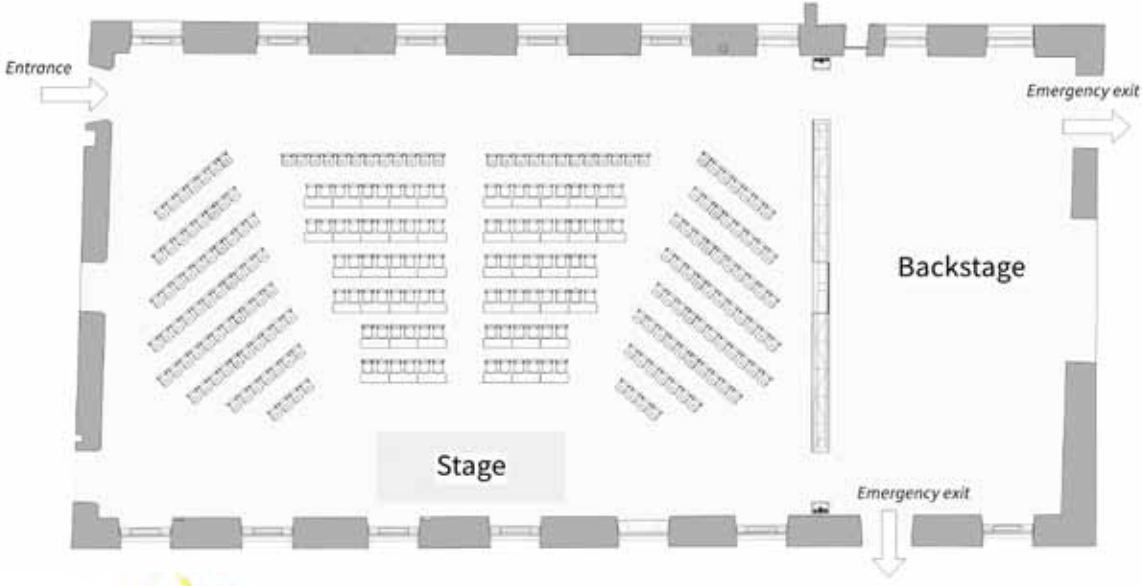
The list of Exhibitors	
1	PORR Healthcare
2	AluKönigStahl GmbH
3	Dhalmore Partners
4	Albert Wimmer ZT GmbH
5	Wiener Krankenanstaltenverbund
6	Centre Hospitalier Emile Mayrisch
7	Centre Hospitalier Emile Mayrisch
8	Ronald McDonald
9	HT Labor + Hospitaltechnik GmbH
10	Iris Ceramica
11	Tischlerei SCHESCHY GmbH
12	Paul Wurth Geprolux S.A.
13	Knauf
14	ATP architekten ingenieure
15	GESIBA - Gemeinnützige Siedlungs- und Bau-AG
16	Nickl & Partner Architekten AG
17	Smart City Wien
18	Smart City Wien



Opening Times

Thursday	09.00 - 18.00
Friday	09.00 - 18.00
Saturday	09.00 - 18.00

Vienna, Austria 12-16 July 2017
Design & Health
12TH WORLD CONGRESS & EXHIBITION



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AluKönigStahl

AluKönigStahl is a provider of highest-quality aluminum-, steel- and PVC systems as well as components for the realization of contemporary, energy-efficient architecture and supports sustainable building concepts. The distribution of renowned brands assures qualitative, top-of-the-range products that are continuously optimized and carefully adapted to adhere to current architectural trends and building standards.

For almost 60 years, there is an alliance with the two internationally leading system manufacturers: Schüco, world market leader with aluminum systems and expert with PVC systems and Jansen, specialist for steel profile systems. This cooperation and the innovative product developments, led AluKönigStahl to the technology- and market leadership. AluKönigStahl is pleased to provide its partners with comprehensive service competency during all stages of a construction project.

This allows the company to provide proven and intensive consultancy in the local and CEE markets where it is represented and to jointly tailor specific solutions that are future-oriented and highly advanced in the field of technology.

