



5th International Conference on Structures and Architecture

2022

6-8 July Aalborg, Denmark

Conference Chairs: Paulo Cruz Marie F. Hvejsel

www.ICSA2022.com

WELCOME TO ICSA2022

The launch of the first edition of ICSA, The International Conference on Structures and Architecture in 2010 was driven by the ambition to cultivate a serious, strong, and open community for nurturing the synergetic potentials of architecture and structural engineering towards a betterment of the built environment.

With the first three editions of ICSA held in the formative historical setting of Guimarães in 2010, 2013, and 2016, this community has grown a solid foundation thanks to a continuously expanding core group of highly committed colleagues with a background in architecture and/or structural engineering. The cohesiveness of this group, and its dynamic ability to attract new talents in a constant search for new grounds and directions intersecting structures and architecture, has progressively made ICSA become the world's leading event bridging the gap between structures and architecture.

With the establishment of IASA, the International Association of Structures and Architecture in 2016, the ICSA community has acquired a permanent plural and transparent platform to further cultivate the international exchange of knowledge and foster cooperation across structures and architecture. Today, the association counts more than 230 members across all continents. The full potential of this platform has yet to be explored and developed as a highly effective organization making a noteworthy contribution to the fields of structures and architecture through principles of integrity, credibility, plurality and diversity, mutual respect, transparency, accountability, enhanced cooperation, and free development of ideas. The launch of the new Springer journal Architecture, Structures and Construction in 2021 marks a first step in this direction, by providing an interdisciplinary international publication outlet to maintain and expand our exchange of knowledge also in between ICSA conferences. You are all invited to join this exploration by taking on an active role in the association.

Based on the trajectory of ICSA and IASA, and the roots in Portugal, 2022 marks the beginning of an international journey towards further development of the community of ICSA and its contributions to a betterment of the built environment. As announced at the closing ceremony of the fourth edition of ICSA held in Lisbon in 2019, this journey starts in Aalborg, Denmark, the location of ICSA2022.

A viable urban perspective?

The breadth of the United Nation's 17 Sustainable Development Goals visualizes how solutions to the intertwined social, economic, and environmental challenges facing us relies on an increased understanding of our individual responsibilities and actions towards a betterment for the collective. Within the fields of structures and architecture, this entails questioning the way we work as well as the quality and value of the works we do in the intersection of the social, economic, and environmental dimensions of architecture and structure. As stated by Japanese architect Fumihiko Maki at the first edition of ICSA in 2010 with reference to his concept of 'collective form'; 'the question is not about sustainability of each individual building, but also how we can create a more sustainable community and environment at the urban scale. I think, even in modest scale, the collective form can have an important place as an object where planners, architects, engineers, and others might be able to work together in a more creative way addressing this challenge. It is less a question of independent effort, somehow the situation suggests something collaborative that we still have not explored fully' (Maki 2010, 00:16:00. Record of panel discussion on 'Mega Structures' at the First International Conference on Structures & Architecture, Guimaraes, Portugal).

COVER PHOTO UTZON CENTER - VIEW TO THE COURTYARD

Jørn Utzon is famous for the Sydney Opera House. He grew up in Aalborg. The Utzon Center was his final building, which he completed shortly before his death in 2008.

Today, Utzon Center is an international experience centre where you can experience and understand the world of architecture, a place where both children and adults get the chance to feel, sense and touch architecture.

Utzon Center collaborates nationally and internationally in order to provide a fascinating programme of temporary exhibitions, which always feature some of the best architecture in the world, herein also workshops, talks, guided tours and yet other emerging activities and formats aimed at expanding and communicating knowledge about the potentials of architecture. The Utzon Center is located on Aalborg's waterfront – the very place where Jørn Utzon would go for walks as a child.

© Utzon Center, Photography by Rasmus Hjortshøj Reproduced with permission Inspired in Maki's call, ICSA2022 is dedicated to stressing and investigating the commitment and responsibility of structures and architecture as drivers of a viable urban development.

Collective potentials

Since the first ICSA conference in 2010 it has been a central ambition of the conference to join research, education, and cooperation into the cross-field of structures and architecture. Following this ambition, the planning of ICSA2022 has aimed to maintain, develop, and further expand ICSA's highly qualified existing scientific program based on traditional Research Papers, while simultaneously introducing a novel practice-oriented research format entitled Critical Practices. Critical Practices is a hybrid format employing the submission, exhibition, and presentation of physical prototypes as research output in combination with shorter reflection papers in an attempt at bridging research across academia and practice. At ICSA2022 this orientation towards practice is likewise evident in an effort to open the conference doors for practitioners and students in order to increase the range and impact of the research and development presented at the conference as sparks for new collaborations across academia and practice.

In the 3 years-planning process leading up to ICSA2022, the cohesiveness of the ICSA community has proved its strength and collective potential in this matter. As results hereof, over 40 key researchers within the fields have joined across institutions in the formulation of a series of groundbreaking research themes for 3 mini-symposia and 14 special sessions hereby attracting a large group of new authors to the community, 6 internationally acknowledged keynote lecturers have generously accepted to spend time to take part in the discussions with participants at the conference, the body of the International Scientific Committee has expanded to over 100 committed colleagues, over 400 abstracts were initially submitted of which 220 contributions were finally accepted for publication and presentation at the conference, a panel of acknowledged practitioners have generously contributed to the development of the new Critical Practices format and joined the Critical Practices Panel Discussion. Finally, yet other capacities within the community have joined to facilitate a series of workshops associated with ICSA, herein a highly ambitious design and build workshop entitled Ephemeral Permanence exploring the circular potentials of structures and architecture made from reclaimed components in a viable urban perspective on site in Aalborg. All despite COVID-19 keeping us at a distance!

The conference proceedings published by CRC Press / Taylor Francis volume, 'Structures and Architecture -A viable urban perspective?' contains the Research Papers and the contributions to the new Critical Practice format presented at the conference. This volume also contains a USB flash card with the full texts of the lectures presented at the conference. Of the 220 accepted peer reviewed contributions, 168 are regular Research Papers presented with an Extended Abstract of two-pages in print and the Full Paper of eight-pages on the USB flash card. An additional 17 contributions, each marked with * in the list of contents are Critical Practices presented with a Reflection Paper of three pages in print. Finally, 35 contributions are Extended Abstracts corresponding to papers published in the special issue 'Structures and Architecture -Joining Forces' of the new Springer journal Architecture, Structures and Construction of which the first of two volumes, volume, A is available in print at the conference. Based upon the review by ICSA2022 International Scientific Committee of the submitted abstracts, approximately 50 authors were invited to submit the corresponding full papers to the journal, strictly following the journal's peer-review process. The 35 Extended Abstracts, each marked with ** in the list of contents of the conference proceedings, represent the papers that were finally accepted for publication in the journal after having successfully completed this process. Hence, the Special Journal Issue serves the dual purpose of cultivating the community of the new journal Architecture, Structures and Construction as an international and interdisciplinary platform while simultaneously raising the level of publications associated with ICSA conferences to a new level adding to the strong foundation of the conference proceedings.

Summarizing, the research presented at ICSA2022 is intended for a global readership of researchers, practitioners, and students, including architects, structural and construction engineers, builders and building consultants, constructors, material suppliers, planners, urban designers, anthropologists, economists, sociologists, artists, and product manufacturers, and other professionals involved in the design and realization of architectural, structural, and infrastructural projects. We hope that it will be applicable in growing the ICSA community aiding new interdisciplinary collaborations towards increasingly collective structural and architectural forms.

In welcoming you to ICSA2022, we would like to take this opportunity to express our sincere gratitude to all authors, organizers of mini-symposia and special sessions, keynote lecturers, panel members and participants for their valuable contributions to the Conference. Our special thanks go to the members of the Local Organising Committee and the International Scientific Committee for their committed work and for the time and effort they have devoted to making ICSA2022 a successful event. A special gratitude also to Tine Skjødt Andreasen and Rasmus Nyborg Andersen for their tireless help with the preparations, and to all colleagues and students at the Department of Architecture, Design and Media Technology at Aalborg University for your engagement in the realization of ICSA2022. Last, but not least, we would like to express our sincere gratitude to all the sponsors of ICSA2022 for their support and trust.

Welcome to ICSA2022!

We hope that you will all enjoy the conference and that we will see you again at ICSA2025

Marie Frier Hvejsel & Paulo J.S. Cruz (Conference Chairs)

WIFI ACCESS

Conference Network: (Available in the period 04.-09.07.2022) Network: AAU-CONF-1 Code: naivgxjn

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1: Utzon Center, reception, auditorium

2: "Create building", main venue

3: The House of Music, Galla Dinner

^{4:} Ephemeral Permanence 1:1, workshop 5: Kunsten, Museum of Modern Art

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Realdania is supporting the exhibition of the peer-reviewed prototypes accepted for the new Critical Practices format launched at ICSA2022 and the design and build workshop Ephemeral Permanence.



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The Carlsberg Foundation's Conference Program is supporting the participation of leading international researchers at ICSA2022.

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aci - American Concrete Institute



bibm – Federation for the European Precast Concrete Industry



Commonwealth Association of Architects



EUCEET – European Civil Engineering Education and Training



LSAA – Lightweight Structures Association Austrolasia

NATIONAL INSTITUTIONS

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Aalborg City, The City Architect's Office



FAOD – The Union of Architects and Designers



Danish Technological Institute, Build In Wood



DBF – Danish Concrete Society



Træ.dk – Danish Wood Portal



Danish Technological Institute, We Build Denmark, Network for Wood Construction



NP – The Danish Association of Planners, Northern Jutland

CONFERENCE ORGANIZATION



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GENERAL INFORMATION

CONFERENCE VENUE

The Conference will be held at Aalborg University Department of Architecture, Design & Media Technology: Rendsburggade 14, 9000 Aalborg, Denmark. The venue is located near the centrum of Aalborg at the Aalborg seafront close to The House of Music (Musikkens Hus) and Utzon Center.



PROCEEDINGS AND SPECIAL JOURNAL ISSUE

ICSA2022 Conference Proceedings published by CRC Press/Balkema (Taylor & Francis Group) will be distributed with the registration's material at the conference together with an ICSA2022 Special Journal Issue of the new journal 'Architecture, Structures and Construction' published by Springer.

SCHEDULE

An overview of the schedule is provided on the back cover of this program.

OPENING CEREMONY

Time: Wednesday, July 06, 08:30 – 09:00 Place: Plenary stage, CREATE

GENERAL MEETING – INTERNATIONAL ASSOCIATION OF STRUCTURES AND ARCHITECTURE

Time: Thursday, July 07, 17:00 – 18:00 Place: Plenary stage, CREATE

CLOSING CEREMONY

Time: Friday, July 08, 16:30 – 17:00 Place: Plenary stage, CREATE

KEYNOTE LECTURES INFORMATION

Louise Fill Hansen: CITIES OF NATURE - A NEW PARADIGM FOR NATURE-BASED URBAN DESIGN

July 06, 09:00 - 10:15 Plenary stage

In her talk 'City of Nature', Louise Fiil Hansen will discuss new approaches to the design of our public realm – and how nature-based design solutions can create a new structural hierarchy within our cities. A hierarchy where humans, nature, society, ecology, safety, and economic equity are seen as equally essential and important to creating the best possible places for life – all life.

