The importance of visuals in communicating engineering knowledge to architects

General information
State: Accepted/In press
Organisations: Design and Processes, Department of Civil Engineering
Contributors: Landgren, M., Jensen, L. B.
Publication date: 2019
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Publication information
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A review of current work with social sustainability in the built environment

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Contributors: Larsen, N. B., Jensen, L. B.
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Publisher: Technical University of Denmark (DTU)
Editors: C. M., K. M.
Article number: L-1
URLs:
http://www.sustain.dtu.dk/
Research output: Research - peer-review › Conference abstract in proceedings – Annual report year: 2018

How does sustainability certification affect the design process? Mapping final design projects at an architectural office
The context of the study is the very strict regulation of energy consumption for operating buildings in Denmark. It is difficult to meet the requirements by system optimisation in the final design phase, so recent research has focused on ways of meeting the target by adapting the whole design process and informing the industry of them. This has led to optimised design processes such as Integrated Energy Design, in which many decisions related to energy consumption and indoor climate are made in the early design stages. The current tendency is to use an expanded notion of sustainability, derived from the sustainability certification system itself, and to apply it even in the early design process. This perspective emphasises all phases of the life cycle of a building. The goal of the present study was to map how a Danish architectural office approached sustainability in the projects they undertook in the course of a year. All the projects concerned were intended to conform to the German Sustainability Certification System DGNB. We developed a mapping tool to document these case projects and found that different sets of certification criteria were used in each project. This demonstrates the
complexity of using them as design parameters in practice, but also that it was successfully achieved.

**Informing Sustainable Architecture**

**General information**

State: Published
Organisations: Section for Building Design, Department of Civil Engineering, Section for Building Energy
Contributors: Landgren, M., Jensen, L. B.
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**Publication information**

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- Web of Science (2018): Indexed yes
- BFI (2017): BFI-level 2
- Scopus rating (2017): CiteScore 1.99 SJR 0.727 SNIP 1.438
- Web of Science (2017): Indexed yes
- BFI (2016): BFI-level 2
- Scopus rating (2016): CiteScore 1.25 SJR 0.362 SNIP 0.933
- BFI (2015): BFI-level 2
- Scopus rating (2015): CiteScore 1.64 SJR 0.628 SNIP 0.982
- BFI (2014): BFI-level 2
- Scopus rating (2014): CiteScore 1.14 SJR 0.337 SNIP 0.636
- BFI (2013): BFI-level 2
- Scopus rating (2013): CiteScore 0.52 SJR 0.347 SNIP 0.37
- ISI indexed (2013): ISI indexed no
- BFI (2012): BFI-level 2
- Scopus rating (2012): CiteScore 0.54 SJR 0.422 SNIP 0.666
- ISI indexed (2012): ISI indexed no
- Web of Science (2012): Indexed yes
- BFI (2011): BFI-level 2
- Scopus rating (2011): CiteScore 0.41 SJR 0.21 SNIP 0.437
- ISI indexed (2011): ISI indexed no
- BFI (2010): BFI-level 2
- Scopus rating (2010): SJR 0.128 SNIP 0.338
- BFI (2009): BFI-level 2
- Scopus rating (2009): SJR 0.215 SNIP 0.439
- BFI (2008): BFI-level 2
- Scopus rating (2008): SJR 0.114 SNIP 0.084
- Scopus rating (2007): SJR 0.132 SNIP 0.498
- Scopus rating (2006): SJR 0.198 SNIP 0.57

Original language: English
Keywords: Integrated energy design, DNGB, Sustainability, Case study, Mapping

DOIs:

- 10.1080/17452007.2017.1397496
Source: FindIt
Source-ID: 2393266619
Research output: Research - peer-review > Journal article – Annual report year: 2018
Integrated design processes – a mapping of guidelines with Danish conventional ‘silo’ design practice as the reference point

This research maps various Integrated Design Processes (IDPs) with Danish conventional silo Design Practice as the reference point. The intention was to identify generic elements that are common among IDPs. The mapping was based on a literature study of a number of IDP guidelines. Eight IDP guides from the last two decades were selected for mapping. The Danish Description of Services functions as a typical representation of a conventional silo Design Practice (CSDP) and as a ‘scale’ against which to map the selected IDP guides. The results indicate a limited consensus on what constitutes an IDP but a possible consensus core that is shared by them all. One commonality is that technical knowledge must inform design decisions, and not simply be used to validate them, but on the other hand, it should not drive them.

Another main trait is the interdisciplinary character of these processes, where several professions must be a part of the process from the beginning. The study also found that all IDP guides have a ‘black box problem’, where the desired inputs and outputs of the process are known but no explanation is given regarding the mechanisms of how the integrated design decisions are to be made or how to facilitate this decision-making in an interdisciplinary design team. These findings can explain the slow adoption of IDPs in the building industry and they can be used to improve IDPs and increase their implementation in integrated building design.
Introduction

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State: Published
Organisations: Department of Civil Engineering, Design and Processes, Royal Danish Academy of Fine Arts
Contributors: Jensen, L. B., Beim, A., Sattrup, P. A., Negendahl, K.
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Source: PublicationPreSubmission
Source-ID: 149827214
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LCA in early design phases

General information
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Organisations: Department of Civil Engineering, Design and Processes, Norwegian University of Science and Technology, Royal Danish Academy of Fine Arts
LCA in the early design phases

General information
State: Published
Organisations: Department of Civil Engineering, Design and Processes, Section for Building Design, Royal Danish Academy of Fine Arts, Schools of Architecture, Design and Conservation, Norwegian University of Science and Technology
Contributors: Beim, A., Bjerregaard Jensen, L. (ed.), Houlihan Wiberg, A.
Number of pages: 6
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Publication date: 2018

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Publisher: Polyteknisk Boghandel og Forlag
ISBN (Print): 9788750211402
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Source-ID: 2434853677
Research output: Research - peer-review › Book chapter – Annual report year: 2018

Social Sustainability: If it doesn't have a number it doesn't exist

General information
State: Published
Organisations: Department of Civil Engineering, Design and Processes
Contributors: Jensen, L. B.
Pages: 142-157
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Source-ID: 149827751
Research output: Research › Book chapter – Annual report year: 2018

Tools for social sustainability into structural engineering

Large scale structures in urban spaces (for instance, a footbridge or more ephemeral structures) are expected to manifest a new urban space identity and, in this sense, address sustainability aspects. This study intends for decisions in structural design to be made based not only on engineering factors, but nourished on a number of criteria that lie beyond the scope of pure structural design and for such factors to be effectively translated into tools that help structural engineers carry out the complete design process, currently taken over by architects in a manner where the engineer is limited to decision in structural terms.

At DTU, we have worked extensively with the connections between environmental sustainability and economic sustainability with structural design. Nevertheless, social sustainability represents a challenge for engineers because it is the least quantifiable. However, current trends in industry are pushing towards incorporating more social sustainability information in design decisions.

This paper is based on a thorough literature review of evidence between the built environment and its impact on levels of social sustainability. The results were incorporated into a tool with criteria, indicators, generic solutions, and assessment methods. Based on this, a new design process that integrates social sustainability knowledge in a systematic way was developed and tested in a case study design process of a foot bridge.
How to foster a High-Tech entrepreneurial mind-set – A multidisciplinary engineering course for Bachelor students

Integrated Energy Design and Life Cycle Assessment in Design Processes for Refurbishment

This paper investigates the state-of-art for using the DGNB Sustainability Rating System, Life Cycle Assessment, and Life Cycle Costing in the Danish building industry, and how well this use is aligned with the Integrated Energy Design process in refurbishment projects. An optimal method for including all aspects of sustainability in the design process is developed based on a literature review, interviews of professionals, and a mapping of design processes at a Danish architecture firm that specializes in sustainable architecture. Finally, the paper reflects upon the final design process presented in this work, considers what is needed to implement this design process, and envisages the impact of this practice on the building industry.
Process optimization on ambitious sustainability goals through the framework of DGNB

The need for designing buildings with a sustainable approach is higher than ever before, but using building sustainability assessment tools, such as DGNB, is a comprehensive and complex activity. This has led to attempts to optimize the tangibility for usage of sustainability assessment tools in the design process. A holistic qualitative approach is used in this paper with the aim of mapping the structure of DGNB Office Building finding and prioritizing topics to address during a design process. Four experts from the Danish building sector were interviewed and their responses analyzed through the use of Grounded Theory. The findings expose that the project brief must define a healthy framework for both collaboration and project management, and a specific two-step approach to obtain the certification goal should be performed. The size of the criteria determined how it should be addressed in the project. DGNB was also found to have an impact on the architectural quality leading to certain architectural traits. An important finding was that it is paramount that all stakeholders take an integrated holistic approach when applying DGNB.