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ATP architekten ingenieure

With 650 employees in nine offices across the DACH and CEE Regions we design and plan user- and lifecycle-oriented buildings for all areas of life. One focus is the healthcare sector.

Four decades of integrated design experience make us the ideal partner for many clients in the development, conception, and design of buildings with intense interdisciplinary requirements. Complex challenges such as hospital design are ideally suited to our working method in which our architects, organizational planners, healthcare designers, and specialist building services and structural engineers work together, simultaneously, from the very start of the project. Led by a lead project manager with single-point responsibility they also monitor execution on site. The combination of this cooperative design culture with the input of our in-house consulting companies enables us to take optimal advantage of digitalization. We have been designing groupwide with BIM (Building Information Modeling) since 2014 and administer the virtual “digital twin” of the building from the initial idea to the ongoing operation.

CHEM
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Centre Hospitalier Emile Mayrisch

"E Spidol vun de Leit fir d'Leit" – a hospital run by people for people

The Centre Hospitalier Emile Mayrisch (CHEM), with 640 beds, is the largest hospital in the south of Luxembourg. Its medical services include 37 specialist departments and an accident and emergency department that is open 24/7, 365 days a year. At its three sites at Esch/Alzette, Niederkorn and Dudelange, 1824 nursing staff and 265 doctors treat an average of 140,000 patients every year. The quality of care and the safety of patients are among the top priorities for clinical quality and risk management at the Centre Hospitalier Emile Mayrisch. Multidisciplinary partnerships focus on ensuring continuous improvement in patient care by introducing forward-looking projects and procedures. In 2013, the CHEM decided to implement the standards of the "Joint Commission International" (JCI). This quality management system is regarded as the gold standard when it comes to quality and safety in healthcare. Since October 2016, the Centre Hospitalier Emile Mayrisch has been the academic teaching hospital of the Saarland University Hospital. Now, with the building of the "Südspidol", an innovative and pioneering hospital, the CHEM aims to set a new benchmark for healthcare in Luxembourg. In a Europe-wide architecture competition, an Austrian consortium made up of the Albert Wimmer Studio and Architects Collective won the contract in 2015. The hospital is due to open in 2022.

DhalmorePartner

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Dhalmore Partners

Dhalmore Partners offers youa selection of suppliers and product properly aimed at your needs, at your clients and be able to find those solutions which will maximize your environments. Together whit the companies we represent, we can constantly guarantee Qality, Selection, Competence and Professionality, all of which is confirmed by our mark.

This is the stategy that has helped us today to proudly represent some of the best Italian companies of the world furniture market, both for their image and for their quality.

The firniture market is now distinguishable for some important perculiar features, like the change in perception of furniture (from investment goods to disposable goods) and the poorly representation in new propopsal which are often non coordinated and without any minimum quality standards.
A Market, which continually evolves, strongly, expandes and constantly changes in its structure. Is is our tsk to find the solutions to all these changes.
Representative agents of Italian furniture companies.

Design&Health
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International Academy for Design & Health

The International Academy for Design & Health (IADH) is a global non-profit organisation with an interdisciplinary knowledge community dedicated to the stimulation and application of research concerning the interaction between design, health, science, culture and economics. Founded by Dr Alan Dilani at the Karolinska Institute, Medical University in Stockholm in 1997 after the successful outcome of the 1st World Congress in Trondheim in Norway, the aim of the IADH is to provide a highly visible global forum for promoting an ongoing international exchange of research findings among scientists, designers, health professionals, industry and Ministries of Health worldwide. As the leading global organisation developing and promoting the exchange of information, knowledge and research within the field of design & health, the Academy offers an inclusive environment for collaborating with its government, academic and professional partners around the world. Fundamental to the Academy's work is the development of a theoretical understanding of the importance of salutogenic design, and its application in the design of physical environments that prevent disease and support and promote human health, wellbeing and quality of life. The Academy is the organiser of the 12th Design & Health World Congress & Exhibition in Vienna.

Destravis Group Statement
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Destravis Group Statement

Destravis is a specialist consulting firm providing expert advice to clients in the health, higher education and research industries.

