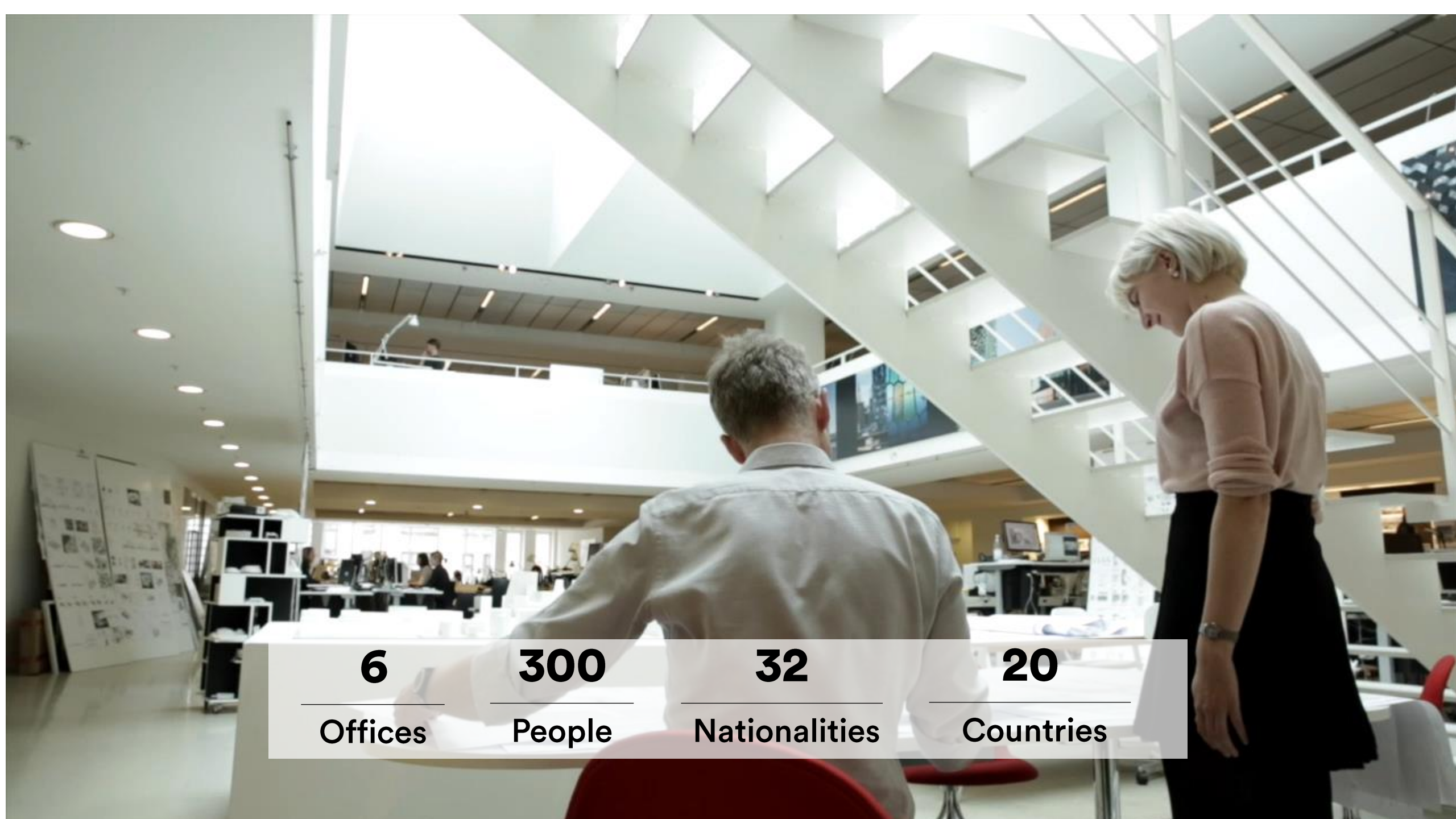


Lysets betydning for det gode indeklima

i et holistisk perspektiv

Jakob Strømmand-Andersen

Partner, Head of Sustainability Engineering



6

Offices

300

People

32

Nationalities

20

Countries

Introduction

Planning



Introduction

Cultural venues



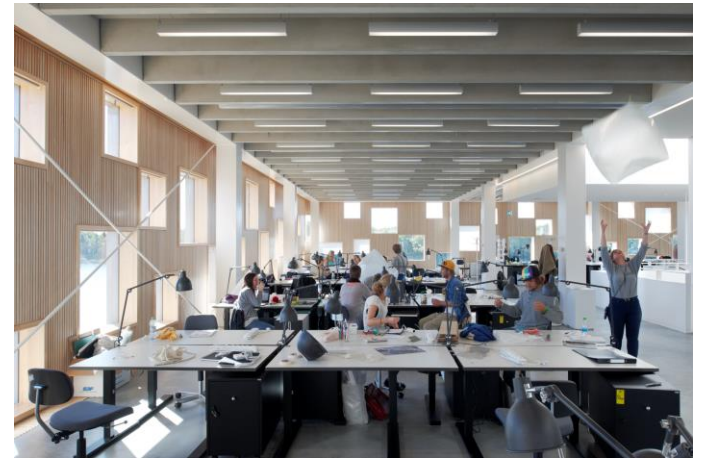
Introduction

Work spaces



Introduction

Learning spaces



A photograph of two men in a modern office setting. They are looking at a computer monitor that displays a 3D architectural model of a building. The man on the right is holding a pen and pointing at the screen. The background is a blurred office environment with other computer monitors and desks.

/ 22 ph.d.er, landskabsarkitekter og ingeniører
/ forskning, udvikling & innovation
/ viden integreres og implementeres i de tidlige designstadier
/ bæredygtigt design