Werner Sobek: TWO-POINT-SIX

July 06, 09:00 - 10:15 Plenary stage

Climate change, scarcity of resources and demographic change pose enormous challenges for the building industry. Only if we plan and design our built environment radically differently in the future can this task be mastered. But how do we manage to design our buildings in such a way that we can build with less material for more people and without harmful emissions? Werner Sobek explains the role that a new view of lightweight construction can play in this - and the importance of good engineering for the careful use of our resources.

Tomás Saraceno: CLOUD CITY AALBORG

July 07, 08:30 - 09:45 Plenary stage

Tomás Saraceno's floating sculptures, artworks and interactive installations challenge ways of inhabiting and sensing the environment. From collaborations with the air to spider/webs, he envisions renewed relationships with the terrestrial, atmospheric, and cosmic realms. Saraceno's community projects Aerocene and Arachnophilia furthermore invite all to deepen an understanding of environmental justice and interspecies cohabitation.

Dr. Franca Trubiano: MATERIAL HEALTH AND HUMAN LABOR – BUILDING ETHICAL CONSTRUCTS FOR ARCHITECTURE AND STRUCTURES

July 07, 08:30 - 09:45 Plenary stage

For well over 200 years, architects have successfully isolated themselves from having to engage with questions of material health and human labor, with the result being that buildings are increasingly placing communities at risk. This paper argues for the introduction of an educational infrastructure that prioritizes the role architects can play in ensuring human health and building labor.

Dr. Philippe Block: RE-DEFINING STRUCTURAL ART: EFFICIEN-CY, ECONOMY, ELEGANCE, ECOLOGY, ETHICS

July 08, 09:00 - 10:15 Plenary stage

Throughout history, master builders have discovered form through the constraints of economy, efficiency and elegance. Drawing from a revival of forgotten knowledge combined with the latest advances in computational design, engineering and fabrication of funicular shell structures in masonry, this lecture will present disruptive sustainable and circular construction innovations, adding ecology and ethics as targets.

Laurent Ney: BRIDGE DESIGN: AN INTEGRATED APPROACH IN COMPLEX CONTEXTS

July 08, 09:00 - 10:15 Plenary stage

Context, immaterial and physical context, is the keyword in the search of an integral design. Using several footbridges designed by Ney & Partners as example, this lecture will explain how complex contexts can lead to a strong and coherent design. When a design is successful, the structure can become an icon, crossing the footbridge can be an experience. But is should also become part of the lives of its users and its environment.

ICSA2022 MINI-SYMPOSIUM

BIO DESIGN: NEW MATERIAL PRACTICES FOR A SUSTAIN-ABLE BUILDING CULTURE

July 06, 10:45 - 17:30 Auditorium Utzon Center

Mette Ramsgaard Thomsen, Centre for IT & Architecture, Royal Danish Academy, Copenhagen, Denmark

Paul Nicholas, Centre for IT & Architecture, Royal Danish Academy, Copenhagen, Denmark

Carole Collet, Design & Living Systems, Central Saint Martins UAL, London, United Kingdom

Nancy Diniz, Design & Living Systems, Central Saint Martins UAL, London, United Kingdom

This panel examines how bio-based materials – materials that arise from the biosphere of abundant, renewable, non-toxic, biodegradable and chemically versatile materials - have the potential to fundamentally change the impact of building practice on our planetary boundaries. To ensure a sustainable future it is imperative that we rethink the material cultures of architecture and the built environment. As global construction activity accelerates, we need to question what materials are and how we work with them. Bio-design agendas challenge a modernist perception of resource as infinite and available without consequence, to an ecological understanding of resource as a shared global reserve to be balanced between the needs of the environment and that of humanity. The panel asks what are the emergent practices of bio-design and what methods of description can represent their inherent complexity and behaviours by positioning three key perspectives:

- Bio-design as grown materials: new use of materials such as mycelia-, organic cellulose- and algae-based materials allow to reconsider how we can grow structurally performing materials and harvest them for the built environment

- Bio-design as composed materials: bio-based polymers such as agar, starch and chitin allow us to consider ecologically sound alternatives to petroleum-based polymers. Their different strength-ratios and durability challenge our perceptions of performance and necessitate new use cases

- Bio-design as living materials: synthetic biology offers new perspectives in our relation to the living allowing us to re-programme the performance of living organisms. We question what is the nature of a living architecture and how can it co-exist in sym-poetic relationships with human inhabitation?

1:1, TOOLS AND PROGRAMS – STRUCTURES AND CON-STRUCTION IN ARCHITECTURE EDUCATION

July 07, 10:15 - 16:50 Auditorium Utzon Center

Mario Rinke, University of Antwerp, Faculty of Design Sciences, Antwerp, Belgium

Maria Vrontissi, University of Thessaly, Department of Architecture, Volos, Greece

Teaching structures and construction is a crucial component of architecture education. Different educational traditions, fundamentally different teaching cultures or differences in study programs already account for a variety of concepts for teaching these fundamental technical aspects. Moreover, new digital technologies and comprehensive discussions on the sustainable use of construction materials have substantially driven changes in teaching concepts at different levels at many architecture schools already. Interestingly, on the one hand, there seems to be a need for a teaching equivalent on the technical side for the proclaimed future of digital architecture using digital modelling techniques, optimisation and parametric design studies, or 3D printing. On the other hand, the digital push has simultaneously stimulated the curiosity and necessity to teach material and construction basics as well as structural principles physically in dedicated workshops. Collecting various experiences from all ends of new educational approaches will support the teaching community in making better decisions for their courses and programs and encourage new, experimental projects to rethink teaching methods for technical aspects in architecture education. This mini-symposium, therefore, provides a platform for advancements in structural and constructional courses and reflects the cross-disciplinarity rising in practice and research, and research-driven education. Instead of documenting best-practices and long-established approaches, interested authors are encouraged to share experiences of experimental, unconventional, cross-disciplinary, 'outside the box' teaching. Asking how new means should be used, what else is needed, how a sustainable design thinking can be naturally implemented, and 'where do we go from here?', the mini-symposium focusses on three main areas:

- MAKING: Full-scale design & build workshops
- SIMULATING: Forces and matter in digital architecture

- FRAMING: Implementing structures and construction in an architecture curriculum for today and tomorrow

MATERIALITY IN ARCHITECTURE AND BUILDING DESIGN

July 08, 10:45 - 16:30 Auditorium Utzon Center

Olga Popovic Larsen, Institute of Architecture and Technology, Royal Danish Academy, Copenhagen, Denmark

Markus Matthias Hudert, Department of Engineering, Aarhus University, Aarhus, Denmark

The presentations in this session explore the role of materiality in architecture and building design. In particular, they highlight projects that address different types of materials and notions of materiality - including natural and bio-composites, fiber-reinforced composites, waste materials as a new resource, metamaterials, sound, and others - and how they relate to architectural values as well as the guality of buildings and that of the built environment. Materials used in buildings are often man-made and almost always processed, and that not only since the invention of reinforced concrete and steel. With metamaterials, new possibilities for the design of materials and material properties emerge. These opportunities for configuring and re-configuring become even more relevant within the current debate on environmental issues. Until recently, building materials have primarily been chosen based on their mechanical qualities, economic criteria, and with regard to their aesthetic and culturally associated values. Today, we are far more concerned with their impact on the environment and the health of inhabitants. Together with computational design and assessment tools, the key to a novel and more sustainable building culture might lie in a new understanding and use of materials.

ICSA2022 SPECIAL SESSIONS

ADVANCES IN WOOD CONSTRUCTION: TECHNOLOGY AND ARCHITECTURE

July 06, 10:45 - 15:05 Laboratory 6.111C

Niels Martin Larsen, Aarhus School of Architecture, Aarhus, Denmark

Philip Tidwell, Aalto University, Espoo, Finland

Moe Kiel, McGill University, Montreal, Quebec, Canada

Today the unique biological, energetic and structural properties of wood are leading to a renewed focus on timber as material for construction. As the imperatives of climate change reconfigure the construction industry, wood has been highlighted for its capacity to sequester carbon dioxide and for its renewability in comparison with other construction materials. In response, the forest products sector – already among the oldest and most technologically developed areas of the building industry – has pushed forward with new strategies for production and assembly. Today 3D scanning, material tracking and automated production can be found from the forest to the factory.

This renewed interest in wood has opened new opportunities for building, but as the vocabulary of timber construction expands from 'stick' frames to 'mass' assemblies, the implications for architecture remain unclear. The imperatives of industry tend toward standardization, but each wood species possesses unique characteristics. This session calls for projects, research and analysis that exemplify the ways in which wood properties and building technologies can be engaged to clear a path for a viable development of the built environment at the intersection of materials, structures and architecture.

BE-AM ON TOUR

July 06, 13:45 - 17:30 Seminar Room 5.127

Ulrich Knaack, Delft University of Technology, Delft, The Netherlands, Technical University of Darmstadt, Darmstadt, Germany Oliver Tessmann, Technical University of Darmstadt, Darmstadt, Germany

Additive manufacturing is boosting in the field of architecture and the build environment – new technologies and new projects are developing fast and we see a new generation designers, engineers and technologists are concerning the scene. This special session wants to address this scene, would like to understand the current technologies and developments as well as potentials for the future of architecture and the build environment. To come to a discussion and outline for the next generation buildings for the build environment additive manufacturing

- The annual BE-AM Symposium goes on tour to join ICSA2022.

RADICAL TECTONICS: AIMING FOR ABSOLUTE SUSTAIN-ABILITY IN STRUCTURES AND ARCHITECTURE IN A TIME OF CLIMATE CRISIS

July 07, 10:15 - 14:35 Auditorium 3.107

ANNE BEIM, Royal Danish Academy of Fine Arts Copenhagen, Denmark

URS MEISTER, University of Liechtenstein, Valuz, Liechtenstein **FRANCA TRUBIANO**, University of Pennsylvania, Philadelphia, United States

Little time remains for us to ponder whether material structures and assemblies are marginally better than others. A radical and uncompro-

mising vision is needed to ensure that significant changes are made to the way we think, design, and build. Needed are new tectonic insights for the physical, life cycle, and emotional context of our buildings and our urban fabric. New tectonic strategies can offer important means for redirecting resources at all levels of society. Indeed, they play a pivotal role when engineers and architects engage in urgent and complex problems such as; the growing scarcity of natural resources, the degradation of the biosphere, the need for zero CO2 emissions, and topographical to our landscapes due to flooding and rising seawater levels. This special session is focused on the concept of 'Radical Tectonics'; the drive to attain absolute sustainability. It asks;

- What can be built when construction materials have the lowest possible(zero) carbon footprint and can be returned to nature without harming the environment?