Our trans-disciplinary team of experts work collaboratively to develop feasible project solutions for clients often as service improvements,
funding strategies or built environment changes. These strategic project solutions are the result of a cross fertilisation of in-house expertise in service planning, health planning, master planning, cost management, business cases, economic assessments and operational optimisation.

We place great emphasis on the inception phase of projects. This is the formative point which can define the path to project success. An informed, strategic approach will ensure well-defined project objectives, alignment with corporate and government strategies, effective use of resources and funds, and efficient project establishment.

Destravis has offices in Brisbane, Sydney and Wellington. From here, we also provide services to Southeast Asia and South Pacific countries.

Gesiba

Fair Living. Public Health. More than just living

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Gemeinnützige Siedlungs- und
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www.gesiba.at

Fair Living is the Gesiba motto, one of the largest and most dynamic non-profit housing providers in Vienna.
Fair Living is more than having a place to live and living in the best possible environment. Fair Living means fair infrastructure for Vienna: In the areas of health and care, for example.

Gesiba was and continues to be a pioneer: Gesiba provided the first inter-generational housing and assisted residences for elderly people as early as the mid-nineties. For years Gesiba has been involved in the planning and construction of residential buildings suitable for elderly people.

Gesiba has gradually established and developed public health and wellness facilities: The first new geriatric centre in Vienna sets an example throughout Europe, recently the Rudolfsheim nursing home, which was awarded the Austrian Building Developer Award. The centre prides itself in a new culture of living and care for the elderly.

With the MARS, Gesiba has achieved a new multifunctional medical centre. It is and has been significantly involved in the reconstruction of the Elisabeth Hospital and has set up exemplary geriatric centres, together with charity organizations such as Caritas and Diakonie. "Living and enjoying life in a fair and dignified way in old age" is a guiding principle, which is becoming ever more important in light of the demographic development.
This means: Nursing homes, day care centres, but mostly assisted residences and inter-generational housing – building bridges.

Gesiba – social responsibility for the city of Vienna.

Haid +Partner, Architekten +Ingenieure +Generalplaner

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Haid +Partner, Architekten +Ingenieure +Generalplaner, Nürnberg was founded in 1980 and became a limited liability company in 1994.

The ATP Group took a stake in the company in 2015 in order to expand the market presence of its core competence of healthcare buildings.
With around 30 employees, Haid +Partner can point to numerous high-quality reference projects for public clients, especially in the areas of health, care, rehabilitation, and wellness.

Professor H. P. Haid and his experienced team have been developing and realizing successful projects noted for their innovative concepts, sustainable solutions, and high quality design for over 37 years.

We take a holistic approach to meeting our clients' requirements and offer solutions ranging from demand planning to general planning.

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Iris Ceramica is the world leader in the production of glazed ceramic tiles and porcelain stoneware for floor and wall coverings destined to residential, commercial and industrial venues. With a range of more than 50 collections and more than 2,500 products Iris Ceramica has been spreading the prestige of Made in Italy across the world since 1961 and every day reaffirms its commitment to the creation of ceramic tile collections with a high technical and aesthetic content, characterised by the excellence of an evolved design that the international awards and certifications are recognition and testament to. Creations that are the result of the company's research and development, unparalleled knowledge that leads to the production of unique materials. Creations that come to life thanks to the combination of innovative, avant-garde technology and the expertise of craftsmanship tradition, in total respect of the most stringent norms and regulations in terms of the production process itself and the finished product. At Iris Ceramica Quality and, above all, Quality of Innovation is the focus of every activity and the value that has always set the company apart from its competitors, values that are also put at the disposal of our partners. In fact, only through research and innovation it is possible to create something that is really unique and exclusive as, thanks to the right choice of materials covering the space around us, the quality of our life changes too. We make things unequivocally clear with the quality of our actions. Innovation is not only an objective but is also the driving force of a new strategy, the leitmotif that brings together the most discerning forces of change, both inside and outside companies. The new lifestyles require new products. Growing values such as the indoor and outdoor areas of houses, offices and public spaces incite us to renew the uses of materials themselves.

