



A T U T

16th annual symposium of architectural research

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Book of abstracts

Aalto University
7-8 November 2024

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ATUT2024: 16th Annual Symposium of
Architectural Research 2021

7-8 November 2024

Aalto University, Espoo, Finland

REGENERATIVE FUTURES: ARCHITECTURE AT THE CROSSROADS OF TRANSFORMATIONS

Architecture is a vital catalyst for societal transformations. It has always been, and continues to be, a visionary field that explores alternative paths for building better, happier, and healthier futures. Currently, in the face of multiple simultaneous crises and unprecedented challenges, architects stand at the crossroads of possible futures, grappling with issues ranging from climate change to social inequality. Recently, the field of architecture has questioned its longstanding tradition of being human-centered to explore the inclusion of non-humans as the naturally unfolding stakeholders of built environment. Within this frame, architecture expands its conceptual, methodological, and professional foundations to navigate towards regenerative futures that promote coexistence, sustainability, resilience and holistic wellbeing on Earth.

This year's conference theme recognizes the pivotal moment at which architecture finds itself at the intersection of crisis and opportunity for transformative change. Futures refer to several possible, probable, and improbable ones. The theme acknowledges the pressing need for innovative responses to the existential challenges facing humanity while embracing the transformative potential of architecture to lead the way towards a more equitable, resilient, and regenerative world for all.

We welcome submissions from fields related to the conference theme, with a focus on architecture, design, planning, and/or the built environment.

More information about the conference
in the ATUT2024 webpage: [https://www.
atut.fi/](https://www.atut.fi/)

CONFERENCE PROGRAMME

Thursday 7th November

9.00-9.30

arrival & registration,
Otakaari 1 X, lobby

9.30-9.40

openin of the symposium
Jenni Reuter

Otakaari 1 X, lecture hall A2

9.40-10.30

keynote lecture: Elke Krasny
Otakaari 1 X, lecture hall A2

10.30-10.45

break

10.45-11.35

keynote lecture: Mikko Dufva
Otakaari 1 X, lecture hall A2

11.35-12.00

Q&A / Panel (keynote 1 & 2)
Otakaari 1 X, lecture hall A2

12.00-13.15

lunch break

13.15-14.15

session 1: paper presentations
*Regenerative human-nature relationships,
urban systems, and the built environment*
Otaniementie 14, lecture room Q201

14.15-14.20

break

14.20-15.35

session 2: poster presentations
Otaniementie 14, lecture room Q201

15.35-16.00

coffee break & poster exhibition

16.00-17.00

session 3: paper presentations
*Proactive design strategies, novel
methodologies and methods of design and
research*
Otaniementie 14, lecture room Q201

17.00-17.10

break

17.10-18.10

session 4: paper presentations
*Proactive design strategies, novel
methodologies and methods of design and
research*
Otaniementie 14, lecture room Q201

18.30-

conference dinner
Restaurant Fat Lizard
Tietotie 1, 02150 Espoo

Friday 8th November

9.30-10.30

session 5: paper presentations
Collaborative and participatory practices, stakeholder networks, power dynamics in architectural decision-making processes
Otaniementie 14, lecture room Q201

10.30-10.40

break

10.40-11.40

session 6: paper presentations
Diverse topics
Otaniementie 14, lecture room Q201

11.40-12.00

discussion & closing
Pany Savolainen
Otaniementie 14, lecture room Q201

12.00-13.00

lunch break

14.30-

Nils Erik Wickberg lectures
PAUSE! We need a time-out for fitting construction into planetary boundaries
Keynote: Charlotte Malterre-Barthes

18.00-

Evening party

Detailed schedule of the lectures can be found in <https://www.newlectures.fi/en/luennot-2024/>

All times are Eastern European Time EET, GMT +2

LOCATION

CONFERENCE LOCATION: OTANIEMI CAMPUS



Background map data: National Land Survey of Finland, CC BY 4.0.



Undergraduate Centre, Aalto University, Department of Architecture, Otakaari 1 X



Väre, main building of Aalto University of Arts, Design and Architecture, Otaniementie 14



Undergraduate Centre, Aalto University, Otakaari 1

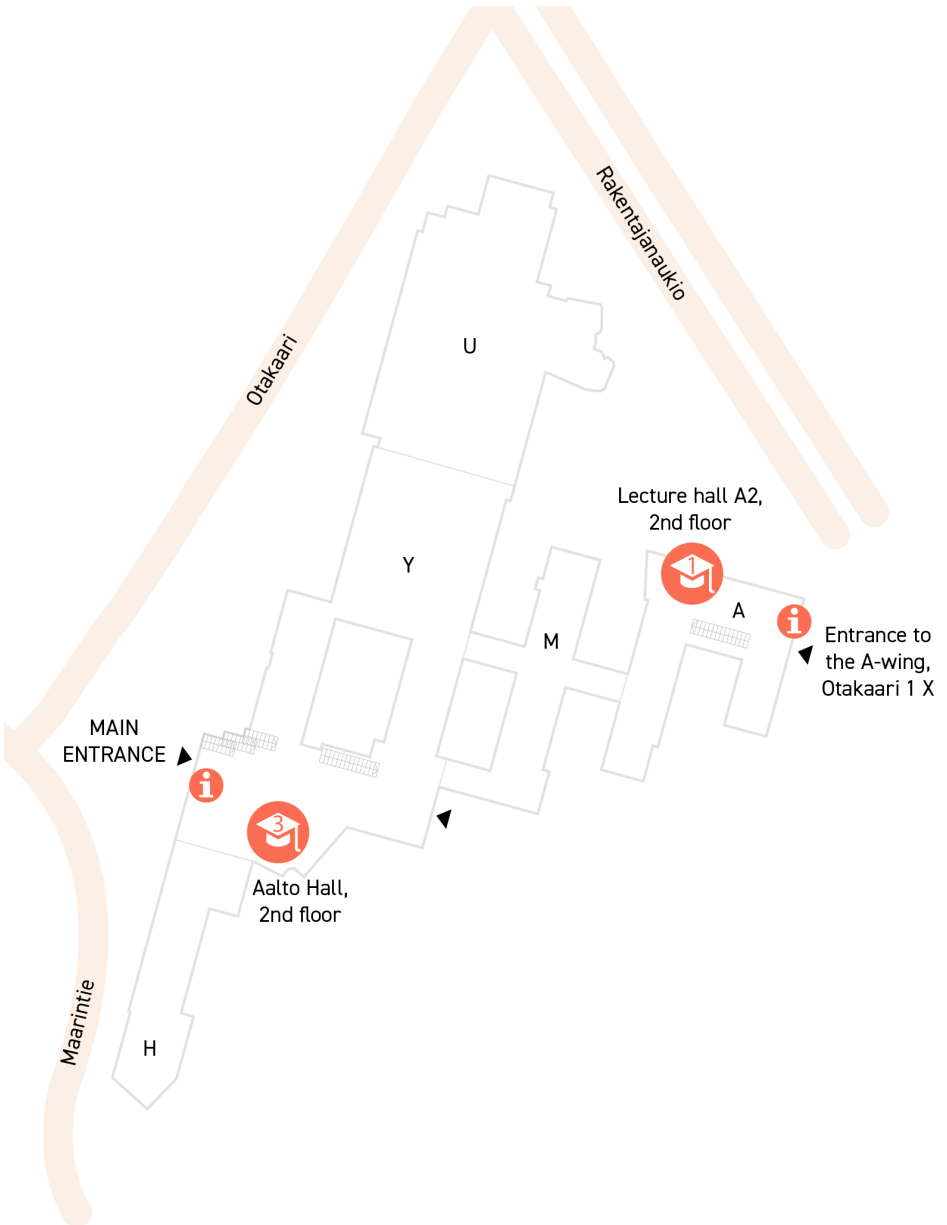


Restaurant Fat Lizard, Tietotie 1



Metro entrance, Aalto University station

UNDERGRADUATE CENTRE, OTAKAARI 1



VÄRE, OTANIEMENTIE 14



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Keynote Speakers

KEYNOTE 1

Elke Krasny

Elke Krasny, PhD, professor at the Academy of Fine Arts Vienna. Krasny focuses on concerns of care, commemorative practices, transnational feminisms and social and ecological practices in architecture, infrastructure, urbanism, and critical pedagogies of the arts. Krasny was a fellow at the CCA Canadian Centre for Architecture. Her curatorial work on Hands-on Urbanism was shown at the 2012 Venice Biennale for Architecture. Together with Angelika Fitz she edited *Critical Care. Architecture and Urbanism for a Broken Planet* (MIT Press, 2019). Her book *Living with an Infected Planet. Covid-19 Feminism and the Global Frontline of Care* (transcript publishers, 2023) focuses on militarized care essentialism and feminist recovery plans in pandemic times.