- What definition of the tectonic should we strive for when looking at materials, building principles, and architectural design choices that are optimized for maximum sustainability, where lifetime scenarios, reuse, and upcycling become crucial parameters?

- What are the short- and long-term perspectives for how architects and engineers can contribute to the categorical green transformation of the building industry – here and now?

Radical Tectonics invites papers on material, structural, and architectural ecologies, principles, and technologies that aim for absolute sustainability in a time of climate crisis.

INFRASTRUCTURE DESIGN AND SOCIO-ECOLOGICAL AGEN-CY: THE (SIDE-)EFFECTS OF STRUCTURES, SYSTEMS AND SPACES

July 07, 10:15 - 12:15 Seminar Room 4.105

Greet de Block Centre for Urban History, University of Antwerp, Antwerp, Belgium

Ditte Bendix Lanng, Department of Architecture, Design & Media Technology, Aalborg University, Aalborg, Denmark

Infrastructure design manifests ubiquitously: transit and sewer systems, train stations, storm surge barriers, green corridors, urban spaces and bike paths. Does infrastructure have socio-ecological agency? And if so, what are the socio-ecological effects of these structures, systems and spaces? This session explores how infrastructure design as a space-shaping practice works to produce and sustain socio-ecological agency.

We invite papers that engage theoretical, analytical and/or case-based scrutiny of the social and ecological formations that infrastructure design interrelate with. This includes questions of, e.g., the distribution of the goods and the bads of infrastructure, the matters of concern present and absent in infrastructure design, the design intentions in relation to socio-spatial (side-)effects, and the futures of infrastructure design and its agency.

RESILIENT BUILT ENVIRONMENT AND COMMUNITIES, PRE AND POST-DISASTER

July 07, 10:15 - 12:15 Seminar Room 5.127

Ornella Iourio, Faculty of Engineering, University of Leeds, Leeds, United Kingdom

Alessandro Melis, School of Architecture, University of Portsmouth, Portsmouth, Great Britain

Climatic crisis and natural hazards, such as earthquakes, floodings, and draughts are strongly modifying our built environment around the world. Architecture and Civil Engineering play a key role in making the urban and built environment more resilient to respond to both future crisis and recover from previous crisis. This session invites papers that explore multi-disciplinary approaches, linking architecture, structural and environmental design and retrofit, aiming to explore:

 How to adapt/transform our built environment to develop housing and neighbourhoods to make it resilient to current and future shocks.
 How to "Build Back Better" during post-disaster reconstruction. Looking at post-disaster housing strategies, resettlements, shelters, integration of structural design with UN-Habitat principles for adequate housing, and the long-term social implications.

TOWARDS A ROBOTIC STRUCTURALISM

July 07, 13:15 - 14:35 Seminar Room 5.125

Mikkel K. Kragh, Civil and Architectural Engineering, Aarhus University, Aarhus, Denmark

Roberto Naboni, Civil and Architectural Engineering, University of Southern Denmark, Odense, Denmark

This session celebrates critically the advent of robotics, and its agency onto the design, conception, and realization of architectural structures. Over the last decade, research in architectural and construction robotics has spread worldwide, in research, education, and practice. Novel material practices, structural complexity, computationally inspired tectonics are emerging as the popularisation of robotics allows designers to experiment, seamlessly, with digital design and fabrication processes. This special session will revolve around fundamental questions: how do we benefit from robots towards a more performative, creative, and efficient structuralism? How do we translate current experimental processes into the practice of the future?

THE ARCHITECTURE AND STRUCTURE OF HUMAN WELLBE-ING

July 07, 13:15 - 16:50 Seminar Room 4.105

Jonas Holst, School of Architecture and Technology, San Jorge University, Zaragoza, Spain

Tenna Doktor Olsen Tvedebrink, Department of Architecture, Design & Media Technology, Aalborg University, Aalborg, Denmark

Which role do architecture and engineering play in facilitating human wellbeing, and how can architects and engineers succeed in enhancing it further? These will be two of the main research questions for the proposed Special Session, which will not only center on topics related to health and healing in relation to the built environment, but considers the question of human wellbeing in broader terms: It entails among other things, as Jørn Utzon once stated, raising our embodied consciousness of the impact of the light and the sounds, the materials and the structures, such as stairs and walls, on our dwelling in and transition through built space.

LOW-CARBON LOW-WASTE STRUCTURES

July 07, 13:15 - 14:35 Laboratory 6.111C

Dario Parigi, Department of the Built Environment, Aalborg University, Aalborg, Denmark

Corentin Fivet, Structural Xploration Lab, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

The construction sector is currently experiencing increasing pressure in the challenge to alleviate its adverse environmental effects, e.g. related to global warming, material depletion, and waste management. Structures alone account for more than 50% of embodied CO2 emissions in buildings. Addressing these challenges require constantly innovating solutions in structural design, processes and materials. In the session, strategies for low-carbon low-waste structures will be addressed, such as: use of environmentally-efficient materials, circularity through use/reuse of loadbearing elements, minimization of material use through structural optimization and construction-based design, adaptive structures and flexibility of use. Finally, it will be investigated how those strategies could establish positive synergies with the architectural design process, and influence how we will design and build in the future.

STRUCTURES AND ARCHITECTURE OF REFURBISHMENT: STRATEGIES AND TECHNIQUES FOR 21ST CENTURY

July 07, 15:10 - 16:50 Auditorium 3.107

Joaquín Antuña Bernardo, Universidad Politécnica de Madrid, Madrid, Spain

Ernesto Fenollosa Forner, Universidad Politécnica de Valencia, Valencia, Spain

Dimitris Theodossopoulos, The University of Edinburg, Edinburg, United Kingdom

The intervention in existing buildings, both to their maintenance and repair is a matter which society has to face in the next decades. For architects and engineers the intervention in existing buildings will be an important activity for the next years. It is necessary to adopt intervention criteria respectful of the building itself, the environment and the users. The main objective of this special session is to share strategies and solutions used by different technicians from different countries, bearing in mind that we are referring not only to historical masonry structures, but also steel, wrought and cast iron and concrete structures. For this, the symposia gathers authors related to intervention in buildings from different points of view; teaching, professional (architects, engineers, builders), normative, social, ecological . . . etc. Particular emphasis will be placed on the task of unpacking interdisciplinary impressions of the difficulties and shortcomings found when approaching an intervention project. The symposium will be organized in the following sessions:

- Intervention Criteria: Heritage preservation, use modifying, maintaining architectural qualities.

- Materials and Techniques: Reproduce or modify.
- Safety of Refurbishment: Practices and codes.

- Architecture and Structure in Refurbishment: Needs and opportunities.

- Use of Refurbished Buildings: The role of owners and users.

INTEGRATED INFORMED DESIGN PROCESSES: JOINING URBAN DESIGN, ARCHITECTURE AND ENGINEERING FOR A SUSTAINABLE TOMORROW

July 07, 15:10 - 16:50 Seminar Room 5.127

Aliakbar Kamari, Department of Engineering, Aarhus University, Aarhus, Denmark

Sofie Pelsmakers, Faculty of Built Environment, Tampere University, Tampere, Finland

Carlos Bañón, AirLab (Arch. Intelligence Research Lab), Singapore University of Technology and Design, Singapore

Integrated building design is growing in complexity at an exponential rate. This occurs due to the variety of involved professions and managing their internal and external collaboration, application of emerging cutting edge technologies and software (i.e. BIM), as well as the design requirements that need to be addressed, i.e. sustainability concepts and building codes. Characteristically, many significant decisions that directly affect the building performance and its relationship with the environment are taken, without complete integrated knowledge and must be revisited and reconsidered. This session opens up discussions about new research-based integrated building design processes at the conceptual stages, the interrelations and trade-offs between Urban Design, Architecture and Engineering to meet project goals towards a sustainable tomorrow.

REIMAGINING BUREAUCRACY: CHALLENGING THE STRUC-TURE AND ARCHITECTURE OF LEGAL FRAMEWORKS

July 08, 10:45 - 12:25 Auditorium 3.107

Henriette Ejstrup, Architecture, Design & Media Technology, Aalborg University, Aalborg, Denmark

Pelle Munch-Petersen, Centre for Industrial Architecture, Royal Danish Academy, Copenhagen, Denmark

The legal frameworks of architecture are seldomly considered in the initial concept of the architectural idea – let alone discussed in architectural practice and academia. Whether we like it or not, legislations always come beforehand the actual building. Within the last century, legislations in building culture has gone from non-existing to micromanaging everything from indoor climate and levels of natural daylight, energy performance, to the functional aspects of materiality. In the coming years sustainability will become a more central part of legislation, which marks this as the time, where the building industry, professionals and researchers across boarders must discuss, what knowledge we can draw from to secure a safe transition into a sustainable building culture. And the time to be vigilant in addressing the question whether the increasing focus upon legislations in fact provide the framework for a sustainable building culture?

This special session calls for research and discussions to bring forth what knowledge can be utilized from the last decades of increasing legislative requirements? Which aspects of the legal framework works well and which do not, in regards to achieving productive architecture as a whole? Can the legal framework be hacked for better or worse, and how do we implement new requirements of sustainability, without making unforeseen legislative pit falls, that may cause more damage instead of insuring a safe common future?

ADAPTIVE BUILDING ENVELOPES

July 08, 10:45 - 14:50 Seminar Room 5.125

Isak Worre Foged, Royal Danish Academy, Copenhagen, Denmark **Mikkel K. Kragh**, Aarhus University, Aarhus, Denmark

Building envelopes are environmentally, and physically, at the forefront of architecture's ability to be both sustainable, expressive and human-oriented structures. While the envelope constitutes and defines the transition between conditioned and unconditioned spaces, it is frequently addressed as a static and non-permeable construction, rather than an adaptive and dynamic membrane with depth. This special session invites discussions, experiments and built works, which question and redefine ways in which the building envelope acts as an adaptive constituent of the building, responding to human needs, human behaviour, the surrounding environment and its material-structural design, fabrication, and operation. The mini-symposium brings together academia and industry through three interrelated themes:

- Material Performances for Adaptive Envelopes.

THE FUTURE OF BRIDGES: A ROADMAP TOWARDS CIRCU-LAR AND INCLUSIVE BRIDGE DESIGN July 08, 10:45 - 12:25 Seminar Room 5.127

Joris Smits, Department of Architectural Engineering + Technology TU Delft & Ney & Partners, Delft, The Netherlands Martin Knight, Bridges + Infrastructure, Knight Architects, High Wy-

combe, United Kingdom

Bridges lie at the heart of our civilization bringing growth and prosperity into peoples every days life. However, bridges are more than mere functional assets. A well designed bridge reflects mankind's creativity and ingenuity and tells us something about our identity. However, our identity is not static. Just as social values are rapidly changing under influence of political polarization and climate crisis, the way that our bridges are commissioned and designed needs to change too.