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Wiener Krankenanstaltenverbund
The Vienna Hospital Association

…includes all hospitals and geriatric centres of the City of Vienna and is one of the biggest hospital operators in Europe.
Presently the Vienna Hospital Association is responsible for:

- 11 hospitals, including the General Hospital-Medical University Campus,
- 11 geriatric centers and residential nursing homes with socio-medical care of the City of Vienna + the socio-therapeutic center in Ybbs and
- 6 training facilities for general healthcare and nursing care.

The geriatric centres and residential nursing homes with socio-medical care of the City of Vienna are specialised in (medical) care for persons, who can no longer be cared for at home. In these competence centres chronically sick and often very elderly people are professionally nursed and medically treated around the clock.

The Vienna Hospital Association employs nearly 30,000 people, who provide service for about 260,000 inpatients and 2,7 million outpatients.

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Ronald McDonald House

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Nickl & Partner Architekten AG

Our internationally active office devotes itself to the planning and construction of buildings in the health care, research and social housing sectors, as well as town planning for the private and public sectors.

Our goal is to create modern buildings which positively boost working and living spaces. To us, architecture means understanding and ordering things whilst focusing upon people. To a large extent, the designs of Nickl & Partner are based upon the actions and needs of people who work, live and receive health care there. Their wellbeing in addition to the perfection, functional interplay of flexible spatial designs and exciting materials is our key concern when performing our work.

We rank among the leading architect's offices in Germany in the fields of medical facilities, clinics and research institutes. Our specialist expertise in the fields of technology and building materials is very extensive and our innovative concepts have proved themselves over a period of more than 3 decades.

The team has increased to number more than 100 architects since the foundation of Nickl & Partner in 1979. Clients from health care, research and urban planning fields have entrusted us with the production of plans and construction work in several different countries, such as Germany, Austria, Switzerland, Italy, France, Russia, the United Arab Emirates and the People's Republic of China.

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Ngonyama Okpanum Associates

"Space design, functional suitability and spatial relationship for buildings to improve the experience and quality of life of those who occupy them." This fundamental principle has guided the firm since its inception in 1993. NOA provides a full range of in-house professional services such as architecture, project management, interior and urban design. This ensures the effective management of projects and confidence in the end product. With eight offices in South Africa and an international office in Abuja, Nigeria, we are able to compete both locally and in the greater African continent. Our fields of expertise are international buildings, office buildings, hospitality and healthcare developments, commercial, residential and industrial projects.

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scheschy
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Tischlerei Scheschy GmbH

Founded in 1955, Scheschy has developed to Austria's leading full-range supplier in the health-care-sector. From hospitals and nursing homes over retirement homes, laboratories and doctors' practices Scheschys' highly-qualified team develops furniture solutions that are tailored to the customers' needs. From planning consultation over design development to the final installation – whatever the requirements are, Scheschy offers an all-round service. According to the customers wish, Scheschy either provides innovative interior for individual areas or for the whole institution. The first intention always is to ensure the perfect combination of design and functionality. For this reason Scheschy combines different colors, shapes and materials to the best solution not only for their customers but also for the customers' customers. Over 60 years of experience and excellent know-how qualify Scheschy for the realization of projects with most varied tasks. Thus, you get top quality from one source.

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PORR and PORR Healthcare

With around 16,000 staff and production output of approximately EUR 3.9 bn, PORR is currently one of the largest Austrian construction companies and a leading infrastructure specialist in Europe. From design and planning to realisation and operations, PORR is truly a full service provider. We draw on more than 145 years of experience to realise projects with passion, dedication and technological excellence. What makes us different? Our customers say that it's our knowhow combined with our holistic approach, our high quality standards and our trustworthiness. This also holds true for the healthcare sector: as a full service provider we have been successfully developing, realising and operating projects in the healthcare sector for decades. Our extensive experience is combined with forward-looking concepts: from the initial idea through to the moment patients visit the facility for the first time. Our customers appreciate this and that's also the key to our success. More than 60 percent of our business relationships have been in place for over a decade, with more than 80 percent going back at least five years. Whether it's a large hospital or a smaller healthcare centre: with PORR you have the right partner by your side.