Photo: Yona Schuh

KEYNOTE 2

Mikko Dufva

Mikko Dufva leads the foresight team at Sitra and is also a docent of futures studies at Aalto University. In his work, he studies trends, weak signals, visions and assumptions about futures. He seeks to make foresight and futures approachable and inspiring. Mikko has extensive experience in foresight a doctorate in Science (Technology) on creation of futures knowledge and systemic foresight.

Photo: Miikka Pirinen



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Session 1

Session 1:

Paper presentations

Regenerative human-nature relationships, urban systems, and the built environment

Thursday 7th of November

13.15-14.15 EET

Otaniementie 14, lecture room Q201

Chair

Hossam Hewidy

Participants

Hella Hernberg & İdil Gaziulusoy:

Matters of care in the regenerative use of neglected spaces

Dimitra Kanellopoulou:

Restorative Landscapes. The Art of Xerolithia in Greek Islands

Elizabeth Donovan:

Regenerative Architecture: Beyond a Synonym for Sustainability

Matters of care in the regenerative use of neglected spaces

Hella Hernberg & İdil Gazıulusoğut
Aalto University

Keywords: care ethics, regenerative use of spaces, sustainable architecture, repair, reuse

ABSTRACT

The severity of the sustainability crisis calls for a fundamental rethinking of urban development and construction processes. Developing regenerative approaches of adapting, repairing, and reusing existing buildings and spaces, including neglected ones, is a key means of lowering the built environment's impacts and offers sociocultural advantages for cities. However, such practices face many barriers due to current paradigms favoring the new, devaluing the past, and prioritizing techno-economic perspectives on urban development.

In this paper, we employ a care perspective to rethink and rearticulate the regenerative use of existing spaces. We draw on the tradition of care thought by feminist political theorist Joan Tronto and STS theorist María Puig de la Bellacasa. Tronto's definition of care as "everything that we do to maintain, continue, and repair our 'world,'" links care not only to human relations but also to spaces and other living and nonliving entities. Bellacasa has further elaborated on the "more than human" dimensions and interdependencies involved in "matters of care." Whereas more recent urban, geographic, and architectural approaches to care have predominantly focused on human-centered, even if spatially-related, aspects of care, we are interested in caring for buildings and the various human-nonhuman relations, possibilities, and struggles it opens up. Based on a literature review, we develop a conceptual framework

to analyze caring architectural approaches. We illustrate its application with a brief analysis of qualitative, semi-structured interviews with urban practitioners involved in caring for existing buildings and spaces. Our analysis highlights the potential of care to offer new understandings of regenerative approaches to the built environment. It also underlines the political dimensions of advancing care, as it radically contests prevailing paradigms concerning the built environment.

Restorative Landscapes. The Art of Xerolithia, in Greek islands

Dimitra Kanellopoulou
Ecole Nationale Supérieure d'Architecture
Paris-Malaquais

*Keywords: dry stone walling,
Mediterranean, Greece, xerolithia,
vernacular*

ABSTRACT

The centuries-old practice of dry stone walling has sculpted the escarp slopes of islands and mountainous regions, primarily in the South Mediterranean, creating a variety of Mediterranean landscapes. Using the ancient method, the peasants and villages in the area were able to construct modest homes for the storage of harvests, the sheltering of animals, and shepherds' quarters. The xerolithia has changed over the ages in the arid parts of the Cycladic islands, influencing the architecture and insular character. In 2018, the millennium technique was included to Unesco's Representative List of Intangible Cultural Heritage. Xerolithia structures are found throughout the arid landscapes of the islands, reflecting the topography lines and cleverly aiding in the collection of limited water. Prior to the recent years of excessive tourist, they also permitted soil cultivation, providing these remote areas with a certain amount of food autonomy. This research looks at these methods' potential for tackling the new issues of local identity preservation and landscape adaptation to climate change. We take a geographical and architectural approach to these anonymous constructions, examining their potential to repair harm to natural and sociocultural environments as well as their pedagogical power to unite generations around issues of transmission, resource economy, and community involvement. Our analysis is based on historical and cultural perspectives. The study looks at

the technique's historical development, emphasising how these vernacular constructions help the area reinvent itself in the face of intense tourism. In order to demonstrate the significant social role that this traditional building technique plays, the study mobilises an archives investigation, fieldwork observations on the islands of Tinos, Kythnos, and Serifos between 2023 and 2024, and interviews with architects and citizens' associations proposing contemporary interpretations of the technique and ways of revival of xerolithia art through participatory design.

Regenerative Architecture: Beyond a Synonym for Sustainability

Elizabeth Donovan
Aarhus School of Architecture

*Keywords: regenerative architecture,
sustainability, terminology*

ABSTRACT

As global challenges escalate, architectural discourse must evolve beyond green and sustainability toward a more holistic approach - regenerative thinking. While sustainability focuses on minimising harm and maintaining existing conditions, regenerative architecture seeks to actively restore living systems, creating built environments that enhance health and wellbeing for both humans and non-humans. By viewing the built environment as an intertwined part of a living ecosystem, regenerative design promotes a proactive approach that creates ecological resilience and thriving biodiversity.

At present, 'regenerative' has become the new buzzword replacing green and sustainability as a synonym, despite having its own theory and design agenda. Thus, this paper aims to explore the critical differences between sustainable and regenerative architecture, highlighting the importance of these nuances in addressing current global crises. It is essential to understand regenerative design as its own concept, instead of a sustainability synonym, because it introduces a more ambitious and holistic framework. It challenges architects and designers to rethink how buildings and spaces can become integrated part of ecological and social regeneration, rather than just less harmful versions of traditional development. It also requires a deeper ethical responsibility to design with the understanding that our built environments are not separate from nature but are vital components of a larger living system.

Through a comprehensive literature review, this research presents a framework that unfolds the complexity and embedded knowledge within regenerative thinking, providing a broad meta-framing of the topic and synthesising insights from diverse fields, including ecological science and design theory. By examining the foundational theories and evolving discourses surrounding regenerative practices, the research identifies critical values, key themes and principles that distinguish regenerative architecture from more conventional sustainable approaches.

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Session 2

Session 2:

Poster presentations

Thursday 7th of November
14.20-15.35 EET
Otaniementie 14, lecture room Q201

Chair

Elif Öztekin

Participants

Iris Andersson:

The Anatomy of Safe Space: From Conceptual Frameworks to Understanding the Role of Architecture

Sini Saarimaa & Marianna Kotilainen:

Examining the Transformation of the Real Estate and Construction Sector: Field of Architecture Responding to New Challenges

Allana Dorneles:

Neuroarchitecture and Well-Being: Innovative Strategies for Humanised Hospital Environments

Annika Dixon-Reusz:

Bloomen Centre for Textiles and Story Telling

Peng Qi, Jonathon Taylor, Raul Castano De la Rosa & Sofie Pelsmakers:

Indoor temperature forecasting for overheating mitigation: A systematic literature review

Markus Hudert:

LapLam: Multi-layered timber panels made of wood production waste

Malin Moisio & Satu Huuhka:

Renovate or replace? Perspectives on carbon footprint

Matti Lakkala, Kari Kanninen & Janne Pihlajaniemi:

Differences between traditional and industrial operating models of construction from the viewpoint of architectural design process: A focus on wooden apartment buildings utilizing volumetric element system

Nuria Casais-Pérez, Ferran Grau Valldosera & Francesc Xavier Roig-Munar:

Practices of Maintenance and Repair at the Mediterranean Coastline. Salou, Adapting a Coastal Touristic Settlement

Elina Siren, Juho Rajaniemi & Jonathon Taylor:

Analysis of Nordic urban biodiversity strategies from the viewpoint of urban planning

Niko Kotkavuo:

Mapping concrete component factories for assessing reuse potential in the building stock

The Anatomy of Safe Space: From Conceptual Frameworks to Understanding the Role of Architecture

Iris Andersson
Aalto University

Keywords: safe space, ontological security, the culture of fear, aesthetics of care, ethnography, Helsinki Central Station

ABSTRACT

Safe space is often perceived as a social concept separate from architecture. I argue that this is not the case. Architecture's fundamental function is to provide shelter.