This special session addresses the call for circular bridge design, as well as the call for an inclusive design process in which users and inhabitants can participate with local knowledge. Therefore, topics for his session can offer a technological approach, addressing new materials and computational methods to achieve better bridges. Or they can focus on the design process and the procurement of our bridges, offering ways to include the public and enhance public support. The goal is to identify a design approach, through all scales of the design, that leads to bridges that are sustainable, future proof and that are valued by society.

CELLULOSE-BASED MATERIALS IN STRUCTURES AND AR-CHITECTURE

July 08, 13:30 - 14:50 Seminar Room 5.127

Jerzy Latka, Faculty of Architecture, Wrocław University of Science and Technology, Wrocław, Poland

Rebecca Bach, Institute of Structural Mechanics and Design, Technical University of Darmstadt, Darmstadt, Germany

The session will focus on cellulose-based materials and their implementation in architectural structures. Taking into account growing need for the recyclable materials, good thermal insulation, low-cost production and minimalised ecological footprint, the session will crate the opportunity to exchange the knowledge and experiences by both professionals and academics. New structural solutions, energy efficiency, implementation of cellulose based materials in building envelope will be the main topics of the session.

⁻ Behavioural Systems for Adaptive Envelopes.

⁻ Field Studies of Built Adaptive Envelopes.

CRITICAL PRACTICES

The call for Critical Practices is a new experimental contribution format, intended to bridge research in academia and research in practice through a combined submission of a physical Critical Practice Prototype and a short written Critical Practice Reflection. Hence, the call is for for demonstration of progress into the practice of the synergy of structures and architecture across the architectural scales ranging from details in facade systems, over innovations in spatial gestures and structural configurations of building typologies, to explorations of novel principles for viable urban infrastructures etc. The presentation format at the conference will be a chaired session in the prototype-exhibition where authors present their prototypes followed by a panel discussion and award ceremony.

The panel consists of the following people:

Isak Worre Foged, Royal Danish Academy, Copenhagen, Denmark Louise Fiil Hansen, Design Director & Partner, SLA, Denmark Niklas Nolsøe, Business Development Director, Lendager, Denmark Kåre Stokholm Poulsgaard, Head of Innovation, GXN, Denmark Frank Jensen, Owner & Chairman, Søren Jensen Engineers, Denmark

WORKSHOPS

The conference includes three workshops: Ephemeral Permanence 1:1, Wandering and Wondering, and Integrated Eco-design in Archineering.

EPHEMERAL PERMANENCE 1:1

July 06, 18:00 - 18:40 On site

Mario Rinke, Professor at the University of Antwerp, Belgium **Alessandro Tellini**, Head of the Rapid Architectural Prototyping Laboratory (Raplab), Switzerland

Tina Vestermann Olsen, Assistant professor at the University of Aalborg, Denmark

The most sustainable construction materials are those we already have. Reusing what already exists is at the heart of circular construction and a fundamental element of a more sustainable architecture. If a building cannot be used anymore and faces demolition, we must at least reclaim its components. On the technical side, the major components should be recognised and reintroduced into the market. On the design side, this new broader notion of materiality pushes towards an availability-based design that also shapes the way how we decide forms, connections, component arrangements and spaces. This quest for circular thinking also applies to the spaces we re-create in the process, they should likewise be understood as ephemeral resources that we need to cultivate towards a viable permanent development of the urban environment. With this ambitious design and build workshop, taking place in an actual site of ongoing urban development in Aalborg, we explore this dual structural and architectural challenge, raising the questions:

- How (different) would structures look like if based on reclaimed components?

- Could they also directly embrace the further reuse of their components?

- What new sorts of architectural spaces can be re-created here and with what urban perspectives?

The workshop is exhibited at the west end of the Aalborg Seafront.

WANDERING & WONDERING: STRUCTURE AND ARCHITEC-TURE OF THE CITY

July 07 13:15 - Venue Create, courtyard

Ditte Bendix Lanng, Tina Vestermann Olsen, Søren Risdal Borg, Harshita Vishway, Apoorva Lalita Jayanti Venkata & Students at MScO2 Urban Design, Aalborg University 2019

The city is at the same time slow and quick, hectic and quiet. Its urban fabric offers spaces, directions, change and history, interactions and exposure to the pedestrian. In this walkshop, we wonder on-the-move through the streets of Aalborg:

Can the structure and architecture of the urban fabric invite healthy and active mobilities by foot? Are mobility spaces social and cultural places? Can pedestrian mobilities play a significant role in more sustainable, fine-meshed urban mobility systems? Is urban walking more than its utilitarian goal (transport or recreation) and how does it relate to the structure and architecture of the city? Is it a cultural activity of dwelling-in-motion? What is the transverse potential of walking in the city across the technical, the social and the aesthetic?

This 'Urban Walkshop' invites interdisciplinary wander and wonder facilitated by planning professionals and urban design researchers that guide you through the mobility network of the inner city, presenting short stories on the way - on routes, humans and spaces. In this matter the walkshop is in itself an exploration of the potential of situated experience and deliberation on the quality of the urban fabric for pedestrians.

We meet in the courtyard of Create July 7th and leave exactly 13:15

INTEGRATED ECO-DESIGN IN ARCHINEERING: GRANTA EDUPACK KNOWLEDGE EXCHANGE

July 07 13:15 - Venue Create, Room 4.217+4.219

Bridget Ogwezi, Academic Development Manager, Ansys Fred Veer, Professor at the Technische Universiteit Delft

The creativity and designs of architects and engineers are brought to life with real materials. The built environment can only be built by taking into account the processing and environmental aspects of these materials to create a design with minimised embodied energy while maintaining low operational carbon impact. Therefore, teaching students about materials and the impacts of materials choices is nowadays a critical and key element of the curriculum. The problem is that this deals with many aspects, which makes it difficult to teach this in a single course. In this matter, it is the aim of the Granta EduPack tool to allow 'archineering' students integrate all these aspects into their work using a single software system.

The workshop will kick off with a discussion on 'The role of digital tools in material studies'. How are they used and why are they useful to educators, researchers and practitioners?

The session will be followed by a hands-on introduction to the teaching tool, Granta EduPack. Granta EduPack contains a database of over 4000 engineering materials and a unique series of tools for selecting materials and understanding the impacts of material choices. Along-side this are a set of high-quality teaching resources to support teachers and students in studying materials in architecture and structural engineering. The EduPack software also ties in with the major materials science books currently in print.

The workshop will be located on the 2nd level of the building and can be access by the orange stairs or by the elevator. Please follow the physical signs for further instructions.

SOCIAL PROGRAM

Welcome Reception and visit to the exhibition "Holiday Home", Wednesday, July 06, 19:00

The Utzon Center in Aalborg, created by the world-renowned Danish architect Jørn Utzon along with his son Kim Utzon. The Utzon Center became his last work before unfortunately died at 90 years old in November 2008. The most notable of Jørn Utzon's building works are Sydney Opera House, which is one of the most famous and iconic buildings in the 20th century. The creation of this exceptional building and others of his works includes their origins in the maritime environment in his hometown, Aalborg, where Utzon spent some important years of his youth. The Utzon Center was inaugurated in May 2008 and is a gathering place at Aalborg harbor, where architecture, design and art, exhibitions and conferences, meetings and culinary experiences unite. The Utzon Center also hosts the autzon archives.

Pre-registered only.

Gala Dinner, Thursday, July 07, 19:30 The House of Music – Foyer and upper foyer

At Aalborg's Limfjord harbor, you will find Musikkens Hus (The House of Music): Aalborg's musical focal point designed by the world known architectural firm COOP HIMMELB(L)AU. After an international project competition COOP HIMMELB(L)AU, and Professor and Architect, Wolf D. Prix visualized the Musikkens Hus we know of today. The house is distributed on more than 20,000 m2 with concert halls, restaurant and teaching and management facilities. On May 31, 2010, the realization of the construction began, and on March 29, 2014, Musikkens Hus finally open to the public. A young music house with strong, visionary roots, which are the frames for the conference's gala dinner.

Pre-registered only.

ACCOMPANYING PERSON'S PROGRAM (TOURS)

1) The Edge of Denmark, July 06, 08:45 - 17:30

The tour starts at Kornets Hus, a charming museum by the Norwegian architect Reiulf Ramstad. Kornets Hus gives a unique opportunity to experience and taste Denmark's agricultural history through a brunch and tour. After a short bus ride, you will arrive at Rubjerg Knude Fyr, where a guided tour will be provided of the lighthouse and beach. The lighthouse located on the coast of the North Sea, was relocated in 2019 to secure the historic site into the future, which gives to an even more unique experience and visit. The trip continues to one of the wonders of the world in the most northern part of Denmark, Skagen. Here you will have the opportunity to stand at the edge of the country and see the Baltic Sea and the North Sea meet. The trip back to Aalborg will be along the east coast, with beautiful views over the Danish landscape and the Baltic Sea.

Price per person: for a minimum of 20 people € 95,00.

Including: Official English speaking guide, "Kornets hus" entranctransport to Grenen, brunch.

Pre-registered only.

Bus transportation starts and ends at east of The House of Music.

2) Industrial Heritage of Aalborg, July 07, 10:00 – 12:00

At the end of the 19th century, Aalborg gradually became an enterprising industrial city with many factories and became known as "the city with the smoking chimneys". Now with a private guided tour with The National Historic Museum of Northern Jutland, you can come back and see the industrial city and not least get an insight into how it with, for example, the railway, bridges, and modern functional architecture along Vesterbro has shaped Aalborg into the city we know today. Price per person: for a minimum of 20 people \in 20,00

Including: Official English speaking Guide Pre-registered only. We meet in the courtyard of CREATE

VENUE: UTZON CENTER

Reception, exhibition Holiday Home, Auditorium Utzon Center



VENUE: CREATE Main venue Ground floor of CREATE, Plenary stage, Critical Practice Exhibition, Auditorium 3.107, Seminar Room 4.105, 5.125, 5.127, Laboratory 6.111C, Accreditation area, Cafeteria for breaks and lunch