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State: Published
Organisations: Department of Civil Engineering, Section for Building Design, Technical University of Denmark
Contributors: Espenhein, K., Jensen, L. B.
Number of pages: 12
Publication date: 2017
Sustainability Gains from combining LCA and Parametric Design in Early Design Phases of Structural Design

General information
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Organisations: Department of Civil Engineering, Section for Building Design, Technical University of Denmark
Contributors: Collin, C., Jensen, L. B.
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Collin_Jensen.pdf
Source: PublicationPreSubmission
Source-ID: 127782490
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Beskrivelse af borepladsen

General information
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Organisations: Department of Civil Engineering, Section for Building Design
Contributors: Nikolajew, M. M., Jensen, L. B.
Pages: 118-119
Publication date: 2016

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Title of host publication: Videnskabelig udredning af international viden om skifergas relateret til en dansk kontekst : DTU, GEUS, DCE
Publisher: Aarhus Universitet, GEUS og Danmarks Tekniske Universitet
Electronic versions:
DTU_GEUS_DCE_2016_Videnskabelig_udredning_af_international_viden_om_skifergas_relateret_til_en_dansk_kontekst.pdf
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Beskrivelse visuel påvirkning

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Contributors: Nikolajew, M. M., Jensen, L. B.
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Title of host publication: Videnskabelig udredning af international viden om skifergas relateret til en dansk kontekst : DTU, GEUS, DCE
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Electronic versions:
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Research output: Commissioned › Report chapter – Annual report year: 2016

Effekter på landskab og trafik

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Organisations: Department of Civil Engineering, Section for Building Design
Contributors: Jensen, L. B.
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Publication date: 2016

Host publication information
Expansion in Number of Parameters - Simulation of Energy and Indoor Climate in Combination with LCA

The Technical University of Denmark has been carrying out research in the energy balance of buildings in relation to indoor climate for decades. The last two decades have seen a major role played by research in the field of Integrated Energy Design (IED) focusing on the earliest design phases. The research has showed that the greatest effect in relation to achieving net-zero-energy buildings is achieved when indoor climate and energy simulation tools are applied from the very first architectural sketches, where geometry, façade design, orientation, etc. are determined. Large architectural offices and engineering consultancies in Scandinavia have invested in software and interdisciplinary design teams to carry out Integrated Energy Design (IED). Legislation has been altered and simulations of indoor climate and energy balance are now required to obtain building permits. IED has been rolled out extensively in the building industry. Having reduced the energy needed to operate the indoor environment to almost zero by designing with knowledge and optimizing systems, the energy needed to construct the building and its systems is now prominent in importance. The CO2 impact of buildings has become an important parameter because sustainability certification systems like the Deutsche Gesellschaft für Nachhaltiges Bauen (DGNB) have taken the lead in Europe. The DGNB system includes Life Cycle Assessment (LCA), and the Danish government has stated that Denmark must be CO2 neutral by 2050. The focus in design is shifting from energy and indoor climate to CO2 impact. The experience from the decades of IED shows that the largest gains in reduction come from the early design phases. LCA in relation to buildings has to include the energy needed to operate the building’s indoor climate as well as the CO2 embodied in the building. This makes the simulations far more complex. LCA thus tends to be placed in the last phases of design and used for certification, so that only a single iteration is needed. However, real-time LCA simulation tools are required if designers are to base design decisions not only on knowledge about indoor climate and energy balance but also on LCA. This paper presents the efforts at DTU’s Department of Civil Engineering to develop a real-time LCA simulation tool, including indoor climate and energy balance simulation (based on Energy +) and the first round of implementing the tool at well-esteemed architectural offices in Scandinavia. The development of the real-time LCA-indoor climate- energy balance tool was funded by Nordic Built.
Mapping one year's design processes at an architecture firm specialized in sustainable architecture - How do sustainability certification systems affect design processes?

The current study mapped how a Danish architecture firm integrated sustainability in their projects over a year. All the projects concerned were aimed at being sustainable within the framework of the DGNB certification system. The focus of DGNB is equally divided between environmental, economic and social aspects. During the mapping process, a picture was drawn of the state of the art for integrating DGNB in design processes and of the challenges involved. Case studies formed the basis of the study and helped substantiate the complexity of integrating DGNB’s criteria as design parameters in practice.

The framework for the study is the increased focus in recent decades on minimizing the energy consumption used for operating buildings, because the building industry accounts for 40% of the total energy consumption in the EU. This focus has led to more optimized design processes within the framework of the Integrated Energy Design (IED) method, in which many decisions related to indoor climate and energy consumption are made in the early stages of the design process and have therefore become an important design factor for both architects and engineers. The tendency is now to widen the perspective to design decisions in all phases of the entire lifecycle of a building. Life Cycle Assessment (LCA) moves to the fore in the design process to make it possible to meet the overall purpose of reducing CO₂ emissions and the general environmental impact of the entire building industry.
Sustainability certification systems as guidelines for early-phase urban design processes

The German Sustainable Building Council (Deutsche Gesellschaft für Nachhaltiges Bauen or DGNB) has one of the most comprehensive sustainability certification systems for urban districts (UD). Their explicit aim is that the system should impact the very earliest design decisions. The Technical University of Denmark has tested the DGNB-UD system in two experimental design projects for similar locations to find out how it can be used in the early-phase design process. This paper describes these two independent design processes, compares them and discusses their general features.

We found that DGNB-UD addresses a broad sustainable focus and can be used as a tool for setting sustainability goals from the very first design steps. The system tends to promote multifunctional compromise solutions that meet several criteria at the same time. Using the DGNB-UD certification system in the early design phases therefore does have some effect on the urban design in terms of a bias towards certain design traits.

General information
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Organisations: Department of Civil Engineering, Section for Building Design
Contributors: Jensen, L. B., Bjerre, L., Mansfelt, L.
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 0.55 SJR 0.23 SNIP 0.359
Web of Science (2017): Indexed yes
Scopus rating (2016): CiteScore 0.33 SJR 0.2 SNIP 0.348
Web of Science (2016): Indexed yes
Scopus rating (2015): CiteScore 0.34 SJR 0.22 SNIP 0.461
Scopus rating (2014): CiteScore 0.43 SJR 0.271 SNIP 0.298
Scopus rating (2013): CiteScore 0.44 SJR 0.285 SNIP 0.467
ISI indexed (2013): ISI indexed no
Scopus rating (2012): CiteScore 0.3 SJR 0.18 SNIP 0.583
ISI indexed (2012): ISI indexed no
Scopus rating (2011): CiteScore 0.19 SJR 0.17 SNIP 0.268
ISI indexed (2011): ISI indexed no
Scopus rating (2010): SJR 0.199 SNIP 0.248
Scopus rating (2009): SJR 0.159 SNIP 0.175
Scopus rating (2008): SJR 0.146 SNIP 0.09
Scopus rating (2007): SJR 0.196 SNIP 0.009
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Research output: Research - peer-review › Journal article – Annual report year: 2016

Videnskabelig udredning af international viden om skifergas relateret til en dansk kontekst: DTU, GEUS, DCE

General information
Students as agents – connecting faculty with industry and creating collaborative projects

Collaborative projects between partners in the building industry and students constitute important means for addressing more advanced parts of the CDIO Syllabus 4. In this paper an existing internship program is revised in order to enhance collaboration between industry and faculty/students and perform as vehicle for addressing challenging parts of the CDIO syllabus.