The term safe space, which has its roots in the women's movement, has expanded to include "separatist" safe spaces in segregated communities, "inclusive" environments that emphasise equality, and safe spaces in which non-human objects are central (Noterman and Rosenfeld, 2014).

Alongside objects, architecture connects bodies and transforms environments. We can establish reciprocal interrelationships with the built environment. Our caring attitude and action regarding the material world are reciprocated by the feeling of ontological security (Groves, 2014; see also Saito, 2022). Ontological security refers to the sense of order and continuity in an individual's experience (Giddens, 2015 (1990)), and the metaphor of safe space reflects a need for it.

With a holistic and caring approach, safe spaces can be seen as an atmosphere (see Böhme, 1993) that is human-made and "has to be lived" (Lehtovuori, 2012, p. 81). Safe space is an important place to negotiate diversity, and architecture could be more active in this discourse. Alongside the culture of fear (Furedi, 2006), there could be a stronger culture of care.

The poster presentation, under the theme of the roles of architecture, examines safety through a multidisciplinary lens, employing a phenomenological framework and ethnographic methods. The Helsinki Central Station is the first case study, and the poster visualises the outcomes of a survey on experiences of safety and unsafety at the station. The stations of Helsinki and Athens are compared through the researcher's field notes – sketches and photographs. The research questions investigate the rhythm of safety and fear, and the tangible and intangible elements that shape safe space. A crucial objective is to demonstrate safe space's relevance to architecture and urban planning.

Böhme, G. (1993) 'Atmosphere as the Fundamental Concept of a New Aesthetics', Thesis Eleven. Translated by D. Roberts, 36, pp. 113–126.

Furedi, F. (2006) Culture of fear revisited: risk-taking and the morality of low expectation. 4th ed. London; New York: Continuum.

Giddens, A. (2015) The consequences of modernity. Repr. Cambridge: Polity Pr.

Groves, C. (2014) Care, Uncertainty and Intergenerational Ethics. Basingstoke: Palgrave Macmillan.

Lehtovuori, P. (2012) 'Towards Experiential Urbanism', Critical Sociology, 38(1), pp. 71–87. Available at: <https://doi.org/10.1177/0896920511407222>.

Noterman, E. and Rosenfeld, H. (2014) 'Safe Space: Towards a Reconceptualization', Antipode, 46, pp. 1135–1159.

Saito, Y. (2022) Aesthetics of Care - Practice in everyday life. London: Bloomsbury Academic.

Examining the Transformation of the Real Estate and Construction Sector: Field of Architecture Responding to New Challenges

Sini Saarimaa and Marianna Kotilainen
Building Information Foundation

Keywords: real estate and construction sector, architecture, emerging challenges, expertise development, delphi study, interview study, Multi-Level Perspective (MLP)

ABSTRACT

The real estate and construction sector is currently undergoing unprecedented change. Despite this, the industry is slow to react and conservative in its practices. The prevailing economic situation adds further challenges, such as the need to respond to the energy transition, promote a circular economy, and prepare for climate change and geopolitical tensions.

This study aims to answer the primary research question: How should the field of architecture (in Finland) respond to the current and emerging issues and changes in the built environment to support a holistic green transition in society? To address this, the study explores several sub-questions, including: Which practices in the field need to be modified, and how can the field foster more effective cross-sectoral collaboration to address the emerging challenges? What new expertise is needed in the field, and which areas should be the focus of future development?

To provide a background for these questions, a comprehensive perspective on the emerging issues in the built environment is developed based on extensive data, with a specific focus on the Finnish context. The research is based on a comprehensive literature review and a three-stage argumentative Delphi study, which gathers

the perspectives of 160 real estate and construction sector experts in Finland. These are enriched with twenty-five (25) semi-structured interviews with Finnish experts from various fields in the real estate and construction sector, focusing on topics relevant to the field of architecture.

The rich dataset creates a funnel: at the literature level, it considers the drivers and challenges of the real estate and construction sector globally, at the Delphi study level it focuses on Finland's sector, and through expert interviews, it delves into the role of architecture in responding to the emerging challenges. The analysis uses Multi-Level Perspective (MLP) framework to enhance our understanding of regenerative futures in the real estate and construction sector and to provide insights into the developmental needs of the architecture field in creating holistically sustainable built environments.

Neuroarchitecture and Well-Being: Innovative Strategies for Humanised Hospital Environments

Allana Dorneles

University Of Beira Interior (UBI), Covilhã.

Keywords: neuroarchitecture, well-being, hospital environments, humanised spaces, participatory design

ABSTRACT

This study investigates neuroarchitecture and its role in enhancing patient well-being in hospital environments, focusing on developing innovative, humanised design solutions that promote recovery and comfort. Through a comparative analysis of the Sanatorium of Paimio, designed by Alvar Aalto in Finland, and Maggie's Lanarkshire at Monklands Hospital in Airdrie, the research explores how these projects create therapeutic environments. A literature review identifies key concepts of neuroarchitecture and its impact on well-being in healthcare spaces, with a spatial analysis assessing the influence of design elements such as lighting, colours, textures, ventilation, and access to nature on user experience. Focusing on the atmosphere of spaces and their effects on patient's mental and physical health, the study highlights nine essential elements contributing to humanised hospital environments. The results demonstrate that despite historical and geographical differences, both case studies illustrate how architectural design can significantly influence patient well-being. The findings underscore the importance of neuroarchitecture in creating therapeutic, flexible, and functional spaces that support recovery and well-being in healthcare contexts.

Bloomen Centre for Textiles and Story Telling

Annika Dixon-Reusz
University of British Columbia

Keywords: real estate and construction sector, architecture, emerging challenges, expertise development, delphi study, interview study, Multi-Level Perspective (MLP)

ABSTRACT

"Bloomen..." is a proposal for a community center for gathering and participation in circular textile systems. The project is a reflection on observations from different planting books, workshops in natural dyeing and building precedents that bring people together through the making and working of materials. The research is analyzed through the goals of comparative methods to understanding elements of community engagement.

Following the planting seasons, workshops and classes are held surrounding, seed planting, dye and pigment harvesting, weaving, and producing fabrics with the addition of a library and amphitheater space for conversations surrounding fibers from soil to soil. Proposed as a conceptual project, critical of the increasing amount of textile waste, demonstrating the role of architecture in creating a place or circular systems, embracing the landscape of the site. The architecture works with the conditions around the site to create a building that grows pigments. Further fostering a new dynamic experience between buildings, people, plants, and materials through the knowledge exchange of textiles, where they come from, and how they are made. Mobilizing a wide range of speculative questions around material practices and their relation to social and climate conditions. In response, to the prompt: "Multi-scalar and systemic

perspectives..." affording a place, and space for people to learn about growing locally and how organics become cloth, a companion, a material, an object of every day. The building acts as a catalyst in providing the place, to co-create an understanding of regeneration. The concept is an opportunity to further develop the capacity to host conversations through textiles about climate change, social dynamics, and landscape-building relations. The intended methodology is to create an outcome that, in the built environment, demonstrates the opportunity for architecture to create places for circular systems to exist.

As a concept and design, the architectural proposition "Bloomen..." was created as a student project at the University of British Columbia, part of the class Architecture Design Studio: Poetics of Home. The project was generated on the ancestral and unceded lands and territories of the Coast Salish peoples of the Musqueam, Squamish, and Tsleil-Waututh Nations.