Tuesday, July 05, 2022								
15:0	00 – 19:00 Conferen	ce Accreditation ICSA	2022 Desk – CREATE ver	nue				
		Wednesday Morning	(WeM), July 06, 2022					
07::	07:30 – 18:00 Conference Accreditation ICSA2022 Desk – CREATE venue							
08:	30 – 09:00 Opening	Ceremony Plenary stag	e					
09:(Keynote I 00 – 10:15 L. F. Hans W. Sobek	Lectures Plenary stage sen "Cities of nature - A "Two-Point-Six"	Chair(s): Paulo Cruz and new paradigm for nature-	d Marie Frier Hvejsel based urban design"				
10:	15 – 10:45 Coffee Br	reak						
10:4	45 – 12:45 Concurre	nt Technical Sessions	WeM 1 to WeM 6					
WeM 1 - Auditorium 3.107	WeM 2 - Seminar Room 4.105	WeM 3 - Seminar Room 5.125	WeM 4 - Seminar Room 5.127	WeM 5 - Laboratory 6.111 C	WeM 6 - Auditorium Utzon Center			
Critical practice Critical practice (1)	General Session Educating architects and structural engineers (1)	General Session Innovative architectural and structural design (1)	General Session Comprehension of complex, conceptual and futuristic structures	Special Session Advances in Wood Construction: Technology and Architecture (1)	Mini-Symposium Bio Design: New material practices for a sustainable building culture (1)			
Chair(s): I.W. Foged	Chairs: L. Luytens	Chair(s): C. McCoy	Chair(s): D. Costanza	Chair(s): N.M. Larsen, P. Tidwell & M. Kiel	Chair(s): M.R. Thomsen, P. Nicholas, C. Collet & N. Diniz			
Probiotic Structures*	Team Totemics: Consequences of an Exquisite Corpse	Influence of flexibility of connections on load distribution of TCC-road bridges	Complexity, Simplified: The Impact on Design with Structural Steel Systems	Forest-Building: exploring carbon sequestration in wood buildings and forests with system dynamics modelling	Fungal bioremediation of plastic waste into building materials			
R. Beckett	P. Wong, D. Thaddeus & F. Hsu	P. Dreifke , T. Göckel, A. Laubach & J. Schaffitzel	T.M. Boake	P. Osborne	E. Elsacker, L. van Rompaey, E. Peeters & L. de Laet.			
Multi-Storey Rammed Earth Construction*	Transformable Building Structures in Architectural Engineering Education**	Design, Fabrication and Erection of a Kinetic Glasshouse	The planning and construction of a double curved building in cross laminated timber (CLT) panels	Towards a Mass Timber Agenda: The local and regional viability of mass timber in Miami-Dade County	Remediating Architecture: A bio- hybrid approach employing fungal mycelium			
J. Jeppesen, N. Brix, J. Johannsson & L.K. Nielsen	M.C. Phocas , M. Matheou & W. Haase	C.H. Bitlloch, S. Urbano, N. Guitart, J. Torres & L. Estupiñá	L.D. Houck & S. Melville	C. Meyer & S. Meyer	C. Colmo & P. Ayres			
Cast & Place: A Cast Aluminum Pavilion Defined by Clay*	José Zanine Caldas and the structural learning from physical models	Post-tensioned Ceramic Structures: Design, Analysis and Prototyping * *	Karbandi and crossed-arch dome, from a possible common ground to constructive and geometric differentiation	Designing the thermal properties of bio- composites for thermal mass and dynamic insulation	Prototaxites stellaviatori: A fungal growth simulation model for Mycelium- Based Composites education in applied arts			
E.M. Segal , L. Ramsburg, J. Draper, S. Thompson, P. Draper, B. Linsday, M. Dowd & A.A.H. Cheng	A.B.P. Carvalho, C. Bartholomeu & M.C.L. dos Santos	<i>M. Bechthold</i> , <i>Z. Seibold & S. Mhatre</i>	C.P. Do Vale	R. Fortin , A. Halepaska & S. Craig	A. Rigobello , N. Gaudillière- Jami & P. Ayres			
Textile Column: Drawing and weaving with 3D printed clay*	Students' perceptions on teaching-learning structures using BIM in Brazil.	Shape optimization of a concrete floor system for sustainability, acoustical, and thermal objectives	Steel "pyramids". Lafuente's architectural experimentations in the 1970s.	The Path to Future Wood: Component Based Structural Assembly Systems	Mycostructures - Growth-driven fabrication processes for architectural elements from mycelium composites**			
S. Pain, N. Bartov, E.P. Choo & J. Young	<i>L. Mattana,</i> J.C. Souza, M.P. Porto, M.C. Villela & P.B Flores	J.M Broyles, A.J. Hartwell, E.G. Alvarez, M.A. Ismail, L.K. Norford, C.T. Mueller & N.C. Brown	<i>M. Abita</i> , A. Tosone, D. Di Donato & R. Morganti	A. Meyboom & D. Correa	E. Biala & M. Ostermann.			

Thatched Facades for a Sustainable Future_ CO2 neutral fire- retardants for vertical thatched surfaces* <i>A. Beim & H. Ejstrup</i>	Space, Stability & Strength: An Integrated Pedagogy for Urban Tectonics and Landscapes <i>M. Laboy</i>	Design process: Goian-Cerveira footbridge over the Miño River, Spain- Portugal A.B. Larena , J.G. Mateo, M.S. de Oliveira & J.B.	Multi-criteria analysis of buildings transformation potential in planning and design <i>R. Andersen & L.B. Jensen</i>	Craft and structural innovation of mycelium structures in architectural education J. Dessi-Olive
		Larena		
Las Aradas Memorial. Engaging in popular building techniques*	The case of an Adaptable Rationalization and structural Dual Generative and Parametric Analysis that may synchronously Control the deformation of the Sydney Opera House System	Exploration of static equilibrium representations; policies and genetic algorithms	Mitigation of seismic risk on high-rise buildings using rocking cores	
H. Fallon & T. Montulet	<i>A. Sophocleous-Lemonari,</i> P. Fereos, M. Georgiou & A. Balabanides	I. Mirtsopoulos & C. Fivet	F. Mollaioli, G. Angelucci & M. De Angelis	
Critical practices panel				
I.W. Foged, A. Lendager, F. Jensen, K. S. Poulsgaard & L.F. Hansen				

Wednesday Afternoon (WeA), July 06, 2022									
12:45 – 13:45 Lunch Break									
13:	13:45 – 15:05 Concurrent Technical Sessions WeA 1 to WeA 6								
WeA 1 - Auditorium 3.107	WeA 2 - Seminar Room 4.105	WeA 3 - Seminar Room 5.125	WeA 4 - Seminar Room 5.127	WeA 5 - Laboratory 6.111 C	WeA 6 - Auditorium Utzon Center				
Critical practice Critical practice (2)	General Session Educating architects and structural engineers (2)	General Session Innovative architectural and structural design (2)	Special Session BE-AM on Tour (1)	Special Session Advances in Wood Construction: Technology and Architecture (2)	Mini-Symposium Bio Design: New material practices for a sustainable building culture (2)				
Chair(s): I.W. Foged	Chairs: T. Fowler & S. Rihal	Chair(s): M. Bechthold	Chair(s): U. Knaack & O. Tessmann	Chair(s): N.M. Larsen, P. Tidwell & M. Kiel	Chair(s): M.R. Thomsen, P. Nicholas, C. Collet & N. Diniz				
Adaptive Reflective Environments*	Musical Structures as Structural Pedagogy	Skins – cultural approaches to experimental facades designed by architect Byoung Cho	Function integration and reinforcement of free-form thin sheet metal using Wire Arc Additive Manufacturing. (WAAM)	Natural Form and Industrial Building – Two Case Studies	Bioluminescent micro-architectures: Planning design in time, an eco- metabolistic approach to biodesign**				
I.W. Foged & M. Sørensen	D.J. Oakley	L.H. Hansen	C.B. Costanzi & U. Knaack	P. Tidwell , P. Heikkinen & J. Torvinen	G. Tyse, M. Tamke, M.R. Thomsen & A.F. Mosse				
Multi-layer planar reciprocal frames: a structure prototype for floor and roof systems*	Can education of structural engineers be improved by including architecture in the curriculum?	The Anthony Timberlands Center for Design and Materials Innovation	Design of optimized 3D-printed steel nodes	Integrative strategies across the digital timber value chain	Material probes into paper waste as a bacterially-induced and 3D printed foam: Combining biodesign and circular principles				
M. Dunn	S.D. Taraldsen, B. Izumi, B.N. Sandaker, M. Luczkowski, B. Manum & A. Rønnquist	P. MacKeith & J. Boelkins	M. Erven & J. Lange	T. Svilans , M. Tamke & M.R. Thomsen	A.F. Mosse & JF. Bassereau				

Reuse and misuse with heat formed acrylic*	Structure as (Primary) Generator of Architectural Design: a Study of a Master Dissertation Studio**	Experiencing structure: Structural design as the making of a spatial artistic expression	How to dress a column: An architect's method for designing with 3D printed clay	Timber structures made of naturally curved oak wood: prototypes and processes * *	Living Manufacture: Principles for a microbial 3D printer
A. Chao, E.M. Segal, L. Ramsburg & P. Draper	L. Luyten	R. Zhang & S. Wang	S. Pain , E.P. Choo, N. Bartov & J. Young	N.M. Larsen , A.K. Aagaard, M.M. Hudert & L.W. Rahbek	T. Arnardottir , M. Dade- Robertson, M. Zhang & J. Loh
Physical model: Goian-Cerveira footbridge over the Miño River, Spain- Portugal*	Flipped Classroom for teaching structures in Architecture courses	Generative Design of Mega-Structures: A Structural Grammar Approach	3D printing of column structures for architectural applications * *		Between Breakfast and Bed: Towards Fluid Modes of Designing and Cohabiting with Living Organisms
M.S. de Oliveira , A.B. Larena, J.G. Mateo & J.B. Larena	E.N.P. Costa & J.M. Sánchez	V. Tomei, D. Faiella, F. Cascone & E. Mele	B. Waldschmitt , C. B. Costanzi, U. Knaack & J. Lange		S. Keune , A. Mody & M. Westerlaken
Critical practices Panel					A Study Model for the Reconstruction of Urban Ecological Niches
I.W. Foged, A. Lendager, F. Jensen, K. S. Poulsgaard & L.F. Hansen					A. Ilgün , R. Mills, F. Mondada & T. Schmickl

Wednesday Evening (WeE), July 06, 2022									
15:0	15:05 – 15:40 Coffee Break								
15:4	40 – 17:30 Concurre	nt Technical Sessions	WeE 1 to WeE 6						
WeE 1 - Auditorium 3.107	WeE 2 - Seminar Room 4.105	WeE 3 - Seminar Room 5.125	WeE 4 - Seminar Room 5.127	WeE 5 - Laboratory 6.111 C	WeE 6 - Auditorium Utzon Center				
Critical practice Critical practice (3)	General Session Educating architects and structural engineers (3)	General Session Computer and experimental methods	Special Session BE-AM on Tour (2)	General Session Glass Structures	Mini-Symposium Bio Design: New material practices for a sustainable building culture (3)				
Chair(s): I.W. Foged	Chair(s): M. Laboy	Chair(s): M. Blenkuš	Chair(s): U. Knaack & O. Tessmann	Chair(s): D. Oakley	Chair(s): M.R. Thomsen, P. Nicholas, C. Collet & N. Diniz				
Kinetic Thin Glass Building Envelope*	Drawing the organicity chart: structure analysis exercises for better design skills	Digital prototyping as a tool for early design evaluation	Concrete AM: An insight into the control of main parameters	Looking at the foundations of structural glass with a digital microscope	PolyBrick 2.0: Design and Fabrication of Load Responsive Structural Lattices for Clay Additive Manufacturing				
H. Mulder	Th. Vilquin	D.I. Dimitrov	<i>J. Ribeiro</i> , B. Figueiredo, P.J.S. Cruz & A. Camões	F.A. Veer	E.B. Birol , C.J. Hernandez & J.E. Sabin				
Towards a new Nordic understanding of Novel Envelope Design*	A Consultancy Design Studio Model for Advanced Structural Integration	Viability study of an integrated optimized tool for form-found timber structures	The business case for 3D printing in the built environment	The adhesively- bonded glass brick system of the Qaammat Pavilion in Greenland: From research to realization**	Principles of biological design as a model for biodesign and biofabrication in architecture**				
M. Singh	T. Fowler & S. Rihal	A. Zamora , J.M. Cabrero & M.M. Hudert	P.L. Rosendahl & A. Wolf	F. Oikonomopoulou , T. Bristogianni, M. van der Velden & K. Ikonomidis	A. Goidea & D. Andréen				