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Organisations: Department of Civil Engineering, Section for Building Design
Contributors: Jensen, L. B.
Publication date: 2015
Peer-reviewed: Yes

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Original language: English
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Sustainability through hands-on experience: Solar Decathlon

General information
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Contributors: Kazanci, O. B., Jensen, L. B., Rønne, C., Olesen, B. W.
Number of pages: 1
Publication date: 2015

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Publisher: Technical University of Denmark (DTU)
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Electronic versions:
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Research output: Research - peer-review › Conference abstract in proceedings – Annual report year: 2015

Creating an information quantum leap in early design phases

The poster will outline the dynamic simulations tools developed in the building industry during the last two decades for integrating knowledge of indoor climate and energy in early phases of a building design and give a brief up date of the present quest to include and integrate information from urban environment climatic conditions, broad multi-criteria sustainability certification in early design phases aiming a.o. at meeting the obligations defined by smart cities challenges. Civil and Environmental Engineering has special challenges concerning design processes. These design projects are always influenced by their location and the topography (be it natural or manmade), climate, etc. This means that each project is unique and must be viewed in its own right. This reduces the benefits of mass production and standardization that are so heavily emphasized in mechanical design and manufacturing. This also means that design theories, tools, and techniques cannot be adopted directly from other design disciplines such as product design where different solutions can be developed for each individual or group. The natural environment has dynamic, unpredictable, and sometimes chaotic properties and behavior. This is more true than ever when considering the challenge of climate change. The requirements and behavior of the human users also vary in time. To meet these challenges, Civil and Environmental Engineering projects must be designed to be flexible so they can adjust for temporary changes in natural or human conditions. They must also be adaptable so they can evolve with technology, society, and the environment. The recent years, increasing application of renewable energy sources put extreme pressure onto the energy grids and need for demands side management, where buildings play a decisive role in stabilizing the energy demand through e.g. thermal storage in building components. Design in Civil and Environmental Engineering also defines the reality in which we live, work, and
play. Thus, it borders other fields such as architecture, landscape design, and urban planning --- influencing them and being influenced in exchange. The design of sustainable and climate adaptive systems and structures requires a very high level of information in all of the design phases. Addressing the challenges will require even more information with a better level of integration than is currently available today in either industry or education. Interdisciplinary design methods building on the know-how created during the past 2 decades is at the fore. How can we better integrate the knowledge at hand in Civil and Environmental Engineering in interdisciplinary design processes?

General information
State: Published
Organisations: Department of Civil Engineering, Section for Building Design, Section for Building Physics and Services
Contributors: Jensen, L. B., Heller, A., Hurup-Felby, B.
Number of pages: 1
Publication date: 2014

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Place of publication: Kgs. Lyngby
Publisher: Technical University of Denmark (DTU)
Research output: Research - peer-review › Conference abstract in proceedings – Annual report year: 2014

Post internship student-industry collaborative projects - as vehicle for the realization of challenging parts of the CDIO syllabus
A large part of the CDIO syllabus concerns skills that are difficult to address in a solely academic environment. Collaboration with industry is in reality a must in order to perform the CDIO based education. Student internships in the industry, hence is the core of the DTU B. Eng. program. At DTU Architectural engineering the 5 month internship period is placed early in the curriculum, after 4 semesters of study.
It is obviously more challenging to find industry internships for students that are at an early stage in their studies because they need more supervision. However the investment is worth the trouble because the post internship curriculum is provided with pedagogical means to address parts of the syllabus that are on an advanced level in the learning taxonomy. The interface between the internship period and post internship student-industry collaborative projects is an important point of focus. Inquiries into this difficult transition are presented with emphasis on the parts of the CDIO syllabus addressing System Design.

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Organisations: Department of Civil Engineering, Section for Building Design
Contributors: Jensen, L. B.
Pages: 12
Publication date: 2014

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Publisher: Universitat Politècnica de Catalunya
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Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Proceedings of the 3rd International Workshop on Design in Civil and Environmental Engineering

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Organisations: Department of Civil Engineering, Section for Building Design, Department of Mechanical Engineering, Manufacturing Engineering
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Electronic versions:
Quantitative and creative design tools for urban design in cold and windy climates

In cold and windy climates, the quality of the urban spaces is severely challenged. A design process with a very high level of information regarding wind, sun, daylight and water from the earliest of the design process will help create the most optimized design. For the last couple of years, the Technical University of Denmark has had an initiative to combine the University’s existing knowledge, relevant for large scale physical planning, in new ways. Technical-scientific knowledge about traffic and transportation, water-management, snow drift, wind engineering, sun and daylight have prospered in academic ‘silos’ where little attention has been made in regards to architectural design processes. Simulation tools were developed that can render a larger amount of information available in a short time and thus can keep pace with an ongoing design process in an architectural studio. Bridging the gap between the design processes and the academic knowledge available is a focus area. The effects of climate change and a general higher demand for quantitative assessment of urban planning proposals in hard climatic locations have created a demand for research based design advice. The paper will present these ‘design tools’ and how they can inform an ongoing design process from the earliest of design phases and afterwards.

General information
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Contributors: Koss, H., Jensen, L. B., Nielsen, T. A. S.
Number of pages: 13
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artek_2014_holger_og_lotte_final_1.pdf
Source: PublicationPreSubmission
Source-ID: 92086481
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Report for the 2014 DCEE Working Group Meeting
The DCEE 2014 meeting at the Technical University of Denmark focused on interdisciplinarity in design processes while embracing the central issues of the previous workshops: design tools / methods and design education in Civil and Environmental Engineering (CEE).

General information
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Organisations: Department of Mechanical Engineering, Manufacturing Engineering, Department of Civil Engineering, Section for Building Design
Contributors: Jensen, L. B., Thompson, M. K.
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Publisher: Technical University of Denmark (DTU)
Editors: Bjerregaard Jensen, L., Thompson, M. K.
ISBN (Electronic): 978-0-9894658-3-0
Keywords: Integrated dynamic model, consequence based design, Parametric tool, Building performance simulation, Integrated design
Electronic versions:
DCEE_2014_eProceedings_186_188.pdf
Research output: Research - peer-review › Book chapter – Annual report year: 2014

The Potential of the Technical University of Denmark in the Light of Sustainable Livable Cities
The Technical University of Denmark (DTU) has a long tradition for research and education in urban planning and sustainable urban development. An increasing societal focus on sustainability and urbanization in society supports this continuous focus on sustainable urban planning in technical educations. The focus on sustainable urban development includes understanding the role of civil engineering, water engineering, sustainable mobility and energy, and communities
in developing future desirable solutions. However, beyond the challenges faced in each of the specific technical fields, there is a growing demand for integrated solutions. A proposal has been developed in the last couple of years to further develop DTU’s education in urban development and livable cities with an emphasis on integration and interdependencies in urban engineering. This paper describes core professional design niches which by themselves have an impact on urban development, including water in cities, climate adaptation, mobility planning, building, energy, and community designs. A number of challenges in developing an integrated approach in the technical education are discussed in the paper. The increasing focus on sustainability but also on global urbanization, compact cities, and smart cities supports new thinking in urban planning and design in technical education. The paper suggests a new initiative to further develop the sustainable urban planning research and education at DTU.