Indoor temperature forecasting for overheating mitigation: A systematic literature review

Peng Qi, Jonathon Taylor, Raul Castano De la Rosa & Sofie Pelsmakers
Tampere University

Keywords: building overheating, forecast, time series, systematic literature review

ABSTRACT

Climate change is increasing building overheating, and this is increasingly recognised as a major future health and sustainability challenge. Overheating significantly impacts occupant's comfort and health and may increase summertime energy consumption due to the use of active cooling systems. Forecasting of building overheating can help mitigate this risk, warning residents about future high temperatures and potentially linking, through smart devices, to active and passive cooling systems or combinations therein. Time series models provide a powerful tool, forecasting indoor temperatures using historical indoor and outdoor temperatures and forecast outdoor temperatures rather than complex building details. However, there are a range of different approaches and methods for indoor temperature forecasts. This study, through a systematic literature review, aims to synthesize the existing research on indoor temperature forecast models based on time series models and explore their potential in building overheating forecasting. This review follows a structured methodological framework to select peer-reviewed articles, extract data, and compare various time series forecast models from regression analysis to machine learning algorithms. The expected outcomes of this study include determining the performance, generalisability, and limitations of various current methods, proposing areas for

future research, and discussing how indoor temperature forecasting can help improve occupant comfort and health, energy efficiency, and overall environmental sustainability in real life.

LapLam: Multi-layered timber panels made of wood production waste

Markus Hudert
Aarhus University

Keywords: circular construction, innovative timber structures, upcycling wood production waste

ABSTRACT

With its current role as one of the largest producers of CO₂ and waste, and the EU's goal of becoming a climate neutral economy and society by 2050, the building construction sector is under a high innovation and transformation pressure. By implementing principles of Circular Economy (CE), for example by activating wood production waste as a material resource, the amount of waste and CO₂ produced as part of building construction could be reduced. Activating production waste is also relevant when timber is used as construction material, as wood is a renewable but not an inexhaustible resource. This is all the more important when taking into account the increasing use of timber and Engineered Wood Products (EWPs) in building construction, which entails an increasing amount of production waste.

In this context, this research investigates the potential of upcycling plate shaped wood production waste such as off-cuts or cut-outs into larger building components, such as wall elements or floor slabs. More specifically, it studies the potential of applying principles inherent to lap-joints, which typically are used in combination with linear timber elements in order to achieve longer components. This is motivated by the assumption that while using the same stock of waste wood elements, applying such principles with gaps of varying sizes could enable the assembly of differently sized components.

Furthermore, the work investigates how such larger components could be achieved by means of mechanical fasteners, such as wooden dowels, and/or adhesives, and how this would impact the structural capacity of the upcycled components. The size of the overlapping areas could be affected, respectively constrained, by potential damages or knots. In the case of dowel joints, regulations have to be followed that define minimum distances between dowels as well as between dowels and the edges of a wooden element.

When working with a given stock, increasing the overall size of the resulting component reduces the size of the areas in which the elements overlap. Due to the required positioning distance between dowels, it might not be possible to place a sufficient number of dowels for rotationally stiff connections. Here, the additional use of adhesives might become necessary.

The full paper will discuss how digital tools could facilitate the production of panels made from wood production waste. It will also provide a state-of-the-art overview of recent developments in multi-layered timber panels. In addition to that, it will provide an overview of different strategies of how to handle gaps, one of which could be to use them for installations, and another one to fill them with insulating material. Potentially, Finite Element Analysis (FEA) or basic calculation methods could be employed to provide a preliminary structural assessment.

Renovate or replace? Perspectives on carbon footprint

Malin Moisio & Satu Huuhka
Tampere University

Keywords: *LCA, CO2, renovation, replacement, demolition*

ABSTRACT

Is it more environmentally friendly to renovate an existing building or replace it with a new one? What kind of CO2 emissions will the energy consumption of buildings cause in the future compared to the past? These questions are crucial for combating climate change and promoting sustainable development in the built environment.

The method uses Life Cycle Assessment (LCA) to evaluate buildings. A new framework, the 'Consequential Replacement Framework' (CRF), presented by Huuhka et al. (2023), is employed to compare replacement and renovation. This framework helps predict and analyse how various decisions will affect the future carbon footprint. In this study, future heating and cooling demand is assessed using an advanced method that employs degree days to model temperature changes, allowing for the predictions of future Greenhouse Gas (GHG) emissions (Huuhka et al., 2024).

The case study uses a 1950s Finnish school building, as examined in Moisio et al. (2024), comparing the GHG emissions of various refurbishment alternatives with the demolition and construction of a new school building of various materials.

The results show that, in Finland, refurbishing an existing building is generally a climate-friendlier option than demolishing it and constructing a new one. Although new buildings might offer better energy efficiency, the embodied emissions associated with their construction cause a significant carbon spike that negates the

benefits of energy efficiency for decades. A warming climate and lower emissions from energy production will reduce the impact of the weaker energy efficiency of old buildings in the future.

Life cycle assessment guides towards more sustainable decisions that support environmentally friendly construction practices, building preservation, and contribute to climate change mitigation.

Huuhka, S., Moisio, M., Salmio, E., Köliö, A., & Lahdensivu, J. (2023). Renovate or replace? Consequential replacement LCA framework for buildings. *Buildings & Cities*, 4(1). <https://doi.org/10.5334/bc.309>

Huuhka, S., Moisio, M., & Arnould, M. (2024). Evaluating past and future building operational emissions: Improved method. *Buildings & Cities*, 5(1). <https://doi.org/10.5334/bc.419>

Moisio, M., Huuhka, S., Salmio, E., Kaasalainen, T., & Lahdensivu, J. (2024). Climate change mitigation potential in building preservation: Comparing the CO2 performance of four refurbishment alternatives to new construction. *Journal of Architectural Conservation*, 1–20. <https://doi.org/10.1080/13556207.2024.2357005>

Differences between traditional and industrial operating models of construction from the viewpoint of architectural design process: A focus on wooden apartment buildings utilizing volumetric element system

Matti Lakkala, Kari Kanninen & Janne Pihlajaniemi
University of Oulu

Keywords: architectural design process, industrialization of the construction sector, product configurator, wooden mass housing

ABSTRACT

The construction industry is currently undergoing a significant transformation, which can be described as the industrialization of the construction sector. One of the biggest problems in construction is the project-specific approach, where almost all buildings are ordered, designed, and built as one-off productions, essentially as continuous prototype production. When unique plans are made for each project using unique products and materials, it becomes practically impossible to take advantage of the economies of scale that repetition can offer.

An industrial operating model results in higher quality, better-performing, and more cost-effective products delivered more quickly to customers, thanks to continuous improvement. In construction done according to the industrial operating model, project-specific design means primarily configuring a pre-developed product according to customer needs rather than redesigning it from scratch. The product is largely pre-fabricated in factories and delivered as modules to be installed at the construction site. Wooden apartment buildings utilizing volumetric element

system are one potential product for this type of development.

For architects to address the challenges brought about by the significant transformation of the construction industry due to its industrialization, it is important to understand how the architectural design process differs between construction based on traditional and industrial operating models. How the architectural design should be conducted when configuring a pre-developed product or when developing a product intended as configurable?

This research aims to clarify these issues by reviewing current literature and through interviews with architects who have designed buildings using a predefined construction concept or who have been involved in developing such a concept. Knowledge of the role of architectural design, its challenges and possibilities in relation to the industrialization of the construction sector is expected as the result.

**Practices of Maintenance and Repair
at the Mediterranean Coastline.
Salou, Adapting a Coastal Touristic
Settlement**

Nuria Casais-Pérez
Aarhus School of Architecture

Ferran Grau Valldosera
Universitat Rovira i Virgili

Francesc Xavier Roig-Munar
Independent environmental consultant

*Keywords: coastal urbanisation, seaside
promenade, tourism architecture, climate
change adaptation*

ABSTRACT

Climate change requires understanding urban and natural contexts as constant processes in evolution. This framework determines an observation of places from an evolutionary rather than static conception. Coasts are dynamic systems where physical, geomorphological, geological, environmental, and urban-social transformations occur, a meeting point between sea, land and atmospheric conditions. This reality calls for understanding any intervention in the coastal space from a transdisciplinary analysis and decision-making caring for and decoding its dynamic nature. However, past interventions in this fragile area appear with an attitude of indifference towards nature's processes and an ambition for human control. Today, the consequences of these traditions are revealed dramatically.