Sustainability intern

PhD. Stud., Ethnology

Lead Designer Landscape Architect

PhD. Stud., Acoustics

Partner, Head of Sustainability Engineering, PhD

Senior Constructing Architect, Facade Specialist

Sustainability Engineers

Lead Sustainability Engineer, PhD

Architect/ Communications

Sustainability intern

Landscape Architect

Senior Architect

Architect/ Communications

Senior Sustainability Engineer, PhD

Lead Designer Landscape Architect

Partner DGNB International Consultant, Visiting Professor

Landscape architect Intern

Senior Architect, Material Specialist,

PhD. Stud., Façade Design

Senior Landscape Architect

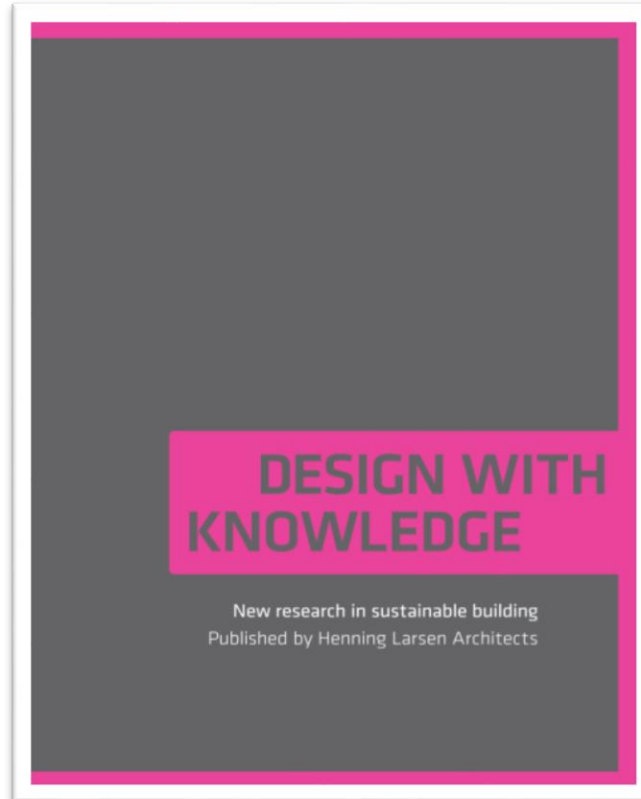
Sustainability intern

PhD. Stud., Artificial Lighting

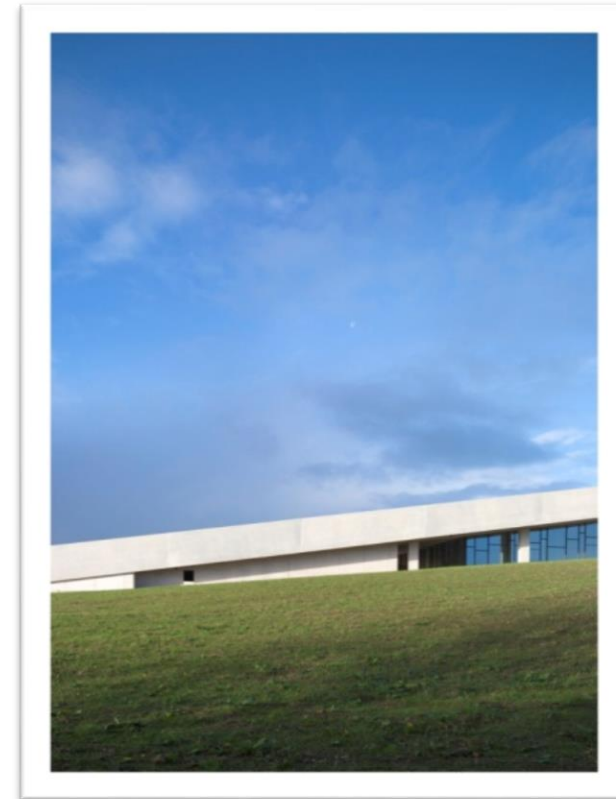
Research & development



Design method & process



Projects



DEVELOPMENT

REBUS

Project



Bellahøj

Project



The Climate Resilient Block

Project



Digitalization

Platform



Learning Spaces

Platform



Facade Design

Platform



Tall Buildings

Platform



Timber Architecture

Platform



RESEARCH

**Artificial light
& daylight**

Ph.d



Materials

Database



Microclimate

Ph.d



**Energy
Design**

Ph.d



**Facade
Design**

Ph.d



Acoustics

Ph.d