Prototyping Collective Gestures: Reworking the way and the work of architecture*	What is built and what is taught* *	A Digital Process for Reconstructing Wind Turbine Blade Geometry from Point Cloud Data	AM of discrete ceramics – Post tensioned gantry structures	Test facilities and concept for the evaluation of optical anisotropy effects in tempered glass	Knitted Cultivation: Textiling a Multi- Kingdom Bio Architecture
M.F. Hvejsel, W. Ahues , M. Stumpf & M. Wyller	C. Olmedo, J. Antuña & A. Calle	C. Kiernicki , S. Kakkad, M. Bermek & T.R. Gentry	<i>J. Carvalho</i> , P.J.S. Cruz & B. Figueiredo	S. Dix, K. Thiele , L. Efferz, C. Schuler, J. Schneider & S. Kolling	<i>J. Scott,</i> R. Kaiser, D. Ozkan, A. Hoenerloh, A. Agraviador, E. Elsacker & B. Bridgens
Re:Shuffle*	The long road to education for upcoming data- driven practices in architecture: gaps, difficulties and silos	Artificial intelligence and machine learning for low carbon architecture. Prototype carbon estimation tool development case study	Reinforcement Lattices for 3DCP: a fabrication method based on ruled surfaces		Experimentation of natural materials: the use of chitin in additive manufacturing
L. Mangliár & M.M. Hudert	<i>A. de Boissieu</i> & R. Deutsch	M. Płoszaj-Mazurek	A. Anton , L. Reiter, E. Skevaki & B. Dillenburger		T. Campos , P.J.S. Cruz & B. Figueiredo
Double Curved Stressed Skin Structures for Architecture* A. Meyboom, D. Correa & O.D Krieg	Consolidating Pedagogies In Between Architecture and Engineering <i>I. Serefoglu, R. Pedreschi &</i> <i>M.P. Maldonado</i> An investigation in fillining the structural	Expertise, playfulness, analogical reasoning: three strategies to train Artificial Intelligence for design applications** <i>G. Mirra & A. Pugnale</i> Development and tacting of roal size	Additively manufactured paper products from cellulose-pulped fibers and its quality according to rheology and 3D printing performance D.A. Agha & U. Knaack		
	classroom in an architecture program	smart material sun shading - R&D ADAPTEX PR. Denz, N. Suvanaarik, P. Konggingha			
		<i>E.F. Waldhör, M. Schneider</i> & C. Sauer			
Critical practices panel					
I.W. Foged, A. Lendager, F. Jensen, K. S. Poulsgaard & L.F. Hansen					
17::	30 – 18:00 Break Wa	alk along the fjord to visit	the site of the Ephemera	Permanence 1:1 Design	& Build workshop
18:0	00 – 18:40 Onsite pres M. Rinke,	sentation: Ephemeral Perr A. Tellini & T. Vesterma	manence 1:1 Design & Bu ann	ild workshop	
19:0	00 – 21:00 Welcome	Reception & Exhibition	: Holiday Home Utzon	Center	

Thursday Morning (ThM), July 07, 2022							
08:0	08:00 – 18:00 Conference Accreditation ICSA2022 Desk – CREATE venue						
08:3	08:30 – 09:45 Keynote Lectures Plenary stage Chair(s): Paulo Cruz and Marie Frier Hvejsel T. Saraceno "Cloud City Aalborg" Dr. F. Trubiano "Material health and human labor - Building ethical constructs for architecture and structures"						
09:4	45 – 10:15 Coffee B	reak					
10:1	15 – 12:15 Concurre	ent Technical Sessions	ThM 1 to ThM 6				
ThM 1 - Auditorium 3.107	ThM 2 - Seminar Room 4.105	ThM 3 - Seminar Room 5.125	ThM 4 - Seminar Room 5.127	ThM 5 - Laboratory 6.111 C	ThM 6 - Auditorium Utzon Center		
Special Session Radical Tectonics: Aiming for absolute sustainability in structures and architecture in a time of climate crisis (1)	Special Session Infrastructure Design and Socio-Ecological Agency: The (side) effects of structures, systems and spaces	General Session Special Structures	Special Session Resilient Built Environment and Communities, Pre- and Post Disaster	General Session The borderline between architecture and structural engineering	Mini-Symposium 1:1, Tools and Programs (1)		
Chair(s): A. Beim, U. Meister & F. Trubiano	Chair(s): G. de Block & D.B. Lanng	Chair(s): L. F. dos Santos	Chair(s): O. luorio & A. Melis	Chair(s): R. Pedreschi	Chair(s): M. Rinke & M. Vrontissi		
Reimagining low- carbon futures: architectural and ecological tradeoffs of mass timber for durable buildings**	The social and ecological agency of infrastructure design	Biomechanics- Driven Kinematics of Reconfigurable Linkage Structures	Semi-temporary post-earthquake settlements in Italian historical centers: performance-based guidelines and BIM simulations	Evaluating profession- based vocabulary in teams of architecture and engineering designers	Detail Machines: Generating Design at Full-Scale**		
M. Laboy	D.B. Lanng & G. de Block	N. Georgiou & M.C. Phocas	S.R. Ermolli & G. Galluccio	S. Bunt & N.C. Brown	T. Boling		
An Urban Sink – Case Study of an (Im) material Metabolism of Buildings	Towards ethical mobility behavior: the socio-ecological potentiality of ambiance-based mobility infrastructure design	The Deployable Tectonic: Mechanization and mobility in architecture**	Future scenarios for housing (re) settlements in Ecuador**	Design and construction of a ribbed concrete slab based on isostatic lines	Material Based Design. A Teaching Methodology for an Introductory Making Course in Architecture Education		
K. Usto , M.F. Hvejsel & C. Brunsgaard	C. Pelgrims	C. McCoy & T. Duffy	O. luorio & M. Russo	P. Vejrum & M.S. Jensen	A.O. Tellini & M. Rinke		
The Construction Material Pyramid – 'Upfront impacts' as a methodical change in architectural design	Recalibrating socio-ecological agency in post-war housing schemes. Experimenting with green infrastructure in The Netherlands (1960-1970s)**	Life Cycle Inventory analysis for resource- efficient structural steel nodes: metal 3D printing or traditional manufacturing?	A Min-Max Protocol for Adaptive Refugee Housing	Conceptual design of structures as a meeting point between architects and engineers. An original example from Switzerland	Methods of Collaboration in Full Scale Projects		
P. Munch-Petersen & A. Beim	B. Notteboom & l. van Hellemondt	M. Chierici, F. Berto, A. Kanyilmaz & C.A. Castiglioni	E. Mark, N. Cheng , D. Golczewski, I. Chen & M. Zad	S. Miccoli & R. Guidotti	U. Meister & C. Rist- Stadelmann		
	The promise within the mess of temporary uses	BladeBridge - Design and Construction of a Pedestrian Bridge using Decommissioned Wind Turbine Blades	Architecture for Coral Restoration: Using Clay-Based Digital Fabrication to Overcome Bottlenecks to Coral Larval Propagation	Three arches for a roof – case study of a multi-disciplinary design process**	Constructing a 1:1 Curriculum on the Arabian Peninsula		
	T.Vestermann	Z. Zhang, K. Ruane, A. Huynh, A. McDonald, P. Leahy, A. Alshannaq, T.R. Gentry, A. Nagle & L.C. Bank	A. Crawford, A. Humanes, G. Caldwell, J. Guest & E. van der Steeg	T. Devriese , M.V.D. Driessche & J. Belis	M. Hughes		

Kulkransporet as transformed infrastructure	Towards Artificial Ossification for Bone- inspired Technical Structures	Lessons from Skopje 1963-2020:How to build back better?	Framing a computational tool for early conceptual structural design	A Pedagogy of Digital Materiality - Integrated Design and Robotic Fabrication Projects of the Master of Advanced Studies in Architecture and Digital Fabrication**
R. Bach & L.B. Jespersen	R. Starke, I. Vukorep, K. Frommelt, A. Melcher & T. Hinze	T. Mihajlovska & M. Petrova	J. Corneliusen , S. Deleuran, P.H. Kirkegaard & V. Beatini	D. Jenny , H. Mayer, P. Aejmelaeus-Lindström, F. Gramazio & M. Kohler.
		Adaptive Aluminum Tensegrity Structure as a Bike Parking Canopy <i>A. Sychterz</i>	How can we design gridshells with customised and unconventional connectors? <i>M. Luczkowski, S.M.</i>	
			Haakonsen, S.H. Dyvik & J.H. Mork	

Thursday Afternoon (ThA), July 07, 2022									
12:	12:15 – 13:15 Lunch Break								
13:	15 – 14:35 Concurre	nt Technical Sessions	ThA 1 to ThA 6						
ThA 1 - Auditorium 3.107	ThA 2 - Seminar Room 4.105	ThA 3 - Seminar Room 5.125	ThA 4 - Seminar Room 5.127	ThA 5 - Laboratory 6.111 C	ThA 6 - Auditorium Utzon Center				
Special Session Radical Tectonics: Aiming for absolute sustainability in structures and architecture in a time of climate crisis (2)	Special Session The Architecture and Structure of Human Wellbeing (1)	Special Session Towards a Robotic Structuralism	General Session Timber structures	Special Session Low-carbon Low- waste Structures	Mini-Symposium 1:1, Tools and Programs (2)				
Chair(s): A. Beim, U. Meister & F. Trubiano	Chair(s): J. Holst & T.D.O. Tvedebrink	Chair(s): M.K. Kragh & R. Naboni	Chair(s): A. Meyboom	Chair(s): D. Parigi & C. Fivet	Chair(s): M. Rinke & M. Vrontissi				
Radical Tectonics – a multi-scalar approach to material circularity through community empowerment, building re-use, and material regeneration * *	An Ecopoetic Architect - the resonate presencing of material properties and environmental conditions in the case of Jørn Utzon	What a carpenter can learn from 'Thingiverse'; how robots are already changing the craft of carpentry	Investigations on shear-connections of timber-granite- composite structures	Multidimensional indicators for recyclability assessment of structural materials	The Construction Studio; An integrated pedagogical approach to architecture education				
A. Beim, U. Meister & F. Trubiano	N.B. Andersen	W. Schwarzmann	F. Walgenbach-Albat , T. Göckel, A. Laubach, G. Kusser, F. Miebach & J. Schaffitzel	M. Mayer	I. Vrouwe & J. Kristek				
The Radical (re) Construction of Memory in the American South	Tectonics of human well-being: Describing architecture in terms of constructed spatial gestures and their impact**	Enabling circularity in building construction: experiments with robotically assembled interlocking structures	Evolving timber school building design in Norway	Why current carbon metrics for buildings fail to show the benefits of timber reuse	Project-Based and Experiment-Based Learning of Structural Behaviour and Integrated Design Skills for Architecture Students				
D. Willkens & V. Noel	E. Sántha , M.F. Hvejsel & J.M. Entwistle	L. Mangliár & M.M. Hudert	E. Ratsou-Stæhr, L.D. Houck & T.K. Thiis	D. Parigi , K. Kanafani & F.N. Rasmussen	Ö. Acican & L. Luyten				