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Organisations: Department of Civil Engineering, Section for Building Design, Department of Management Engineering, Systems Analysis, DTU Climate Centre, Energy Systems Analysis, Production and Service Management, Centre for Facilities Management, Department of Transport, Transport policy and behaviour, Department of Environmental Engineering, Urban Water Engineering
Contributors: Jensen, L. B., Nielsen, P. S., Nielsen, S. B., Nielsen, T. A. S., Mikkelsen, P. S.
Number of pages: 6
Pages: 90-96
Publication date: 2014

Reflections on How DGNB(UD) Certification Standards Effect Design Methods
DGNB is an abbreviation of Deutsche Gesellschaft für Nachhaltiges Bauen, a German sustainability standard and certification system that has operated for a decade and that was appointed as the official Danish system by Green Building Council (GBC) Denmark in 2009. In 2012 GBC Denmark launched a second DGNB standard, now focusing on urban districts. This certification standard is currently still in the process of being adjusted to Danish standards. DGNB Urban Districts (DGNB(UD)) pleads for using their system as design ‘tool’ or guideline for the very early design stages. This process has not been investigated or described well. In this paper, the effect of DGNB(UD) on design is investigated in a case study using DGNB(UD) as a ‘design tool’. The effects on the design process is observed and compared to well established methodologies of integrated energy design (IED) and traditional beaux-arts architectural design. The case study addresses the design of an abandoned harbor area to be re-inhabited and to provide new functions.

General information
State: Published
Organisations: Department of Civil Engineering, Section for Building Design, Henning Larsen Architects A/S, Gehl Architects, Technical University of Denmark
Contributors: Mansfeldt Faurbjerg, L., Redder Pedersen, S., Jensen, L. B., Nygaard Sørensen, C.
Pages: 57-65
Publication date: 2013

Report for Working Group 2: Design Education in Civil and Environmental Engineering
The theme for the second working group was design education in civil and environmental engineering. Issues discussed during this meeting included the current state of the art of civil design education, the importance of civil design education, tools and techniques that can be used to build design competencies, the importance of balancing hard and soft skills, and the role that culture and context play and will continue to play in civil design in the future.

General information
Integrated Energy Design in Master Planning

This PhD thesis considers urban structure and buildings in an energy correlation and use the knowledge to design energy- and comfort-optimized cities and buildings. The parameters are: the structure of nature, the city and the landscape, both in terms of geometry and interrelationships and in terms of opportunities and limitations with regard to light, shade, sun and wind.

The aim is threefold: (1) to unfold the link between building energy use and urban density, typology and fabric; (2) to analyse how technical scientific knowledge can be integrated in early urban planning and design decisions (IED); and (3) to show the architect's responsibility and opportunities to rethink their architectural role based on new goals and knowledge.

The research results show an impact from urban form on building energy consumption which is much greater than previously thought, more precisely described, and more dynamic in character as daylight is taken into account. Furthermore, the results suggest that there are limits to urban densification (200-300%) as an energy optimization strategy. The solar energy and daylight potential should be considered, and indeed protected, as a common resource in urban design.

The most important observation for qualitative design research is that the first step to improving energy performance must be taken with the architect's first sketch on paper. It is here that the framework and preconditions for the city and the building's performance will be set. Argued this way, optimization of the special properties of urban density, typology and fabric takes priority over the optimization of technical service systems. This means that in the design process the architect's responsibilities outweigh those of the engineers.

The research is reported in the main body of this thesis and in the papers for scientific journals.

Integrated Energy Design of the Building Envelope

This thesis describes the outcome of the PhD project Integrated energy design of the building envelope carried out through a combination of scientific dissemination reported through peer-reviewed journals and a wide range of affiliated projects involved in at an architectural firm. The research project analysed how the implementation of technical knowledge early in the building design process can quantify the effect of a building's façades on its energy efficiency and indoor
climate and thereby facilitate a more qualified design development.

The project was structured in the following way: 1) the importance of integrating knowledge in the early stages of design, and how it can be done; 2) understanding the façade’s typology; and 3) the complex notion of comfort.

The project touched not only on the technical capabilities and requirements governing façade design, but also the process by which it takes place. This was done by applying the methodology of Integrated Energy Design (IED) and analysing its applicability in the design of façades. A major part of the project was an actual engagement in the architectural process to test out incorporating a consciousness about energy and comfort as part of a more holistic performance evaluation.

The research project illustrates the great potential in taking passive properties into account through a geometrical optimisation inherent in the development of the architectural concept. It demonstrates that integration of technical knowledge at the early stages of design not only can qualify the geometrical processing, but also facilitate the design development of the façade. Thereby a more holistic performance optimisation can be obtained through parameters such as overall façade geometry and orientation, functional organisation, room height and depth, façade layout, window geometry and transparency, design of the window aperture, etc. Through the wide range of affiliated project involved in at the architectural firm over the course of this project, this approach resulted in building designs with an energy demand at least 25% below the minimum requirements while simultaneously maintaining high-quality indoor climate and architectural quality.

One cardinal finding from the project is that by applying engineering knowledge in a supportive way in what is usually considered the realm of architects, common ground can be established. This can ensure the full utilisation of both the inherent aesthetic qualities and the potential for improvements in energy efficiency that combine to enrich the architectural concept. True architecture should represent a holistic performance evaluation and therefore be seen as the common goal for all the professional disciplines involved in the building design process. This project also illustrates the importance of understanding the interdisciplinary collaboration between engineers and architects. Contrary to the traditional notion that the building’s performance is determined by the architect’s first sketch on a napkin, to a great extent it is already determined by the building’s context and the building programme. This places great responsibilities on the shoulders of both engineers and architects in the critical first phases of design.

**General information**

State: Published
Organisations: Department of Civil Engineering
Contributors: Nielsen, M. V., Bjerregaard Jensen, L., Svendsen, S.
Number of pages: 264
Publication date: 2012

**Publication information**

Place of publication: Kgs. Lyngby
Publisher: Technical University of Denmark (DTU)
ISBN (Print): 9788778773456
Original language: English
Electronic versions:
Martin_Vraa_Nielsen_Afhandling_.PDF
Research output: Research › Ph.D. thesis – Annual report year: 2012

**Investigation of Architectural Strategies in Relation to Daylight and Integrated Design: A Case Study of Three Libraries in Denmark**

This paper investigates the use of daylight in three architecturally successful buildings. The aim is to discuss the challenges and opportunities of architectural daylight strategies in relation to integrated design. All these buildings were designed with the focus on a strategy of using daylight to create well-lit, exciting spaces and spatial sequences. The original ideas, thoughts, and decisions behind the designs and daylight strategy are compared with answers in questionnaires from test subjects who have experienced the space and lighting conditions created. The results indicate that the architectural daylight strategies formulated by the architects and engineers at the beginning of the design process are actually experienced by the “users” in the existing buildings. The architectural daylight strategy was different in each of the three libraries, and analysis of the results show that daylight strategies that include spatial considerations received more positive evaluations. Furthermore, the study showed that designs aimed at achieving an even distribution of daylight with an illuminance target of 200 lx did not result in higher evaluation of the daylight design.

**General information**

State: Published
Organisations: Section for Building Physics and Services, Department of Civil Engineering, Section for Building Design
Contributors: Jørgensen, M., Iversen, A., Bjerregaard Jensen, L.
Pages: 40-54
Publication date: 2012
Peer-reviewed: Yes

**Publication information**

Journal: Journal of Green Building
Volume: 7
Bridgescaping - Contextual Structural Design

Large-scale infrastructural projects such as bridges used to be the monopoly of engineers. They were designed as – often very beautiful – expressions of how forces work in a structure, guided by the nature of materials and a rational construction process. However, in recent decades politicians and investors have discovered ways of getting more from their investments by using such projects to give identity and coherence to an area. This has led to a European tendency for engineers to surrender their design opportunities and let architects take over but it does not have to be so. These projects can also encourage engineers to focus more on the aesthetic aspects of their design and the way their structures will work in the context of the surroundings. This paper will present a series of contemporary bridge structures to provide a short history of the tendency described above and discuss design at the boundary between civil and architectural engineering.