**Designing
the common**

Ph.d



Research in light and acoustics – exploring Virtual Reality

/ combining the audio and visual human experience



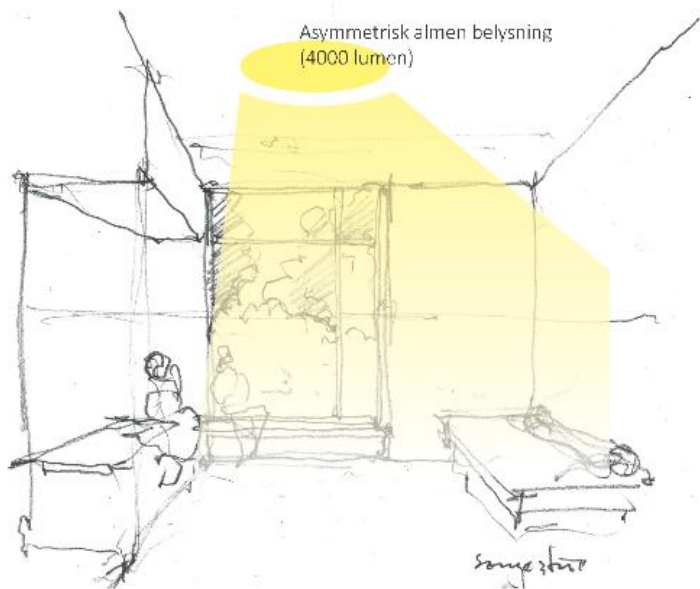
Bispebjerg

Ny psykiatri - konkurrenceforslag

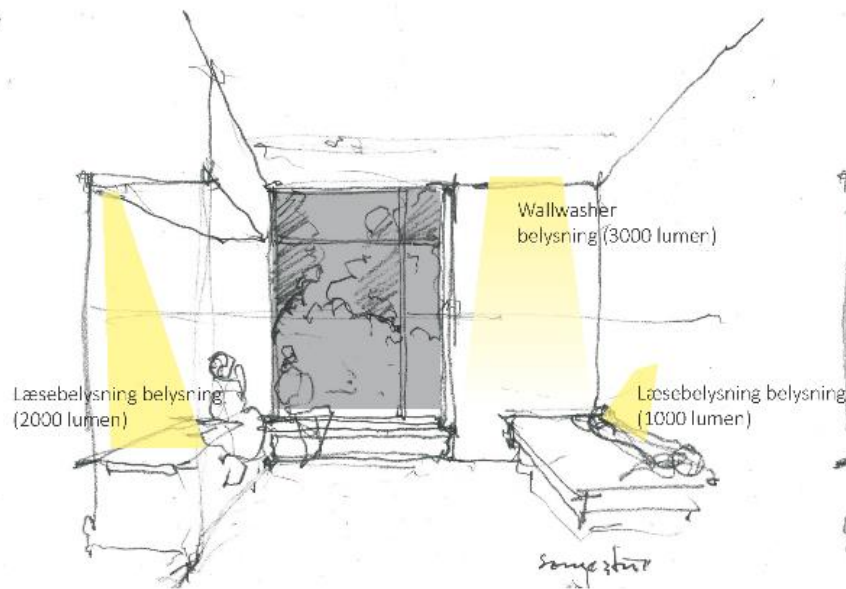


Belysningsstrategi

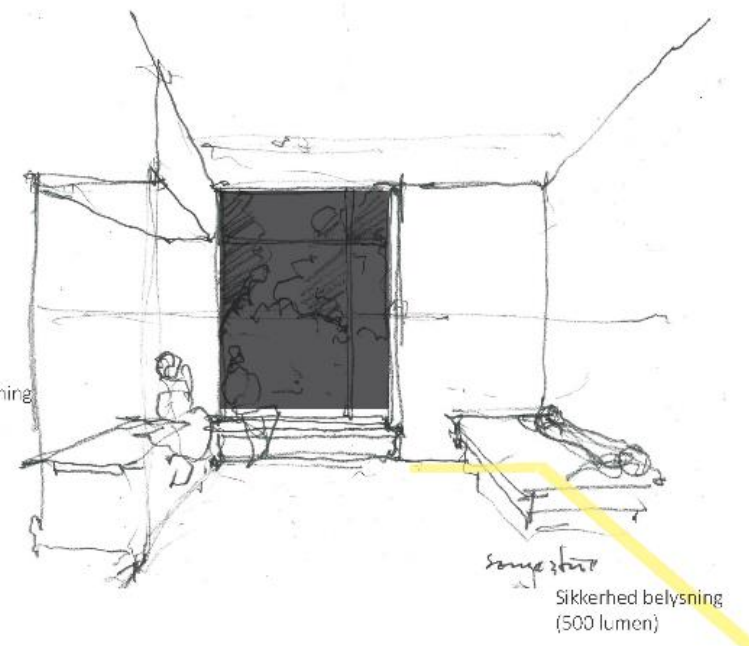
Sengestue



Almen belysning



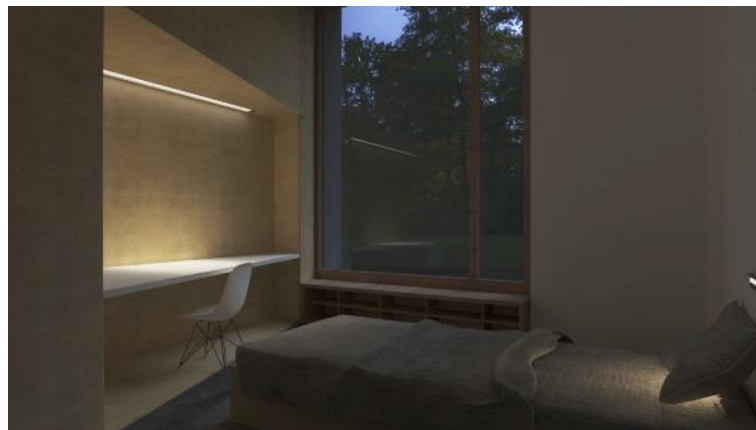
Komfortbelysning



Sikkerhedsbelysning

VR som et redskab

Teknisk realistiske simuleringer af belysningsniveauer



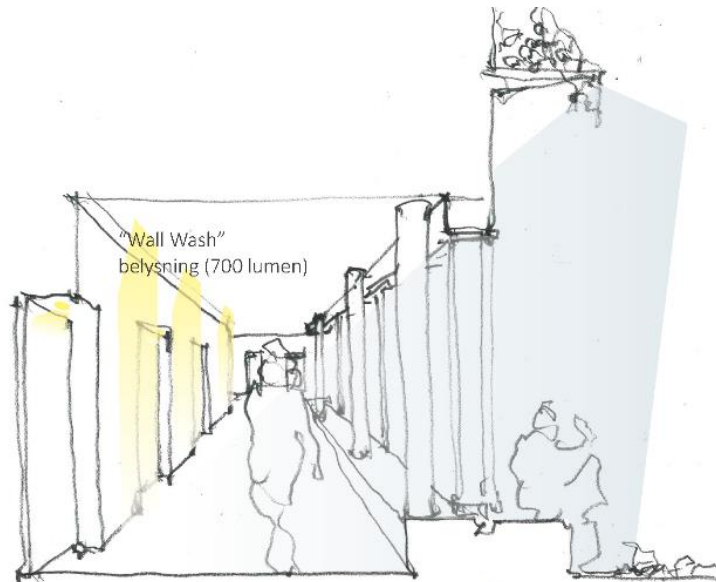
Almen belysning

Komfortbelysning

Sikkerhedsbelysning