Rural coastal towns' evolution into touristic settlements implied the rigidization of permeable agricultural land generating an entropic and fragmented territory due to the infrastructure at the service of mass tourism. The disappearance of dune systems, maritime pine forests, and the traditional ordering of agricultural plots eliminated the original drainage systems

and altered the water cycle. Furthermore, second-home developments and their accessibility infrastructure blocked the continuity of water paths and obstructed the land-sea transit of sediments. Additionally, the seaside promenade becomes a critical built border for the natural performance of the dynamic coastal system and its adaptation to climate changes.

This paper focuses on a fragment of the west Mediterranean coast where transformations from 1950 until today reveal intense coast alterations and their climatic repercussions. It addresses the current state and functioning of Salou's urban coastline, a city in a vulnerable coastal system with a seaside promenade exposed to intense tourist pressure. Salou presents different artificial coastal milieus, none in their natural state. The paper evidences present problems due to past destructive actions on the coastline, and even the current short-term and rigid solutions. It exposes a selection of nature-based interventions to implement the coastal landscape performance.

Analysis of Nordic urban biodiversity strategies from the viewpoint of urban planning

Elina Siren, Juho Rajaniemi & Jonathon Taylor
Tampere University

Keywords: biodiversity, policy, urban planning

ABSTRACT

Biodiversity is important for ecosystem and human health, yet it is degrading rapidly worldwide. As a response, biodiversity loss is addressed in international policies such as the Kunming-Montreal Global Biodiversity Framework and the EU Biodiversity Strategy for 2030. In these policies and in the scientific discourse it is now recognized that also urban areas have a role to play in protecting and enhancing biodiversity by providing both remnant and novel habitats as well as connecting urbanites with nature.

On a local level, cities around the world, including some Nordic cities, have in recent years created urban biodiversity strategies. Such strategies aim to increase the integration of biodiversity issues into everyday practice across different municipal departments. They typically include a selection of practical biodiversity-friendly actions and accompanying indicators to follow progress. As such, they provide a snapshot of the state-of-the-art in biodiversity-friendly urban planning policy.

The objective of the research is to find out what kinds of actions, indicators and tools are currently promoted in Nordic urban planning practice to improve biodiversity. The actions will be further analysed in terms of the target planning phase and land-use typology. The method of investigation is qualitative plan content analysis of biodiversity strategies in three most populous cities of Finland, Denmark,

Norway and Sweden. The expected outcome of this research is to gain knowledge about the types of actions cities are taking specifically from the viewpoint of urban planning, possible gaps in relation to current scientific knowledge about biodiversity, and the similarities and differences between the Nordic countries.

Mapping concrete component factories for assessing reuse potential in the building stock

Niko Kotkavuo
Tampere University

Keywords: precast concrete reuse, history of concrete industry, GIS

ABSTRACT

For assessing the potential for precast concrete component reuse existing knowledge on the Finnish building stock is limited. A large portion of the building stock has been built using precast concrete components (e.g. Mäkiö et al., 1994, Huuhka et al., 2015), but the amount of precast components in the building stock is hard to assess due to limited knowledge on the degree of prefabrication outside of Helsinki. The value of the relevant parameter in the Finnish registry of buildings and apartments (RHR) is limited to either prefabricated or in-situ construction, which is lacking as there are a large number buildings whose frames are partially composed of precast components and among partially precast buildings various mixes of precast and in-situ techniques have been used.

A useful proxy might be provided by studying the market availability of precast concrete components around Finland throughout the years. This can be done using archival research methodology and mining and combining data from various sources, most importantly *Betoniteollisuuden käsikirja*, an annual publication on Finnish concrete industry published between 1966 and 1992 and the so called general forms of industrial statistics collected by the statistics bureau of Finland.

Locations of factories, their times of operation and products manufactured will be collected in a database and used to create maps of availability in a geographic

information software. Besides the potential use of the availability maps as a proxy for degree of prefabrication in the building stock, the database of factories and their products can be useful in identifying the factories of origin for disassembled concrete components to be reused and providing data that could be used in calculating the embedded carbon of the original production of those components.

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Session 3

Session 3:

Paper presentations

Proactive design strategies, novel methodologies and methods of design and research

Thursday 7th of November

16.00-17.00 EET

Otaniementie 14, lecture room Q201

Chair

Christine Mady

Participants

Sichen Dong, Markus Matthias Hudert & Toni Kotnik:

Novel Tectonics of Wooden Roof Structure

Julia Kilian, Laszlo Mangliar, Giuseppe D'Arenzo, Leonardo Belladelli & Markus Hudert:

Rethinking timber joinery: Design and testing of a mono-material timber joint for multi-story buildings

Aislinn McCarthy & Evelyn Ågren:

The Salvaged Mind: An exploration into inverted waste streams and new material potentials

Fereshteh Khojastehmehr & Günther H. Filz:

Redesigning the Weald and Downland Gridshell using bent and twisted spatial structures

Novel Tectonics of Wooden Roof Structure

Sichen Dong
Aalto University

Markus Matthias Hudert
Aarhus University

Toni Kotnik
Aalto University

Keywords: novel tectonics, technological change, engineered wood, digital fabrication, structural organization, roof expression

ABSTRACT

The article focuses on wooden roof structure as the index of tectonic development. Wood, as the oldest building material, continues to shape modern construction, which wooden roof serves as the fundamental element. Technological advancements and cultural change resulted in a constant evolution of tectonic expression. In contrast to the classical wooden roof tectonics of traditional construction with linear element, two major technological developments—engineered timber and digitalization—has transformed modern wooden roof construction with new artistic expression. The paper describes in particular the impact of GLT, CLT and LVL on wooden construction with focus on the tectonics of roof structures.

Rethinking timber joinery: Design and testing of a mono-material timber joint for multi-story building

Julia Kilian
Politecnico Di Milano

Laszlo Mangliar
Aarhus University

Giuseppe D'Arenzo
Aarhus University

Leonardo Belladelli
Politecnico Di Milano

Markus Hudert
Aarhus University

Keywords: circular construction, reversible timber joints, timber-only joints, modular construction systems, tectonics

ABSTRACT

In an attempt to promote a higher degree of mono-materiality, modularity, and circularity in building construction, this research takes inspiration from the traditional timber joinery methods and seeks to investigate the applicability of timber-only joints in contemporary building structures.

The research examines how these traditional timber connections, known for their inherent detachable character, can enhance the adaptability, reusability, and flexibility in modern buildings. Furthermore, the study on mono-material joinery seeks to revive the tangible tectonic qualities present in the wooden structures of the past.

Considering the technical advancements in the woodworking industry and the good workability of timber as a material, the fabrication of timber components can today be partially or fully automated, which significantly eases the fabrication processes, even if intricate designs with more complex geometries are involved.

The research employs digital design and fabrication methods in developing a mono-material and potentially detachable joint, integral to a modular skeleton system that is comparable to a three-dimensional puzzle.

On the model scale, the proposed modular construction system demonstrates the ability to be disassembled, reconfigured, scaled up or down, reused, and recycled. The experimental building presented in the paper acts as a confrontation of the joint design, testing its structural integrity, and its impact on experiencing the architectural space.

As part of this paper, we present and discuss the design and fabrication of a prototypical timber joint comprised of glulam, plywood and wooden dowels. Moreover, regarding the structural properties of this joint, the paper presents preliminary results derived from experimental testing.