P&T Group
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P&T Group

P&T Group is the oldest and largest international architectural engineering practice in the South East Asia with over 2000 staff, working from offices located in Hong Kong, Singapore, Bangkok, Shanghai, Beijing, Wuhan, Dalian, Chongqing, Shenzhen, Macau, Hanoi, Ho Chi Minh, Jakarta, Kuala Lumpur, Dubai, Abu Dhabi, and Doha. With more than 145 years of experience, the Group offers a full range of architectural, structural and mechanical engineering, planning and project management services on a diverse range of projects. P&T Group is now working on several major hospital development projects including St. Paul's Hospital, Tsuen Wan Adventist Hospital and Gleneagles Hong Kong Hospital in Hong Kong, and Security Forces Medical Centre in Riyadh.

Perkins Eastman Black

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Perkins Eastman Black

Perkins Eastman Black, founded in 1998, is a Toronto based planning and design firm, known internationally for its work in healthcare. Creative planning and design have resulted in new approaches for projects transforming specialty acute and complex-continuing care, dementia-friendly, and child-friendly environments and ambulatory facilities.

At Perkins Eastman Black, we believe that the physical environment significantly impacts quality of life, and has been shown to help the healing process. Well-designed spaces improve how individuals perceive and use their surroundings. We have established new paradigms and continually monitor emerging trends to remain at the forefront of innovation.

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IGO-Ortner Gruppe

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Technical requirements and capabilities have changed considerably over the years, above all in health care. We have contributed to this development as an all-round system integrator in the fields of heating-ventilation-air-conditioning and sanitary installations as well as electrical engineering in the realization of numerous construction projects. As a learning organization, it is our task and goal to keep on implementing technical innovations in tailor-made solutions in the future.

Providing our services in the Health Care sector has been significant to us for decades. We will continue to contribute our know-how with responsibility and a vision for the safety and well-being of people.

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Albert Wimmer ZT-GmbH

The Atelier Albert Wimmer was founded in 1977, employing about 70 people today. Architecture can and ought to take part in creating and supporting an open society. This central duty applies to residential buildings as well as to urban planning projects, leisure centres or health projects like the new Vienna North Hospital. At the beginning of each project we face the task of identifying the virtues of the place and its surroundings before reinterpreting it in a new way. Our conviction to keep the spirit of a space or a site alive while transforming it in an advantageous way is the basis of Architect Albert Wimmer's working method. The studio relies on the following four pillars: intervention (to comprehend the aura of a space and to reinterpret it), articulation (to accept social responsibility), art (integration of emotions in the design process) and innovation (further development).

Major competitive success defines our scope of work: the Vienna Central Station, the Eurogate master plan, the construction of the new Vienna North Hospital as well as the new hospital Südspidol in Luxembourg and the clinics for children and adolescents in Freiburg, Germany. Through several decades of professional work and highly qualified co-workers we have rich experience in the area of planning and implementation of construction projects in Austria and abroad. The acceptance of tasks in the field of general planning belongs to our entrepreneurial scope of work.

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Paul Wurth Geprolux

Through the interdisciplinary expertise in project management, project development and technical engineering, Paul Wurth Geprolux contributes to the design & construction of efficient and sustainable buildings and infrastructure. In the field of healthcare Paul Wurth Geprolux supports its clients with a holistic approach starting with the definition of project strategy, the definition of operational & functional concepts, the elaboration of detailed space programs, feasibility studies and the organisation of architectural contests. Furthermore, Paul Wurth Geprolux provides healthcare know how throughout the project life cycle by consulting its clients in fields such as process organisation, project organisation & innovation, healthcare architecture, medical equipment, ...

Driven by its entrepreneurial spirit, Paul Wurth Geprolux is dedicated to creating excellent buildings and infrastructures which meet your needs and boost your business or activities.

World Health Design

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