General information
State: Published
Organisations: Section for Building Design, Department of Civil Engineering, Section for Structural Engineering
Contributors: Bjerregaard Jensen, L., Almegaard, H.
Pages: 38-42
Publication date: 2011

Host publication information
Title of host publication: Proceedings of the 1th. International Workshop on Design in Civil and Environmental Engineering
ISBN (Print): 978-89-89693-31-4
Keywords: Structural Design, Architectural Engineering, Integrated Design, Bridgescape
Source: orbit
Source-ID: 284792
Research output: Research - peer-review › Article in proceedings – Annual report year: 2011

Energy renovation of listed buildings

General information
Integrated Structural Design Education

In Environmental Impact Assessment (EIA), the environment is broadly defined and includes not only quantifiable aspects, but also social conditions, scenic beauty, traffic, cultural heritage, and commercial development. A successful bridge design must comply with all of these demands according to EU legislation. And a successful engineering student must be prepared to work in the open-ended, multidisciplinary environment necessary to produce structures which comply with EIA demands. This paper describes an innovative course developed at the Technical University of Denmark which integrates landscaping and structural design. The integrated courses create a setting for learning about the design of large-scale structures and involve geometry, statics, computer simulation, graphical design and landscape architecture. Together, they educate engineers who can take part in the early design phases of a project, function well in design teams, and comply with EU EIA demands.

General information
State: Published
Organisations: Section for Building Design, Department of Civil Engineering, Section for Structural Engineering
Contributors: Bjerregaard Jensen, L., Almegaard, H.
Publication date: 2011

Host publication information
Title of host publication: Proceedings of the 1th. International Workshop on Design in Civil and Environmental Engineering
Keywords: Structural Design, Architectural Engineering, Integrated Design, Curriculum Integration
Source: orbit
Source-ID: 284983
Research output: Research - peer-review › Article in proceedings – Annual report year: 2011

Mutual Workshops enhancing Curriculum Integration

The BSc Eng programme in architectural engineering at DTU Civil Engineering is organized in accordance with CDIO principles. We have been working with CDIO principles for 2-3 years now, and in the following we present the process and adjustments that were made, with the third semester as a case. Every semester has a teaching team consisting of all the teachers for courses in that semester. Each semester also has its own theme and a multidisciplinary, joint project. So the most active members of the teaching team, of course, are those responsible for courses that address the theme and contribute to the joint project. The theme of the third semester is ‘structural design’. Structural design is defined as an integration of material science, statics and geometry in relation to an architectural project. Anticipating the implementation of CDIO and this theme, major changes were made to the curriculum. A course in material science was moved from the fourth to the first semester so that the project could be informed by material science. A new course in geometry was prepared and software that could facilitate an integrated design project was introduced (STAAD Pro). The ‘full package’ of the new third-semester project in structural design was realized for the first time in autumn 2009. This paper presents the lessons learned from this first round along with the changes they inspired. Amongst the biggest changes made was the introduction of a successful joint workshop between the geometry course and the design course. This realized the full potential of structural design and firmly highlighted the creative potential in geometry for hesitant students. The joint workshop also showed potential as a general tool that can enhance curriculum integration.

General information
State: Published
Organisations: Section for Building Design, Department of Civil Engineering, Geometry, Department of Mathematics, Section for Structural Engineering
Contributors: Bjerregaard Jensen, L., Markvorsen, S., Almegaard, H.
Publication date: 2011

Host publication information
Title of host publication: Proceedings of the 7. International CDIO Conference
Obstacles and New Opportunities for Integrated design

Recent developments in integrated design in Civil Engineering are outlined by describing how projects can now be informed with engineering knowledge at a conceptual level. The well-defined methods of integrated design are challenged by young engineers and architects. The development of simulation programs has been massive and engineering educational programmes can no longer teach just one design method with its related programs, but must instead give room for a continuous experimental design laboratory.

Quantifying the potential of automated dynamic solar shading in office buildings through integrated simulations of energy and daylight

The façade design is and should be considered a central issue in the design of energy-efficient buildings. That is why dynamic façade components are increasingly used to adapt to both internal and external impacts, and to cope with a reduction in energy consumption and an increase in occupant comfort. To gain a complete picture of any façade’s performance and subsequently carry out a reasonable benchmarking of various façade alternatives, the total energy consumption and indoor environment need to be considered simultaneously. We quantified the potential of dynamic solar shading façade components by using integrated simulations that took energy demand, the indoor air quality, the amount of daylight available, and visual comfort into consideration. Three types of façades were investigated (without solar shading, with fixed solar shading, and with dynamic solar shading), and we simulated them with various window heights and orientations. Their performance was evaluated on the basis of the building’s total energy demand, its energy demand for heating, cooling and artificial lighting, and also its daylight factors. Simulation results comparing the three façade alternatives show potential for significant energy reduction, but greater differences and conflicting tendencies were revealed when the energy needed for heating, cooling and artificial lighting were considered separately. Moreover, the use of dynamic solar shading dramatically improved the amount of daylight available compared to fixed solar shading, which emphasises the need for dynamic and integrated simulations early in the design process to facilitate informed design decisions about the façade.
COMPARISON AND CLASSIFICATION OF DESIGN BUILD PROJECTS IN DIFFERENT ENGINEERING BACHELOR PROGRAMS

General information
State: Published
Organisations: Section for Building Design, Department of Civil Engineering, Computer Aided Process Engineering Center, Department of Chemical and Biochemical Engineering, Department of Electrical Engineering, Department of Mechanical Engineering, Department of Informatics and Mathematical Modeling
Pages: 1-7
Publication date: 2009

Host publication information
Title of host publication: COMPARISON AND CLASSIFICATION OF DESIGN BUILD PROJECTS IN DIFFERENT ENGINEERING BACHELOR PROGRAMS
Place of publication: Singapore
Publisher: Proceedings of the 5th International CDIO Conference, Singapore Polytechnic, Singapore, June 7 - 10, 2009
Source: orbit
Source-ID: 255337
Research output: Research - peer-review › Article in proceedings – Annual report year: 2009

Green cottages of tomorrow

General information
State: Published
Organisations: Section for Arctic Technology, Department of Civil Engineering, Section for Building Design
Contributors: Villumsen, A., Bjerregaard Jensen, L.
Number of pages: 53
Pages: 37-40
Publication date: 2009

Host publication information
Title of host publication: tourist cottages and climate change
Place of publication: Lyngby
Publisher: Center for Arktisk Teknologi
Keywords: sustainable design
Source: orbit
Source-ID: 255273
Research output: Research - peer-review › Article in proceedings – Annual report year: 2009

The problem of scale in design-implement experiences in civil engineering

General information
State: Published
B 150 civil engineering futures: The 150th anniversary celebrations of the study of civil engineering in Denmark