The Salvaged Mind: An exploration into inverted waste streams and new material potentials

Aislinn McCarthy & Evelyn Ågren
Aarhus School of Architecture

Keywords: architectural reuse, construction waste, sustainability, material value, salvage

ABSTRACT

Current architectural practice is materially intensive, contributing to mass production of construction waste. In order to drastically shift the way waste is perceived, architecture needs to reframe existing design methodologies and reevaluate the materials before they are defined as worthless. This research explores materials defining design as a means of showcasing new potentials in construction scraps. A pragmatic approach, born of the materials-at-hand, disrupts current discourse that defines materials as secondary to the concept, repositioning the value of salvage. A 1:1 built prototype is paired with theoretical analysis in this paper, informing the research with practical testing of methodologies. Through the design process, the material sourcing and processing challenge current ideals of aesthetics and influence tectonic decisions. The paper studies interdisciplinary inquiries alongside practical applications, seeking to exchange the positioning of these materials from undesirable to central within architectural practice, to shift perceptions of remains and acknowledge their potential.

Redesigning the Weald and Downland Gridshell using bent and twisted spatial structures

Fereshteh Khojastehmehr & Günther H. Filz
Universität Innsbruck

Keywords: *regeneration, elastic gridshell, twist, geometrical pattern, multi-objective design*

ABSTRACT

Regenerative design emphasizes reforming or revitalizing instead of depletion [1]. In architecture, the importance of this approach lies in learning from the past and utilizing new technologies and developments to improve existing designs. Flexible grid structures are widely acknowledged for their efficiency, attributed to their unique form, excellent structural capabilities, and minimal use of materials [2]. Additionally, their reduced material consumption and elastic deformation, which minimizes the need for fabrication methods like CNC milling, align with sustainability goals, making them environmentally friendly options for construction and engineering projects. Elastic gridshells are typically formed by applying elastic bending to the profiles' weaker axis. Alongside bending, elastic twist also holds significance in elastic gridshells to increase the design freedom [3]. Regenerating elastic gridshells by combining elastic bending with elastic twisting revolutionizes these structures by changing the surface curvature, transparency, and structural performance. The pattern type in elastic gridshells is usually geodesic, meaning that the profile is tangential to the surface, or asymptotic where the profiles are perpendicular to the surface. By introducing twist to the longitudinal axis of the profile, we can smoothly transition between these two pattern types. This enables possibilities for

achieving multiple design objectives, such as controlling daylight and views or varying the structural performance in different parts of the pattern. The Weald and Downland Gridshell is a well-known elastic gridshell with a geodesic pattern. To showcase our method, we redesign this structure using a combined geodesic-asymptotic pattern and compare the resulting structure with the original from both architectural and structural perspectives. The results open new doors for innovative applications of combined geodesic-asymptotic flexible grid structures as environmentally friendly design options, offering various design possibilities.

[1] P. Mang and B. Reed, "Regenerative Development and Design," in *Sustainable Built Environments*, V. Loftness, Ed., New York, NY: Springer US, 2020, pp. 115–141.

[2] J. Lienhard, "Bending-Active Structures: Form-finding strategies using elastic deformation in static and kinetic systems and the structural potentials therein," PhD Dissertation, ITKE, University of Stuttgart, Stuttgart, Germany, 2014.

[3] F. Khojastehmehr and G. H. Filz, "Expanding the design freedom of spatial patterns by combined elastic bending and twisting: a parametric study," in *Proceedings of the IASS Annual 2023*, pp. 1–12.

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Session 4

Session 4:

Paper presentations

Proactive design strategies, novel methodologies and methods of design and research

Thursday 7th of November

17.10-18.10 EET

Otaniementie 14, lecture room Q201

Chair

Christine Mady

Participants

Philip Graham:

'Rightsize': a housing design game for spatial and energy sufficiency

Claudia Auer:

Aesthetic Layers in an Architecture Competition for a New Museum - a Reflection in Practice

Léna Jegard:

Finnish glazed balconies: Investigating the role of resident's behaviour in overheating risk mitigation.

Markus Hudert and Sladjana Markovic:

Revisiting Digital Literacy: Deep Learning and Generative AI in AEC education

'Rightsize': a housing design game for spatial and energy sufficiency

Philip Graham
University of Cambridge

Keywords: adaptability, adjustable housing, space standards, gaming, sufficiency

ABSTRACT

A chronic misallocation of housing space in the UK has serious consequences for climate and wellbeing. This is because households with excess space make overcrowding more prevalent, thereby increasing pressure to build new housing and its associated energy, carbon and material throughputs. Instead of addressing this problem by building yet more standard, inflexible housing, one sufficiency-oriented alternative would be to replace this excess with more adjustable housing. Continuously adjustable housing would allow people to respond to changes in their housing needs by merging an apartment they have the right to buy, with adjacent modules of living space that they may only rent. Conceptually, this approach could help households with additional care needs to rent the space they need, when they need it, but without giving up the security and investment privileges of home ownership. Importantly, such arrangements would also introduce an incentive to downsize, since recurring rental liabilities tend to discourage households from holding more space than they need. A small number of architects have tackled this problem, though typically in entirely rented, centrally managed schemes. Nevertheless, such precedents can be adapted for a part-owned, part-rented situation and analysed using a novel, design game method. In this way, residents' strategic behaviour can be simulated in a tabletop game to produce qualitative (and potentially quantitative) data on floor plan efficacy, under different tenure, spatial and life course scenarios.

Initial experiments suggest the design game method could encourage a shared understanding of housing sufficiency, amongst users, lenders, investors and designers alike.

Aesthetic Layers in an Architecture Competition for a New Museum - a Reflection in Practice.

Claudia Auer
Aalto University

Keywords: museum design, architectural competition, aesthetic values, urban atmosphere, landmark, place sensitivity, culture and the city

ABSTRACT

Qualitative assessment of architectural solutions is the focus of architectural competitions. High quality of the overall architectural approach and adaptation to the cityscape and urban structure are primary evaluation criteria. But even for professionals these concepts may have a mystic and intangible meaning.

This paper is an attempt to make concepts of aesthetic values and qualitative assessment of architecture tangible, and understandable. It is a discussion of new phenomena related to museum design in the context of cultural heritage. It is written as a reflection-in-practice parallel to architecture competition jury work.

This reflection has provided new understanding of how museum service design influences the aesthetics of museum buildings and the interplay of the museum building with the urban environment. It has also raised questions of what kind of landmark can a new museum be while neighboring and relating to a significant cultural heritage landmark. And it has given answers to how a museum can enhance the cultural appeal of a city.

Issues of architectural landmarks are discussed through the concepts of urban atmosphere, cultural heritage and placemaking by architecture. The museum building is scrutinized as a new open, interactive, and inclusive building type and

transformations in aesthetic values related to public building design in times of change are indicated.

As an outcome in this study, aesthetic layers are defined and discussed as qualitative markers of architectural solutions. These layers make the evaluation of design solutions more tangible, more understandable, and more sustainable and support a qualitative discussion of architecture in a transdisciplinary field. They also reintegrate a new aesthetic discussion into the architecture discourse of today.

**Finnish glazed balconies:
Investigating the role of resident's
behaviour in overheating risk
mitigation**

Léna Jegard
Tampere University

*Keywords: balcony, glazing, housing,
wellbeing, overheating, Finland*

conditions, at different times and captured from street level. Preliminary results provide key insights for the design of effective passive strategies for overheating risk mitigation in Finnish glazed balconies.