Belysningsstrategi

Gangarealer



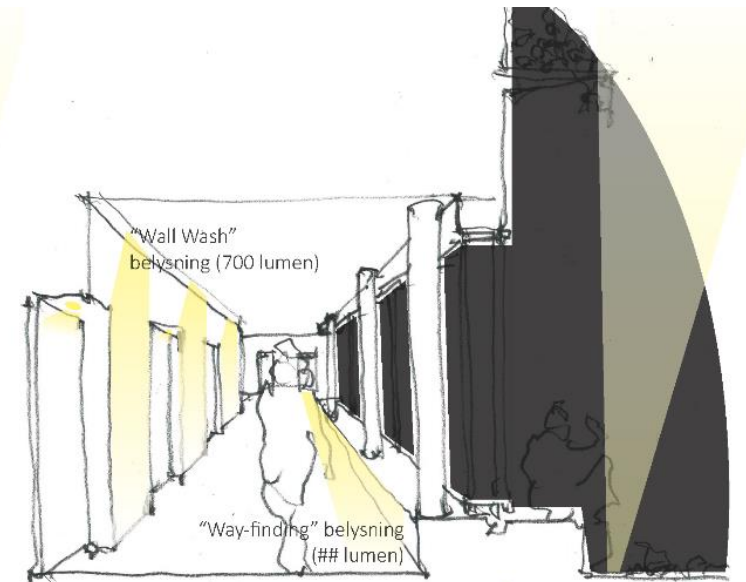
Gangzone langs hoved

Dag
- Wall Wash



Gangzone langs hoved

Aften
- Asymmetrisk almen belysning



Gangzone langs hoved

Nat
- Wall Wash
- Wayfinding belysning

Belysningsstrategi

Gangarealer

Dag



ON OFF

wallwashers	<input checked="" type="checkbox"/>	<input type="checkbox"/>
corridor wide beam lights	<input type="checkbox"/>	<input checked="" type="checkbox"/>
guiding lights/floor wash lights	<input type="checkbox"/>	<input checked="" type="checkbox"/>
door spotlights	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Aften