Foreword

B150 – Civil Engineering Futures consists of interviews made, articles written, and projects presented in connection with the 150th anniversary celebrations of the study of civil engineering in Denmark. Instead of a historical retrospect, it was decided to look into the future. What challenges will the next 150 years bring civil engineers? Researchers and lecturers at DTU’s Department of Civil Engineering (known as DTU Byg) suggested possible events, and we also consulted civil engineers and their business partners in the building industry. In this way, a programme was put together consisting of free, public lectures by international experts, and workshops and master classes on this question open to everyone in the building industry. The use of glass as a construction material would have been considered impossible a few years ago. But work on achieving complete transparency was a major theme in twentieth century architecture. Together, civil engineer Peter Rice and architect Ian Ritchie created a paradigm shift with their revolutionary ideas for glass facades supported by cables. Glued and bolted constructions made entirely of glass are now a reality in small-scale projects, yet the story of transparency and dematerialisation is far from complete. New construction materials have also come from new knowledge at the nano-scale. Design at the molecular level opens the way for materials with completely new properties and options, e.g. active materials, designed to cope with some specific climatic challenge or clean the air. With nanotechnology, the artificial and the natural move closer together; this is the perspective for civil engineer Chris McCarthy’s work all over the world. And what is new is not just the way the construction materials are put together; they also require a huge investment in new production equipment and working processes for the craftsmen who use them. Completely new thinking is needed when an electrical impulse is used to improve the penetration of a chemical. The same applies when classical materials like concrete are given new properties or when a previously passive insulation material is altered to play an active role in a building. The Design Master Class was for architects, civil engineers and students. It was led by Richard Horden, who is not only the head of a design department at Munich Technical University, but also works on design in his own company in London. The theme for the design project was ‘Touch the earth lightly’ – ultra-lightweight constructions interposed between the human body and the climate. Ultra-lightweight constructions are also the basis for the work of civil engineer Werner Sobek in his capacity as head of the legendary ILEG (Institute for Lightweight Structures). But as time has gone on, he has both collaborated on major architectural projects and, in other cases, gone his own way. His comprehensive knowledge of science and architecture, and especially of construction and materials, has enabled Werner Sobek to develop a technically advanced form of aesthetics. The Master Class in low energy buildings was led by civil engineer, Svend Svendsen, a Professor at DTU Byg. Together with colleagues and students, he has achieved an extensive knowledge of Integrated Design. In fact, the situation is that our knowledge of the energy performance of buildings is so complete now that the bottleneck in the creation of low-energy buildings is no longer in the technology, but in the way the industry works. Integrated Design is a concept that ranges over all the various work processes necessary from the earliest beginnings of a project to its completion in the low-energy building. The master class practised using ‘ID Build’, a free-ware program developed by DTY Byg, which facilitates integrated design. The architect Thomas Herzog is one of the pioneers of Integrated Design and, together with the Frauenhofer Institute in Germany, has helped create a new standard for sustainable building. One day of the master class was devoted to lectures by civil engineers and architects from Denmark and abroad who talked about their own experience with Integrated Design. The anniversary event was rounded off with another important topic related to sustainability – a Workshop on Traffic. The workshop discussed traffic prognoses and the way they are used in the preparation of urban transport and traffic strategies. Civil engineer Jonas Eliasson spoke about the experience in Sweden of developing a database for traffic prognoses. The main Anniversary Conference on 16 November offered a number of seminars organised by the professional associations and lectures by civil engineers Stephen Selkowich and Cecil Balmond. In collaboration with the architect Renzo Piano, Stephen Selkowich has developed and tested low-energy façade systems; and Cecil Balmond’s visionary use of his extensive knowledge of architecture, science, construction and building opened our eyes for totally new possibilities in civil engineering.
Ian Ritchie: Structural glazing and beyond

General information
State: Published
Organisations: Department of Civil Engineering, Section for Building Design
Contributors: Bjerregaard Jensen, L.
Pages: 20-27
Publication date: 2008

Host publication information
Title of host publication: B150-Civil engineering futures: the 150th anniversary celebrations of the study of civil engineering in Denmark
Place of publication: København
Publisher: Technical University of Denmark, Department of Civil Engineering
Editor: Bjerregaard, L. M.
ISBN (Print): 978-877877251-0
Research output: Communication › Book chapter – Annual report year: 2008

konstruktionsfornuft tilsat magi

General information
State: Published
Organisations: Section for Building Design, Department of Civil Engineering
Contributors: Bjerregaard Jensen, L.
Pages: 22
Publication date: 2008
Peer-reviewed: Unknown

Publication information
Journal: BETON
ISSN (Print): 0109-758x
Original language: Danish
Source: orbit
Source-ID: 233230
Research output: Communication › Journal article – Annual report year: 2008

Richard Horden: Touch the earth lightly

General information
State: Published
Organisations: Department of Civil Engineering, Section for Building Design
Contributors: Bjerregaard Jensen, L.
Pages: 94-99
Publication date: 2008

Host publication information
Title of host publication: B150-Civil engineering futures: the 150th anniversary celebrations of the study of civil engineering in Denmark
Place of publication: København
Publisher: Technical University of Denmark, Department of Civil Engineering
Editor: Bjerregaard Jensen, L.
ISBN (Print): 978-877877251-0
Research output: Communication › Book chapter – Annual report year: 2008

Thomas Herzog: Interdisciplinarity and low-energy buildings

General information
State: Published
Organisations: Department of Civil Engineering, Section for Building Design, Arup Group
Contributors: Kragh, M., Bjerregaard Jensen, L.
Pages: 120-123
Publication date: 2008
Ideal Structures & Urban Context: Strategy for integration of ideal spatial structures and place: Virum Sports Hall designed by Finn Monies and Jørgen Nielsen

General information
State: Published
Organisations: Section for Structural Engineering, Department of Civil Engineering
Contributors: Bjerregaard Jensen, L.
Number of pages: 216
Pages: 8-24
Publication date: 2006

Host publication information
Title of host publication: The Complexity of The Ordinary : Context as key to Architectural Strategies
Place of publication: Copenhagen
Publisher: Royal Academy of Art, School of Architecture
ISBN (Print): 87-7830-143-2
Keywords: Folded plate structure
Electronic versions:
Ideal structures & Urban Contex t ISBN 87 7830 143 2.pdf
Source: orbit
Source-ID: 194720
Research output: Research - peer-review › Article in proceedings – Annual report year: 2006

Naturvidenskab og 'det andet': Historiografiske vinkler på dansk glas arkitektur
Title: Works of Engineering and 'The Other' History and Theory of Modern Architecture in Denmark
Keywords: Tectonic
Engineer Science Architecture Arne Jacobsen C.I.A.M. Organic Tecnology Arts & Crafts Romantic John Soan
Historiography Abstract The article examines the apparent silence concerning history and theory of modern architecture in Denmark during the after war period. By making inquiries into the general agenda of mainstream C.I.A.M. modernism a strong Danish line of oppositional architecture appears. Sigfried Giedions influential book 'Space Time and Architecture' promotes science and works of engineering as keys to overcoming the rift between structure and architecture that appeared during the 19th century – in Giedions point of view because architects failed to catch up with technological progress. 'Space Time and Architecture' is a linear history in an almost Hegelian sense describing the parallel development of still more dematerialized built structures (+exposed glass cladding ) and natural science, implicitly evoking a relation between the two. Arne Jacobsen's Rødovre City hall is a case study of architecture that manifest Giedions and C.I.A.M.s programme. Glass Curtain wall cladding and exposed engineering structures characterize this building. What is not so well known outside Denmark is that at stock of Danish Architects opposed to Arne Jacobsens ideas of architecture and in reality also to the C.I.A.M. programme. Their silence in terms of explicit architectural theories may be due to the fact that 'Den Klintske Skole' line of architects where rooted in architectural theories from the Arts & Crafts movement and further back from the English pioneers of 'The Picturesque' (Kay Fisker clearly demonstrated this link between eg. PV Jensen Klint and William Morris. David Watkin and Christopher Hussey the link between romanticism and Arts & Crafts).

The essence of these architectural strategies is the opposition to science and industry manifest in tectonic strategies. Danish architecture of the after war period is devoted to Ruskin’s stock of tectonic strategies. Bo & Wohlert's Louisiana Museum is a case study in this aspect, wonderfully reinterpreting follies of the romantic garden: the ruin and the Chinese pavilion coupled with vernacular motives using glass only as a non exposed necessity. But since 'Space Time and Architecture' aggressively ridiculed what could be termed a romantic architectural programme (explicitly Arts & Crafts architecture eg. By Maybeck and Greene and Greene, so praised by Kay Fisker), the above mentioned silence appeared. Finally the article in detail examines how the term ‘romantic’ is used as a negative expression in ‘Space Time and Architecture’ and how Giedion uses the term ‘organic’ in a sense suited for C.I.A.M.’s mission of promoting science as architectural meaning.

General information
State: Published
Organisations: Section for Structural Engineering, Department of Civil Engineering
Contributors: Bjerregaard Jensen, L.
Pages: 43-55
Publication date: 2006
Peer-reviewed: Yes

Publication information
Journal: Nordic Journal of Architectural Research
Volume: 19
Suburbia and Social Democracy: The golden age of Danish 'Modernism'
An inquiry into the implicit values behind construction practice in Denmark - 1950-1970.