ABSTRACT

In the face of climate change and growing need of more flexible living environments, the design qualities of balconies in housing are essential for fostering environmental interaction and enhancing the wellbeing of residents. Existing literature shows that Finnish glazed balconies are prone to overheating specifically in the summer months. Overheating has multiple negative impacts on residents' wellbeing related to thermal discomfort and the higher energy demand for cooling, which also has environmental implications. Despite the potential risk for overheating, existing studies suggest that passive techniques, such as shading and ventilation, can effectively mitigate the risk of overheating, provided they are supported by residents' adaptive behaviour. While previous studies suggest an inadequate use of balconies as main factors increasing overheating risk and overall compromising usability, how to design balconies to promote an effective use of passive strategies, e.g. glazing opening for ventilation and curtains, is still understudied. This study, through in-depth empirical case study in Finland, aims to contribute to a better understanding about the potential of resident's behaviour in overheating risk mitigation in Finnish glazed balconies. Observations on the opening and closing of glazing, the introduction of shading objects, and their implementation were conducted during spring and summer months in correlation with different weather

Revisiting Digital Literacy: Deep Learning and Generative AI in AEC education

Markus Hudert
Aarhus University

Sladjana Markovic
University of Belgrade

Keywords: education in AEC, digital Literacy, deep Learning, generative AI, sustainable design

ABSTRACT

"Digital literacy is the ability to understand information and—more important—to evaluate and integrate information in multiple formats that the computer can deliver." – Paul Gilster, 1997

The concept of Digital Literacy emerged in response to the internet and its groundbreaking impact. It is foreseeable that Generative AI tools will have a similarly profound impact on the AEC sector. Some of today's AEC students have already recognized the potential of these tools. They use Chat GPT for solving programming tasks and for completing written assignments, and employ DALL-E, Midjourney, or Stable Diffusion to generate and test initial ideas for design projects. As educators, it is our responsibility to introduce all students to how these rapidly evolving tools work. Moreover, we need to enable them to use these tools in a responsible manner, and with a critical attitude. For example, the images produced by above-mentioned tools are aesthetically fascinating, but they are not reflecting the physical reality and requirements of buildings, including construction constraints, joints, or structural soundness. While pointing this out as a flaw, we can at the same time refer to very recent and still evolving tools such as Point-E, which produces 3D point clouds from complex prompts, and which might

remedy this shortcoming. Moreover, other Deep Learning based tools start to appear that enable the structural design space exploration of bridges, for example.

This paper first provides an overview of current and emerging Generative AI tools, and reflections on how to use them in AEC education. Second, the paper argues that students should be guided towards an updated form of Digital Literacy, so that they can benefit from the advantages of Generative AI, while at the same time maintaining a critical and responsible attitude towards it.

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Session 5

Session 5:

Paper presentations

Collaborative and participatory practices, stakeholder networks, power dynamics in architectural decision-making processes

Friday 8th of November

09.30-10.30 EET

Otaniementie 14, lecture room Q201

Chair

Hossam Hewidy

Participants

Tina Vestermann Olsen & Hanna Mattila:

Social justice and temporary uses in the regeneration of Østre Havn and Karolinelund in Aalborg, Denmark

Daniel Movilla Vega:

Dwell Well Your Whole Life: Insights from Cross-Sector Collaboration in Swedish Eldercare Housing.*

Teemu Jama:

Inverting urban planning system to avoid nature-cultural dualism

Tommy Kaj Lindgren:

The City is a Factory. The City as a Regenerative Assemblage. Case Signe.

Democracy and experimental co-creation: mixed motives in the regeneration of Østre Havn and Karolinelund in Aalborg

Tina Vestermann Olsen & Hanna Mattila
Aalborg University

Keywords: urban regeneration, collaborative planning, co-creation, democracy, temporary uses

ABSTRACT

In this paper, we discuss two interrelated cases of urban regeneration in Aalborg, Denmark: Østre Havn, a former no-go, industrial/harbour zone, and Karolinelund, an abandoned amusement park. The development of Østre Havn into high-end residential area and Karolinelund into a public park has been gradual, including temporary uses and experimental practices driven by collaborations spanning municipality, developers, planners, and local activists. For the municipality of Aalborg, these practices had a dual purpose: they were meant to contribute, first, to local, democratic processes of identity-formation, and second, to economic growth and emergence of entrepreneurial activities. This paper investigates the tensions or even contradictions between these two objectives.

Our paper is based on empirical studies and planning-theoretical research. The planning-theoretical part engages with collaborative planning, revisiting two philosophical traditions that have formed its theoretical basis: critical theory and pragmatism, especially John Dewey's pragmatism. While Dewey's pragmatism views co-creative practices as pivotal for communities' identity-building, critical theory presents a more pessimistic view, according to which current societal conditions hardly leave any other functions for creative activities than the one of serving consumerism and mass

manipulation. This contradicts the Deweyan idea of creativity that provides the basis for progressive political development.

We use these two contradicting theoretical strands to analyze interviews with planners, developers and activists, who were involved in the experimental regeneration processes in Østre Havn and Karolinelund. In addition, we carry out document analysis. We ask whether the municipality – as it provided the platforms and formats for the co-creation – succeeded in balancing these goals, and whether this kind of balancing is even a desirable or possible goal. The purpose of the paper is both to assess the two regeneration processes and to test the analytical power of pragmatist and critical theories in the face of empirical material.

Dwell Well Your Whole Life*: Insights from Cross-Sector Collaboration in Swedish Eldercare Housing.

Daniel Movilla Vega
Umeå University

Keywords: eldercare housing, cross-sectoral collaboration, housing design, Sweden

ABSTRACT

The improvement in housing provision that benefits older individuals is an anticipated result of closer integration between eldercare, planning, and the older residents themselves. In Sweden, spatial planners and social services are linked by the Social Services Act in housing provision for older individuals (SFS, 2001:453), and their collaboration is legally enforced in the Planning and Building Act (SFS, 2010:900). However, a Swedish government report on a new Social Services Act (SOU, 2020) has indicated difficulties in finding effective forms for this collaboration.

This paper investigates the evolution of cross-sectoral collaboration between spatial planners, social services, and senior citizens' representatives in Swedish eldercare housing. It does so by tracing the historical development of the collaboration between these actors in the form-specification process of this housing type in Focken, a neighborhood in Umeå, northern Sweden, known for its tradition as a residence for the city's eldercare. Its purpose is to develop an understanding of how collaborative practices in architectural decision-making processes take place at a municipal level and how they impact the spatial, material, and social dimensions in a specific building type.

Focused on purpose-built eldercare housing designed on the site between 1899 and

2024, the paper delves into the motivations behind the projects, the roles and overlapping interests of the actors involved in the collaboration, and their reflection in architectural design. Drawing on archival materials, architectural drawings, and ethnographic studies, the paper contributes to the scarce body of research on social services' participation in spatial planning, reflects on the integration of this collaboration into municipal practice, and examines the conditions for innovations in eldercare housing within the collaboration.

SFS. (2001:453). Social Services Act. (Unofficial English translation from 2005).

SFS. (2010:900). The Planning and Building Act. Karlskrona: Swedish National Board of Housing, Building and Planning.

SOU. (2008:113). Bo bra hela livet: Ministry of Social Affairs.

SOU. (2020). Hållbar socialtjänst. En ny socialtjänstlag: Ministry of Social Affairs.

* "Dwell well your whole life" is the English translation of the title of the Swedish government report, Bo bra hela livet (SOU, 2008), with proposals aimed at enabling municipalities to provide better housing for elderly people.

Inverting urban planning system to avoid nature-cultural dualism

Teemu Jama
Aalto University

Keywords: nature-culture dualism, urban planning, zoning, design paradigms

ABSTRACT

Land-use planning and its statutory zoning instrument have traditionally been based on a dualistic worldview that separates the built environment from nature. This dichotomy spans from urban design theories from the dawn of the planning profession till the mundane practices of today. The built environment is designed exclusively for humans, while the natural environment serves a hybrid purpose: supporting both human needs (recreation, resource extraction, conservation etc.) and the ecological needs of the environment itself (climate, biodiversity etc.). In the planning practice the former needs are integrated in the urban design while the latter needs are dealt separately through impact assessments. Furthermore, within ecological impact assessments, despite the greater holism, nature is increasingly seen also as an utility for humans as socio-ecological services. This division in decision making material production with semantics used in assessments maintains the traditional dualism in practice. At the same time the need for systemic changes towards less harsh impacts on planetary well-being is ever more evident and recognized from multiple perspectives. In this article I argue that it is the nature-cultural dualism especially in the nomenclature of plan-making that prevents systematic changes towards more sustainable and regenerative practices in urban planning and design. Furthermore, by following the ethos of critical realism in the form of conceptual paper, I explore if it is possible to purge this dualism by applying ecologist Yrjö Haila's

philosophy and concepts for dualism-avoidance[1] on urban plan-making.