Radical Tactics for Mycelium Structures	Evidence-based design as a process for designing a health supportive environment at care facilities for elderly with dementia	Computational Design and Robotic Fabrication of a Self- Supporting Acoustic Shell	Mass timber buildings: the good, the bad and the ugly	Reducing the environmental impact of footbridges through smart under- deck cable-stayed systems	Structural models in architectural education: Experimental explorations between the physical and the digital realms
J. Dessi-Olive, R. Buntrock & O. Oliyan	V.L. Lygum , N. Mathiasen, S. Grangaard, L. Sigbrand & A.K. Frandsen	P. Loh, G. Mirra , D. Leggett & A. Pugnale	A. Solarte & R. Couper	M.d.M. Corral & L. Todisco	J.J. Castellón González
		Robotic zip-bending of wood structures with programmable curvature**	The design, development and construction of a digitally fabricated reciprocal timber structure	Spherical harmonic shape descriptors of nodal force demands for quantifying spatial truss connection complexity**	From conceptual art to structural design, teaching structures for architects
		R. Naboni , A. Kunic, D. Marino & H. Hajikarimian	A. Dieste, R. Pedreschi & C. Nan	<i>K.L. Lee</i> , <i>R. Danhaive & C.T.</i> <i>Mueller</i>	E. Brito & R.F. Póvoas

Thursday Evening (ThE), July 07, 2022

14:35 – 15:10 **Coffee Break**

 $15:10-16:50 \quad \mbox{Concurrent Technical Sessions} \quad \mbox{ThE 1 to ThE 6}$

ThE 1 - Auditorium 3.107	ThE 2 - Seminar Room 4.105	ThE 3 - Seminar Room 5.125	ThE 4 - Seminar Room 5.127	ThE 5 - Laboratory 6.111 C	ThE 6 - Auditorium Utzon Center
Special Session Structures and Architecture of Refurbishment: Strategies and Techniques for the 21st Century	Special Session The Architecture and Structure of Human Wellbeing (2)	General Session The history of the relationship between architects and structural engineers	Special Session Integrated Informed Design Processes: Joining urban design, architecture, and engineering for a sustainable tomorrow	General Session Concrete and masonry structures	Mini-Symposium 1:1, Tools and Programs (3)
Chair(s): J. Antuña, E.F. Forner & D. Theodossopoulos	Chair(s): J. Holst & T.D.O. Tvedebrink	Chair(s): Y. Akgün	Chair(s): A. Kamari, S. Pelsmakers & C. Bañón	Chair(s): I.P. Curiel	Chair(s): M. Rinke & M. Vrontissi
Tectonics of conservation technology**	Wellbeing at the office: an anthropological approach to POE	Central Institute of Sciences building: the complexity of the synthesis	Towards an Open Model for Integrated Planning of the Built Environment: Research Agenda	A slim concrete skeleton within thick block masonry; multi-story building construction	Panel Discussion: Structures and construction in a future architecture curriculum
D. Theodossopoulos	M. Rasmussen , J.M. Entwistle, M. Stender & S. Petersen	E.G. da Silva, J.M. Sánchez & J.C. de Vasconcellos	J. Ruge , J.R. Noennig, A. Bögle, J. Schiewe & M. Ballestrem	N. Leimand	
A study of relevant features for over- elevation as a strategy for urban renewal	Tying architecture and homeostasis using affordances: An approach to well- being in the built environment	Expressing Structural Forces–Carlo Scarpa and his Collaboration with the engineer Carlo Maschietto	Integrated Informed Design Processes: A mapping of building performance criteria in the Danish conventional design practice	Geometrical analysis of masonry structures for computational methods of design and form finding. the case study: Iranian YazdiBandi	Panel Discussion: Structures and construction in a future architecture curriculum
M.P. Blasco & I. Cabrera i Fausto	Z. Djebbara, A. Jelic & L.B. Fich	AC. Schultz	M. Christiansen & A. Kamari	T. Samipour & J.A. Diaz	
Design for Disassembly: Comparative Life Cycle Assessment of Two Wood-Frame Structural Systems	Stories of Structures, Spaces and Bodies: Towards a Tectonics of Well-being**	Redefining structural art: a neuroaesthetics perspective on the art of structural design**	A Blended Approach to Concept Transfer: Building Platform- based Design for Manufacture and Assembly (DfMA)	Dynamic response of masonry structure with the application of horizontal seismic band: shake table tests	Panel Discussion: Structures and construction in a future architecture curriculum
S. Silverstein	T.D.O. Tvedebrink , A. Jelic & S. Robinson	S. Wang , T. Kotnik & J. Schwartz	D. Maxwell & I. Kuzmanovska	S. Yadav, Y. Sieffert , F. Vieux-Champagne, P. Garnier, M. Hajmirbaba, L. Arléo & E. Crété	

HBIM: to Know to Model the Complexity, Cases History on Italian Cultural Heritage	How 4E Cognition Changes Architectural Education**	Searching for Shankland: The Career of Edward Clapp Shankland		Exploration in how to streamline, lighten, reduce costs, and ease the environmental footprint of reinforced concrete slabs	Panel Discussion: Structures and construction in a future architecture curriculum	
A. Armanasco, V. Caspani, D. Foppoli , & M. Bellanova	S. Robinson	M.S. Uihlein		A. Perez-Garcia & I. Lauwers		
Restoration of existing RC frame buildings with CLT panels: experimental and numerical study on innovative connection system		Sydney Opera House: the strength of an idea		1970: Accidents that changed the course of the Brazilian Heavy Construction industry	Panel Discussion: Structures and construction in a future architecture curriculum	
F. Boggian, A. Aloisio, M. Pelliciari, S. Sirotti & R. Tomasi		J. Rey-Rey		S.N. Alves & J.M. Sánchez		
17:00 – 18:00 General Meeting – International Association of Structures and Architecture Plenary stage with keynote debate Dr. P. Block, L. F. Hansen, Dr. F. Trubiano, L. Ney, T. Saraceno						
19:	30 – 23:00 Gala Dinn	er The House of Music				

Friday Morning (FrM), July 08, 2022					
09:00 - 17:00	Conference Accreditation ICSA2022 Desk – CREATE venue				
09:00 – 10:15	 Keynote Lectures Plenary stage Chair(s): Paulo Cruz and Marie Frier Hvejsel Dr. P. Block "Re-defining structural art: Efficiency, economy, elegance, ecology, ethics" L. Ney "Bridge design: An integrated approach in complex contexts" 				
10:15 - 10:45	Coffe Break				
10:45 – 12:25	Concurrent Technical Sessions FrM 1 to FrM 6				

FrM 1 - Auditorium 3.107	FrM 2 - Seminar Room 4.105	FrM 3 - Seminar Room 5.125	FrM 4 - Seminar Room 5.127	FrM 5 - Laboratory 6.111 C	FrM 6 -Auditorium Utzon Center	
Special Session Reimagining Bureaucracy: Challenging the structure and architecture of legal frameworks	General Session The tectonic of architectural solutions (1)	Special Session Adaptive Building Envelopes (1)	Special Session The Future of Bridges: A roadmap towards circular and inclusive bridge design	General Session Ecology of structures and architecture (1)	Mini-Symposium Materiality in Architecture and Building Design (1)	
Chair(s): H. Ejstrup & P. Munch-Petersen	Chair(s): P. Trovalusci	Chair(s): I.W. Foged & M.K. Kragh	Chair(s): J. Smits & M. Knight	Chair(s): J. Dessi- Olive	Chair(s): O.P. Larsen & M.M. Hudert	
Certifying architecture	Távora's house in Ofír: sustainability and vernacular knowledge	Adaptive Hybrid Structure for Photovoltaic Shading Modules Integration	The Striatus arched bridge: Computational design and robotic fabrication of an unreinforced, 3D-concrete-printed, masonry bridge**	Local tectonics. Danish architectural construction in historical environmental perspective	Curious Constructions: Around Materials, Labor, And the Environment	
M.B. Jørgensen	E. Fernandes	C. Palochi , M. Matheou & M.C. Phocas	S. Bhooshan , V. Bhooshan, A. Dell'endice, J. Megen, P. Singer, J. Chu, T. Van Mele & P. Block	M. Lauring	D. Costanza	
The bumpy road to a sustainable building culture – an initial overview of the challenges in getting from innovative ideas to positive impact in construction	Poetics of construction, material imagination, and place identity: Assessing the work of RCR Architects in the UAE	Geometric variety of scissor linkages according to loop geometry: A case study of a canopy design	Nature inclusive Bridge Design	Architecture as Empathic Data Structure between Adjustable Hyperintelligence and Reasonable Indestructibility	Exploration of various textures in ferro- cement panels	
M. Thomassen & P. Munch- Petersen	I.P. Curiel & S. Strum	B. Atlamaz, Y. Akgün , F. Maden, C. Kavuncuoglu & Ö. Kilit	J. Smits	NC. Fritsche	R. Schwaen	
Daylight conditions in housing – its role and priority in Danish Building regulations**	Living, Uninterrupted: The Positive Potential of Low Impact Construction**	Wood-Textile Thermal Active Envelopes**	Re:Crete – Reuse of Concrete Elements in New Structures: a Footbridge Prototype	Circularity of Place? An investigation of spatial gestures as circular principles	Material Practices: Exploring materiality and process	
A.K. Frandsen, N. Mathiasen & L. Grønlund	T.M. Boake	I.W. Foged	J. Brütting, J . Devènes, C. Küpfer, M.Bastien-Masse & C. Fivet	R.N. Andersen & M.F. Hvejsel	R. Pedreschi	
Competitional Narratives and Architectural Outcomes	The tectonic of single column roof structures				Towards customized textile profile preforms made from flax fibers and biobased resin for the design of biocomposite structures	
n. Ejstrup & J.S. Ivieisen	L. SIIVNIK				г. baszynski & H. Dany	