Dansk Arkitektur - årgang 2000: Musholm Bugt Ferie- og fritidscenter

Resumé af gruppernes ideoplæg
Ready-mades: Outline of some Strategies concerning the Massproduced Detail

General information
State: Published
Organisations: Aarhus School of Architecture
Contributors: Jensen, L. B.
Publication date: 1996

Host publication Information
Title of host publication: Proceedings of the 1996 ACSA European Conference

Projects:

Anchoring, quantifying and implementing sustainability in the Danish building industry - The development of a robust tool to embed social sustainability
Larsen, N. B., PhD Student, Department of Civil Engineering
Jensen, L. B., Main Supervisor, Department of Civil Engineering
Dyring, C., Supervisor
Thuesen, C., Supervisor
Industrial PhD
01/08/2018 → 31/07/2021

Member of Research and Evaluation Committee commissioned by Municipality of Copenhagen: Noise Screen Tagensvej
Contact person: Birgitte Kortegaard
Jensen, L. B., Project Participant, Department of Civil Engineering, Section for Building Design
01/01/2010 → 31/12/2010

Innovations in Interdisciplinary Research in Built Environment within the Baltic Sea Region
Funded by Federal Ministry of Education and Research (BMBF) of Germany / Inno-BSR. Project owner prof. Annette Boegle, HCU
Jensen, L. B., Project Participant, Department of Civil Engineering, Section for Building Design
30/04/2017 → 01/02/2019

Digital tools for landscape architects: A case study of digital tools used for analyzing and screening climate adaptation challenges in the early design phase
Danish Title: Undersøgelse af digitale værktøjer hos arkitekttegnestuer til beregning og screening af regnvand i den tidlige designfase DTU Environment/European Regional Development Fund.
Jensen, L. B., Project Manager, Department of Civil Engineering, Section for Building Design
Ambjerg-Nielsen, K., Project Participant, Department of Environmental Engineering, Urban Water Systems
Mikkelsen, P. S., Project Participant, Department of Environmental Engineering, Urban Water Systems
01/09/2016 → 12/03/2017
Udvikling af metode til integreret bæredygtigt design  
Landgren, M., PhD Student, Department of Civil Engineering  
Jensen, L. B., Main Supervisor, Department of Civil Engineering  
Jensen, L. B., Supervisor, Department of Civil Engineering  
Sattrup, P. A., Supervisor, Department of Civil Engineering  
Toftum, J., Examiner, Department of Civil Engineering  
Hansen, E. K., Examiner, Department of Civil Engineering  
Kiesslinger, J., Supervisor  
Bögle, A., Examiner  
Industrial PhD  
01/10/2015 → 30/09/2018  
Award relations: Udvikling af metode til integreret bæredygtigt design  
Project: PhD

Bæredygtighed ved renovering af eksisterende byggeri  
Eriksen, M. S. H., PhD Student, Department of Civil Engineering  
Rode, C., Main Supervisor, Department of Civil Engineering  
Bjarlev, S. P., Supervisor, Department of Civil Engineering  
Jensen, L. B., Examiner, Department of Civil Engineering  
Hansen, H. T. R., Examiner  
Thuvander, L., Examiner  
Institut stipendie (DTU) Samf.  
01/11/2010 → 04/07/2016  
Award relations: Bæredygtighed ved renovering af eksisterende byggeri  
Project: PhD

Integreret energidesign af klimaskærmen  
Nielsen, M. V., PhD Student, Department of Civil Engineering  
Svendsen, S., Main Supervisor, Department of Civil Engineering  
Jensen, L. B., Supervisor, Department of Civil Engineering  
Olesen, B. W., Examiner, Department of Civil Engineering  
Christoffersen, L. D., Examiner  
Hestness, A. G., Examiner  
Institut stipendie (DTU)  
15/12/2008 → 28/09/2012  
Award relations: Integreret energidesign af klimaskærmen  
Project: PhD

Alternative Asker i Beton - Ny Æstetisk og Byggeteknisk Performance  
Kappel, A., PhD Student, Department of Civil Engineering  
Ottosen, L. M., Main Supervisor, Department of Civil Engineering  
Goltermann, P., Supervisor, Department of Civil Engineering  
Kirkelund, G. M., Supervisor, Department of Civil Engineering  
Jensen, L. B., Examiner, Department of Civil Engineering  
Jensen, L. B., Examiner, Department of Civil Engineering  
Ferreira, C. M. D., Examiner  
Ferreira, C. M. D., Examiner  
Ferreira, C. M. D., Examiner  
Ferreira, C. M. D., Examiner  
Brix, L. D., Examiner  
Institut/centerfinansieret  
01/12/2012 → 06/03/2018  
Award relations: Alternative Asker i Beton - Ny Æstetisk og Byggeteknisk Performance  
Project: PhD

The architectural transition between stations and urban spaces, seen from a safety point of view  
Strandbygaard, S. K., PhD Student, Department of Civil Engineering  
Jensen, L. B., Main Supervisor, Department of Civil Engineering  
Grundlund, B., Supervisor  
Nielsen, O. A., Supervisor, Department of Management Engineering  
Nielsen, O. A., Supervisor, Department of Management Engineering  
Jørgensen, J., Supervisor
Industrial PhD
01/10/2015 → 06/07/2019
Award relations: The architectural transition between stations and urban spaces, seen from a safety point of view
Project: PhD

Integreter energiudsigt i masterplanning
Strømann-Andersen, J. B., PhD Student, Department of Civil Engineering
Svendsen, S., Main Supervisor, Department of Civil Engineering
Jensen, L. B., Supervisor, Department of Civil Engineering
Kongebro, S., Supervisor
Nielsen, S. B., Examiner, Department of Management Engineering
Pedersen, P. B., Examiner
ErhvervsPhD-ordningen VTU
01/10/2008 → 25/06/2012
Award relations: Integreter energiudsigt i masterplanning
Project: PhD

Architectural Engineering til superlætt konstruktioner
Castberg, N. A., PhD Student, Department of Civil Engineering
Hertz, K. D., Main Supervisor, Department of Civil Engineering
Jensen, L. B., Examiner, Department of Civil Engineering
Bontempi, F., Examiner
Larsen, O. P., Examiner
Institutt stipendie (DTU)
15/08/2010 → 22/11/2013
Award relations: Architectural Engineering til superlætt konstruktioner
Project: PhD

Integration of CFD in Structural and Architectural Wind Engineering
Jørgensen, N. G., PhD Student, Department of Civil Engineering
Koss, H., Main Supervisor, Department of Civil Engineering
Bennetsen, J. C., Supervisor
Georgakis, C. T., Supervisor, Department of Civil Engineering
Jensen, L. B., Supervisor, Department of Civil Engineering
Fischer, G., Examiner, Department of Civil Engineering
Franke, J., Examiner
Höffer, R., Examiner
Institutt stipendie (DTU)
01/11/2009 → 30/09/2015
Award relations: Integration of CFD in Structural and Architectural Wind Engineering
Project: PhD

Civil Engineering Futures - International Lecture Series ( and publication of Book).
Civil Engineering Futures - International Lecture Series ( and publication of Book).
Jensen, L. B., Project Manager, Department of Civil Engineering, Section for Building Design
01/05/2006 → 01/05/2008
Project: Research

High tech start ups: Industriens fond - højt teknologisk innovation
Jensen, L. B., Project Participant, Department of Civil Engineering, Section for Building Design
Andersson, P. H., Project Participant, Office for Study Programmes and Student Affairs
Fernvall, P. S., Project Participant, Office for Innovation & Sector Services
Berg, R. H., Project Participant, Department of Micro- and Nanotechnology
Project ID: 97011-K
01/10/2014 → 01/01/2017
Project: Research