[1] Haila Y (2000) Beyond the Nature-Culture Dualism. *Biology & Philosophy* 15(2): 155–175.

The City is a Factory. The City as a Regenerative Assemblage. Case Signe

Tommy Kaj Lindgren
Aalto University

Keywords: assemblage theory, actor-network theory, urban design

ABSTRACT

The city is a factory that produces more city. The heterogeneous actors that make up the assemblage of the city, humans and non-humans, create the conditions for the city to reproduce itself – being the site and result of its reproduction.

This paper argues, that by seeing the city as an assemblage, we can identify the key actors and power-balances in the way(s) in which the city becomes and transforms itself through iterations. With this theoretical framework a holistic analysis of the dynamics of urban development can be made, and possibilities towards shifts from a mere reproductive status-quo towards regenerative models open up.

This premise is here tested with an actor-network theory based reading of the assemblage(s) at work in the case of the "Signe" building project in Helsinki, Finland. The project is a prime example of a constellation of things from regulatory statements and rent prognostications, to real-estate managers, architects and the reinforced concrete of the building frames themselves, that together make up the city-factory. By tracing the networks of actors that have enabled the cyclical narrative of demolition and rebuilding on this central site in the heart of the city, we can see the material and immaterial, social and natural, human and non-human actors at work. The tracing is done in phases, first, through a review of the planning and building documents and all related material,

like contracts and published discourse; second, this tracing is then questioned and tested through insights gained from expert interviews.

This tracing allows us to conclude what the decisive actors and their configurations were in this process of transformation and it allows us to speculate what changes can be proposed for the crafting of new processes of urban change, that instead of the reproduction of extant values, make a regenerative city-assemblage possible.

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Session 6

Session 6:

Paper presentations

Diverse topics

Friday 8th of November

10.40-11.40 EET

Otaniementie 14, lecture room Q201

Chair

Ira Verma

Participants

Katja Maununaho:

Kaupunkitutkimus ja -taide

kaupunkikehityksen agentteina

Luis Miguel Ginja:

The lost Space of Sculpture in Portugal, an

Architectural point of view

Jarre Parkatti:

Bygger urban design på kunskap eller

ideologi?

Qian Zhang:

Evolutionary Game Theory of Station-

City Complexes in China: Collaborative

Design Toward Harmonizing Transport and

Development Resources

Urban research and art interventions in an urban development project

Katja Maununaho
Tampere university

Keywords: urban development, experience-based knowledge, conviviality, urban art

ABSTRACT

"The urban centre of a desirable future" project in Oulu city centre aims to improve the communication between citizen and urban environments through a process that combines research knowledge and artistic interventions in urban space. As part of the project, a group of urban researchers presented their research outputs to a group of artists, after which the artists planned urban artworks using the outputs and perspectives that had inspired them. One of the artworks, Utopedia Oulu was realized in September 2024 in the pedestrian centre of Oulu. Utopedia is a collection of words that do not yet exist, but that are needed to describe the future of Oulu. The words were collected from citizens through an online invitation and at a pop-up space that was open for three days, during which the collected words were also presented in the space and listened on city walking tours.

This paper focuses on the interaction between citizen experiences of the urban space and experience-based knowledge that was tested on several phases during the project. The research outputs that inspired and supported the artists in planning and implementation of the pop-up space originated from a multidisciplinary urban research project that aimed at translating experience-based data into design projections that can be utilized in designing inclusive and convivial urban spaces (Maununaho, Puumala & Luoma-Halkola 2023). The results were presented to the artists, and the researcher acted as a

sparring partner in the planning of the work. The researcher was also present during the execution of the work and collected further observations on encounters and conviviality in the pop-up space. The collected ethnographic observation dataset was then analysed utilizing the theoretical model of the design projections that aim towards non-exclusionary urban places, from the perspectives of the future development of Oulu's city centre.

The lost Space of Sculpture in Portugal, an Architectural point of view

Luis Miguel Ginja

CIAUD.UBI - Universidade da Beira Interior

Keywords: space, sculpture, architecture, project, design

ABSTRACT

The article proposes to explore the relationship between oblivion and memory, seeking to materialize these relationships through sculpture and its contribution to architecture. One of the possible definitions for architecture, or at least one of its demands, is the perpetuation in time of human endeavours. Judith Schalansky (b.1980), in her 2018 book, *An Inventory of Losses*, warns that forgetting is undoubtedly bad; the worse would be to forget nothing since all knowledge is generated by ignoring (Schalansky, 2021, p. 18). The English sculptor Rachael Whiteread (b.1963) will surely be the possible crossroad of how loss can generate the new. The loss of the architectural object, the house as shelter, caused the House to become a sculpture in 1993, and the interior became the exterior. The void becomes its positive and creates the new, the uninhabitable. The skin, the building, is lost, and the space it encloses materializes. This is the point of intersection with the Portuguese sculpture Dorita de Castel-Branco (1936-1996), particularly in one piece, the Santo António of Lisbon. Between Rachael Whiteread and Dorita de Castel-Branco, the association is articulated through scale and essentially through the relationship with the human body. Those opposing them are the limits of space that both try to encapsulate. Through the literature review, we will try to find those limits and understand how both contribute directly to the characterization of the architectural space and the relation of that

space with the body. The productions of these artists have a direct relationship with the city, with the landscape, and how these sculptures define space, as a monument, outside the classical canon of its museum display and transform the city. We will take the menhir as a prehistoric monument, as a starting point to understand the object, not only as a piece but as the first artificial object that defines the landscape. In Francesco Careri's (b.1966) words, Land art tends directly to architecture and landscape, that is, to the menhir as an inanimate object to transform the territory (Careri, 2013, p. 122).

Bygger urban design på kunskap eller ideologi?

Jarre Parkatti
Aalto University

Keywords: ideologi, stadsplanering, urban design, urban design-teori, vetenskaplighet

ABSTRACT

När livsvillkoren förändras drastiskt och världen står inför svåröverskådliga utmaningar är det lägligt att ta fasta på delade grundvärden såsom en ekologiskt hållbar och socialt välfungerande stad. Men hur uppnås målen och hur bestäms stadsbyggets randvillkor? Kan socialt relevant urban design-teori framtvinga ett intellektuellt samförstånd om bestämda slags planeringslösningar som medel och därmed delvis normera arkitektoniskt-kreativt skapande vetenskapligt-rationellt? Hur kan dylika försöks förment ideologiska karaktär avvisas? Åsidosätts de tvärtom av en i själva arkitekturpraktiken uppspårbar självtillräcklig vetenskaplighet? Svansansatsen i denna litteraturbaserade analys förutsätter ett särskiljande av det diskursivt kunskapsbaserade, konstnärliga och politiska i verksamheten, ett klagörande av hur vetenskaplighet och ideologi kan förstås samt att en relativ enighet om övergripande planeringsmål identifieras. Då arkitekturen och urban design-teorin består av olikartade element samt omstridda premisser och rön är det kritiskt att yrkesutövare förmår särskilja det principiellt kontroversiella från jämförelsevis objektiv kunskap och rent faktiskt låter sig vägledas av den senare.

Evolutionary Game Theory of Station-City Complexes in China: Collaborative Design Toward Harmonizing Transport and Development Resources

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Keywords: evolutionary game theory, collaborative practices, MATLAB simulation

ABSTRACT

To address the imbalance between transport and urban development in hub areas from perspectives of multi-stakeholders, this paper constructs an evolutionary game model in the collaborative design of station-city complex among local government (LG), urban public transport operators (UPTO) and China state railway group (CSRG). It analyses the equilibrium strategy combinations by Lyapunov first method, simulates the evolution path and demonstrates the significance on decision-making behaviors with sensitivity analysis from three aspects: the effectiveness of station-city integration policies, the convenience of transport organization and the importance of transport spatial integration. The simulation results through MATLAB indicate: the penalties are more favorable to LG than incentives; the enhancement of the urban traffic effect is the most motivating strategy for UPTO; excessive additional costs will bring CSRG's early exit. This research integrates the dynamic evolution of game process in multi-fields, and further clarifies the positive incentives for transport-oriented urban planning policies.



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