Friday Afternoon (FrA), July 08, 2022

12:25 – 13:30 Lunch Break

13:30 – 14:50 Concurrent Technical Sessions FrA 1 to FrA 6

FrA 1 - Auditorium 3.107	FrA 2 - Seminar Room 4.105	FrA 3 - Seminar Room 5.125	FrA 4 - Seminar Room 5.127	FrA 5 - Laboratory 6.111 C	FrA 6 - Auditorium Utzon Center	
General Session Building Envelopes / Facades (1)	General Session The tectonic of architectural solutions (2)	Special Session Adaptive Building Envelopes (2)	Special Session Cellulose-Based Materials in Structures and Architecture	General Session Ecology of structures and architecture (2)	Mini-Symposium Materiality in Architecture and Building Design (2)	
Chair(s): K. Dong	Chair(s): R. Povoas	Chair(s): I.W. Foged & M.K. Kragh	Chair(s): J. Latka & R. Bach	Chair(s): T. Vilquin	Chair(s): O.P. Larsen & M.M. Hudert	
Valuation of Modernist Envelope as Criteria for Architectural Intervention Aiming Energy Efficiency	Structural typologies and the architectural space - Studies of the relationship between structure and space by application of structural types to multistory buildings**	Optimisation of daylighting conditions through adaptive kinetic envelopes	Exploration of natural materials in additive manufacturing in architecture: use of cellulose-based pulps	Structures and change – Tracing adaptability based on converted buildings**	A robotically extruded sugar waste composite for a circular biomateriality in architecture	
J.M. Sánchez & C. Amorim	B.N Sandaker, B. Kleven & A.R. Wang	M.Y. Jeong , M. Matheou & L. Blandini	T. Campos , P.J.S. Cruz & B. Figueiredo	M. Rinke & R. Pacquée	J. Meng , D. Alnaeb, A.K. Salmane, P. Devadass, M. Cruz & B. Parker	
Façade Tiles in Hong Kong: From protective envelope on everyday buildings to the tileworks of the Cultural Centre and M+ Museum	The forgotten column at the Sydney Opera House	Occupant-Oriented Adaptive Building Envelopes: A Hybrid Design Framework for Human, Material, Environment Synergies	Preserving the environmental properties in paper- based architecture	The principles of combining facade loadbearing properties with the effects of sustainable passive shading	Fiber Reinforced Timber – Designing Structural Beams for Sustainable Buildings with Enhanced Load- Bearing Capacity	
R.S. Diedering , N. Tian & J.X. Zhu	P. Tombesi , P. Stracchi & L. Cardellicchio	V. Fragkia & I.W. Foged	A. Jasiolek	M. Blenkuš , A. Avguštin, F. Peharda & U. Žvan	M. Budig & D.S. Mlote	
Climate-Adaptive Façades: An Integral Approach for Urban Rainwater and Temperature Management	The constructive dimension. The influence of structural language in making architecture		Temporality in eternity – paper partitioning in an open building	Why Urban Mining is Inevitable: Analyzing the Resource Consumption of Urban Structures	Composite adaptation: a holistic structural and architectural approach to small- scale building adaptation in cities	
C. Eisenbarth , W. Haase, L. Blandini & W. Sobek	P. Trovalusci & R. Panei		J. Łatka	<i>S. Weidner</i> , R. Bechmann & W. Sobek	M. Anderson	
Revisiting the Analogy of the Building Envelope and the Skin: A Biomimetic Perspective						
Z. Öztoprak						

Friday Evening (FrE), July 08, 2022								
14:50 – 15:30 Coffee Break								
15:30 – 16:30 Concurrent Technical Sessions FrE 1 to FrE 6								
FrE 1 - Auditorium 3.107	FrE 2 - Seminar Room 4.105	FrE 3 - Seminar Room 5.125	FrE 4 - Seminar Room 5.127	FrE 5 - Laboratory 6.111 C	FrE 6 - Auditorium Utzon Center			
General Session Building Envelopes / Facades (2)	General Session The tectonic of architectural solutions (3)	General Session Tall Buildings	General Session Emerging technologies		Mini-Symposium Materiality in Architecture and Building Design (3)			
Chair(s): R. T. Hellwig	Chair(s): E. Fernandes	Chair(s): D. Parigi	Chair(s): B. Figueiredo		Chair(s): O.P. Larsen & M.M. Hudert			
Maintenance, Repair and Refurbishment of masonry façades to avoid severe seismic damages	Classification of connections and joints in buildings for sustainability (CCJB-S): a provisional scheme	I LOVE TO GET HIGH: A Critique of the Materiality of Observation Spaces	Automated robotics agents for assembly- aware design of shells		Eloquent timber: Tacit qualities, telling materiality, and the inhabitants' voice**			
M. Roik & S. Hine	C. Escaleira , P.J.S. Cruz & R. Amoêda	T.M. Boake	S. Wilcock , J.H. Boyle, M.R. Dogar & O. luorio		U. Groba			
Managing Complexity: Design Development of an Innovative Membrane based Double-Skin Envelope	Conveying Tradition through Tectonics: The Case of Kagawa Prefectural Office Building and Kiyomizu- dera Temple.	Living among the clouds: From tower to texture	Life-cycle assessment of water-filled glass (WFG)		The structural geometry of a beam element from 4 torqued strips			
K. Ku & M. Cimillo	N.S. Yordanova	M. Petrova & T. Mihajlovska	G. Cavana , M. Gutai & A.G Kheybari		G.H. Filz , S. Elmas & A. A. Markou			
		Skyscraper Collaboratory**	Embedding ornament: custom nozzle design in 3-D clay printing		Material Value(s): Motivating the architectural application of waste wood**			
		T. Fowler & K. Dong	Y.M. Wu, A. Kenny, I. Kim & D. Correa		X. Browne, O.P. Larsen, N.C. Friis & M.S. Kühn			
16:30 – 17:00 Closing Ceremony Plenary stage								

* Are contributions accepted for the new Critical Practices research format. Critical Practices is a hybrid format employing the submission, exhibition, and presentation of physical prototypes as research output in combination with shorter reflection papers of three pages in an attempt at bridging research across academia and practice.

**Are contributions corresponding to papers published in the special issue 'Structures and Architecture – Joining Forces' of the new Springer journal Architecture, Structures and Construction. Based upon the review, by ICSA2022 International Scientific Committee of the abstracts submitted to ICSA2022 call for participation, approximately 50 authors were invited to submit the corresponding full papers through the Journa's Editorial Manager system strictly following the journal's peer-review process. Presentations marked ** represent the papers that were finally accepted for publication in the journal after having successfully completed this process.

Presenting authors are marked in **bold**.

WIFI ACCESS

Conference Network: (Available in the period 04.-09.07.2022) Network: AAU-CONF-1 Code: naivgxjn

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Author, Session Sessions are listed as Day Time – Room

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Room is: 1 (Auditorium 3.107), 2 (Seminar Room 4.105), 3 (Seminar Room 5.125) 4 (Seminar Room 5.127), 5 (Laboratory 6.111 B-C), 6 (Auditorium Utzon Center)

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ICSA2022 SHORT PROGRAM

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15:00 – 19:00 Conference Accreditation ICSA2022 Desk – CREATE Venue										
			Wed	nesday, Ju	ly 06, 2022					
07:30 –	- 18:00	18:00 Conference Accreditation ICSA2022 Desk – CREATE Venue								
08:30 -	- 09:00	Opening Cerem	Opening Ceremony Plenary stage							
09:00 –	- 10:15	Keynote Lecture	es Plenary sta	ige						
10:15 –	- 10:45	Coffee Break								
10:45 –	- 12:45	WeM 1 Critical practice Critical practice (1)	WeM 2 General Session Educating architects and structura engineers (1)	VeM 2 Seneral Session Educating inchitects ind structural engineers (1) WeM 3 General Session Innovative architectural and structural design (1)		WeM 4 General Session Comprehension of complex, conceptual and futuristic structures	WeM 5 Special Session Advances in Wood Construction: Technology and Architecture (1)	WeM 6 Mini- Symposium Bio Design: New material practices for a sustainable building culture (1)		
12:45 –	- 13:45	Lunch Break								
13:45 -	- 15:05	WeA 1 Critical practice Critical practice (2)	WeA 2 General SessionWeA 3 General SessionEducating architects and structural engineers (2)Innovative architectur and structur design (2)		3 eral sion vative itectural structural gn (2)	WeA 4 Special Session BE-AM on Tour (1)	WeA 5 Special Session Advances in Wood Construction: Technology and Architecture (2)	WeA 6 Mini- Symposium Bio Design: New material practices for a sustainable building culture (2)		
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15:40 – 17:30		WeE 1 Critical practice Critical practice (3)	E 1 WeE 2 tical General ctice Session ical practice Educating architects and structural engineers (3)		: 3 eral sion puter and erimental nods	WeE 4 Special Session BE-AM on Tour (2)	WeE 5 General Session Glass Structures	WeE 6 Mini- Symposium Bio Design: New material practices for a sustainable building culture (3)		
17:30 -	- 18:00	Break Walk along the fjord to visit the site of the Ephemeral Permanence 1:1 Design & Build workshop								
18:00 -	- 18:40	Onsite presentation	on: Ephemeral F	Permanence	1:1 Design &	& Build workshop	M. Rinke, A. Tellini	& T. Olsen		
19:00 -	21:00	Welcome Recep	tion & Exhibit	ion: Holida	y Home Utz	zon Center				
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08:00 - 18:00	Confere	ence Accreditation	n ICSA2022 [Desk – CREA	ATE Venue					
08:30 - 09:45	Keynote	e Lectures Plena	ry stage							
09:45 – 10:15	Coffee	Break								
10:15 – 12:15 ThM 1 Special Session Radical Tectonics: Aiming for absolute sustainability in structures and architecture in a time of climate crisis (1) ThM 2 Special Session Infrastructure Design and Socio-Ecological Agency: The (side)effects of structures, systems and spaces		2 ial Session tructure n and Ecological cy: The effects uctures, ms and ss	ThM 3 General S Special Str	ession uctures En Co and	M 4 pecial Session silient Built vironment and mmunities, Pre- d Post Disaster	ThM 5 General Session The borderline between architecture and structural engineering	ThM 6 Mini-Symposium 1:1, Tools and Programs (1)			

12:15 - 13:15	Lunch Break							
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17:00 – 18:00	General Meeting – International Association of Structures and Architecture Plenary stage with keynote debate Dr. P. Block, L. F. Hansen, Dr. F. Trubiano Plenary stage							
19:30 – 23:00	Gala Dinner The House of Music							
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09:00 – 17:00	Conference Accred	ditation ICSA2022 D)esk – CREATE Venue					
09:00 - 10:15	Keynote Lectures	Plenary stage						
10:15 – 10:45	Coffee Break							
10:45 – 12:25	FrM 1 Special Session Reimagining Bureaucracy: Challenging the structure and architecture of legal frameworks	FrM 2 General Session The tectonic of architectural solutions (1)	FrM 3 Special Session Adaptive Building Envelopes (1)	FrM 4 Special Session The Future of Bridges: A roadmap towards circular and inclusive bridge design	FrM 5 General Session Ecology of structures and architecture (1)	FrM 6 Mini-Symposium Materiality in Architecture and Building Design (1)		
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14:50 – 15:30	Coffee Break							
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ICSA 2022 5th International Conference on Structures and Architecture 06-08 July, Aalborg, Denmark