Industrial PhD Development of method for Integrated sustainability design
Supervision of industrial phd. Mathilde Landgren (JJW architects)
Jensen, L. B., Supervisor, Department of Civil Engineering, Section for Building Design
01/10/2015 → 01/10/2018
Erasmus - BeInterBaltic
A 3 year project about interdisciplinary design Projects in the curriculum of Universities in Germany, Sweden, Finland, Denmark, Poland and Estonia.
Jensen, L. B., Project Participant, Department of Civil Engineering, Section for Building Design
01/09/2015 → 01/09/2018

STED: Nordic Built STED - Sustainable Transformation and Environmental Design
This project targets innovation of the analysis and the design processes for the Nordic building stock. The main aims are:
1) To develop design methods and solutions for renovation and new buildings combining energy efficiency, environmental design and lifecycle thinking
2) To create a Nordic research and innovation platform for design, renovation and transformation in architecture
3) To create innovative ICT services and tools for performance modeling and resource management for design and renovation
Jensen, L. B., Project Manager, Department of Civil Engineering, Section for Building Design
Negendahl, K., Project Coordinator, Department of Civil Engineering, Section for Building Design
01/08/2015 → 01/08/2018
Keywords: Sustainability, LCA, Integrated dynamic models, Computational design, LCC, Building information Modeling, Building Performance Simulation
Collaborators: Royal Danish Academy of Fine Arts, Studio Granda, White Arkitekter AB, OOPEAA, Vandkunsten Arkitekter, Norwegian University of Science and Technology, Helen & Hard, Danske Arkitektvirkomsheder, Chalmers University of Technology

Arkitektur og landskap: seminar om store konstruksjoners kontakst
2008: Chair, Seminar co-organized by AHO (Oslo) together with professor Arne Eggen. and DTU: De store infrastruktur konstruktioners møde med landskap og byrum Large scale structures in the context of landscape architecture.
Jensen, L. B., Project Manager, Department of Civil Engineering, Section for Building Design
Project ID: 25826
15/08/2008 → 17/08/2008
Collaborators: Fondet for Dansk Norsk Samarbeid, The Oslo School of Architecture and Design

Integrated Concept Design – INCLUDE framework
Application for: 3. bando di concorso per progetti nel campo della ricerca scientifica (3. wettberbsausschreibung für projekte im bereich der wissenschaflichen forschung) Frauenhofer Italia Research s.c.a.r.l. Innovation Engineering Center Title: Integrated Concept Design – INCLUDE framework
Jensen, L. B., Project Participant, Department of Civil Engineering, Section for Building Design
01/07/2015 → 01/08/2017
Project: Research

Spatial Adaptable Rapidly Erectable Building Systems
Application for call of the International Network Programme, Danish Agency for Science, Technology and Innovation 'Spatial Adaptable Rapidly Erectable Building Systems' Funding period 1 March 2015-31 December 2015
Jensen, L. B., Project Participant, Department of Civil Engineering, Section for Building Design
01/03/2015 → 31/12/2015
Project: Research

Urbanisation and Infrastructure in the Arctic - Challenges from a Sustainable Perspective
Organizing Committee.
Jensen, L. B., Project Manager, Department of Civil Engineering, Section for Building Design
Project ID: 26242
02/01/2014 → 30/04/2014
Project: Research

Third International Workshop on Design in Civil and Environmental Engineering
Workshop 22-23 August 2014 on Design Methods in Civil and Environmental Engineering.
Jensen, L. B., Approving Authority, Department of Civil Engineering, Section for Building Design
Project ID: 26363
Activities:

Member of the PhD Assessment Committee, DTU Representative. (External organisation)
Period: 2016 → …
Lotte Bjerregaard Jensen (Participant)

Department of Civil Engineering
Section for Building Design

Description
Member of the PhD Assessment Committee, DTU Representative, Malene Hagen Eriksen's PhD

Member of the PhD Assessment Committee, DTU Representative, Malene Hagen Eriksen's PhD
Degree of recognition: International

Related external organisation

Member of the PhD Assessment Committee, DTU Representative.
Activity: Membership › Membership in review committee

Project evaluation committee for Technology Foundation STW (External organisation)
Period: 1 Jun 2015 → 1 Sep 2015
Lotte Bjerregaard Jensen (Participant)

Department of Civil Engineering
Section for Building Design

Description
Technology Foundation STW is a Dutch funding agency for academic research in the field of applied sciences. Scientific quality and substantial interest from third-parties, such as companies or non-profit organisations, to exploit the research results are both prerequisites. STW is financed by the Netherlands Organisation for Scientific Research (NWO) and the Dutch Ministry of Economic Affairs, Agriculture and Innovation. For the evaluation of research proposals we approach scientific as well as industrial experts in the field concerned.

Project evaluation committee for Technology Foundation STW
Degree of recognition: International

Related external organisation

Project evaluation committee for Technology Foundation STW
Activity: Membership › Membership in review committee

3rd International Workshop on Design in Civil and Environmental Engineering
Period: 1 Jan 2014 → 1 Nov 2014
Lotte Bjerregaard Jensen (Organizer)
Department of Civil Engineering
Section for Building Design

Related event

3rd International Workshop on Design in Civil and Environmental Engineering
21/08/2014 → 23/08/2014
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

ARTEK Event 2014
Period: 1 Jan 2014 → 1 May 2014
Lotte Bjerregaard Jensen (Organizer)
Department of Civil Engineering
Section for Building Design

Related event

ARTEK Event 2014: Urbanisation and infrastructure in the Arctic
07/04/2014 → 09/04/2014
Sisimiut, Greenland
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Member of the PhD Assesment Committee, Aalborg University (External organisation)
Period: 2014 → …
Lotte Bjerregaard Jensen (Participant)
Department of Civil Engineering
Section for Building Design

Description
Member of the PhD Assesment Committee, Aalborg University, Ellen Kathrine Hansen's PhD

Member of the PhD Assesment Committee, Aalborg University, Ellen Kathrine Hansen's PhD
Degree of recognition: International

Related external organisation

Member of the PhD Assesment Committee, Aalborg University
Activity: Membership › Membership in review committee

Member PhD assessment Committee Aalborg University (External organisation)
Period: 2014 → …
Lotte Bjerregaard Jensen (Participant)
Department of Civil Engineering
Section for Building Design

Description
Aalborg University, Ellen Kathrine Hansen's PhD

Member of PhD Assesment committee Aalborg University, Ellen Kathrine Hansen's PhD
Degree of recognition: International
Member of the PhD Assessment Committee, DTU Representative. (External organisation)
Period: 2013 → …
Lotte Bjerregaard Jensen (Participant)
Department of Civil Engineering
Section for Building Design
Description
Member of the PhD Assessment Committee, DTU Representative, Niels Andreas Castberg's PhD
Member of the PhD Assessment Committee, DTU Representative, Niels Andreas Castberg's PhD

Membership PhD Assessment Committee, The Royal Danish Academy of Fine Arts Schools of Architecture, Design and Conservation (External organisation)
Period: 2012 → …
Lotte Bjerregaard Jensen (Participant)
Department of Civil Engineering
Section for Building Design
Description
Membership PhD Assessment Committee, Peter Andreas Sattrup's PhD
The Royal Danish Academy of Fine Arts
Schools of Architecture, Design and Conservation
Membership PhD Assessment Committee, Peter Andreas Sattrup's PhD
Degree of recognition: International

Elected member of Board of Education (External organisation)
Period: 2009 → 2018
Lotte Bjerregaard Jensen (Participant)
Department of Civil Engineering
Section for Building Design
Description
Elected member of Board of Education, Department of Civil Engineering, Technical University of Denmark

Membership PhD Assessment Committee, The Oslo School of Architecture and Design (External organisation)
Period: 2009 → …
Lotte Bjerregaard Jensen (Participant)
Description
Membership PhD Assessment Committee, The Oslo School of Architecture and Design, Johan Bettum's PhD
Degree of recognition: International

Related external organisation
Membership PhD Assessment Committee, The Oslo School of Architecture and Design
Activity: Membership › Membership in review committee