ON OFF

wallwashers	<input checked="" type="checkbox"/>	<input type="checkbox"/>
corridor wide beam lights	<input checked="" type="checkbox"/>	<input type="checkbox"/>
guiding lights/floor wash lights	<input type="checkbox"/>	<input checked="" type="checkbox"/>
door spotlights	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Nat



ON OFF

wallwashers	<input checked="" type="checkbox"/>	<input type="checkbox"/>
corridor wide beam lights	<input type="checkbox"/>	<input checked="" type="checkbox"/>
guiding lights/floor wash lights	<input checked="" type="checkbox"/>	<input type="checkbox"/>
door spotlights	<input checked="" type="checkbox"/>	<input type="checkbox"/>

LYS:
oplevelse versus **krav**

“ Arbejdet med lys er en
balance mellem
oplevelse og krav.



“

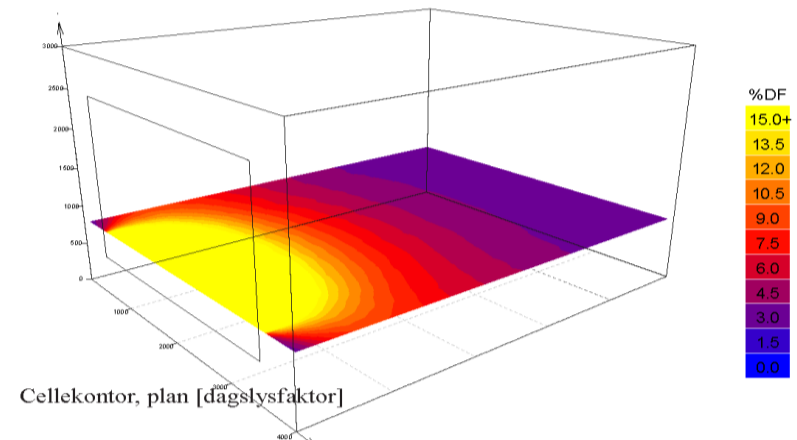
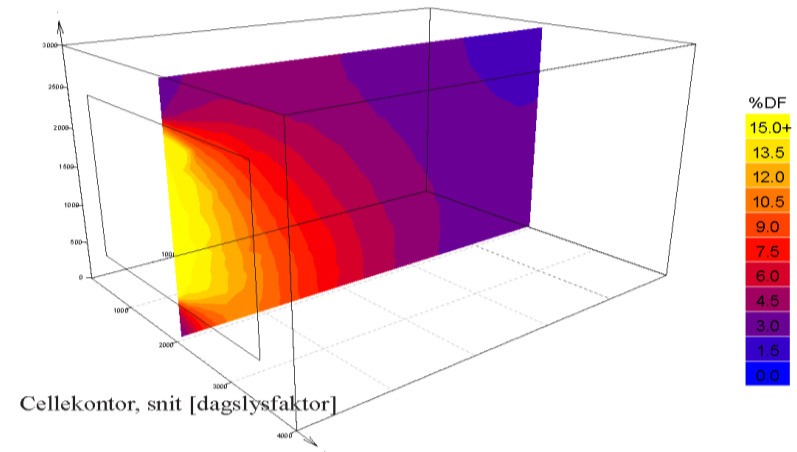
Dagslys er et
kærtegn

Peter Høegh, 'Effekten af Susan' (2014)

“

En patients indlæggelsestid
kan reduceres med 7,3 time,
hver gang dagslyset øges
med 100 lux

Jorder et al. (2013)



“

Et godt dagslysdesign kan få os til at gå på kompromis med høje temperaturer og ringe luftkvalitet : Lys er en overtrumfer.

Geo Clausen, Professor, sektionsleder på DTU Byg, Institut for Byggeri og Anlæg

Dilemmaet

Det specifikke

Variert lys
Inspirerende lys



Det uspecifikke

Jævnt lys
Funktionelle lys



Gentofte

VS.

Albertslund



1985



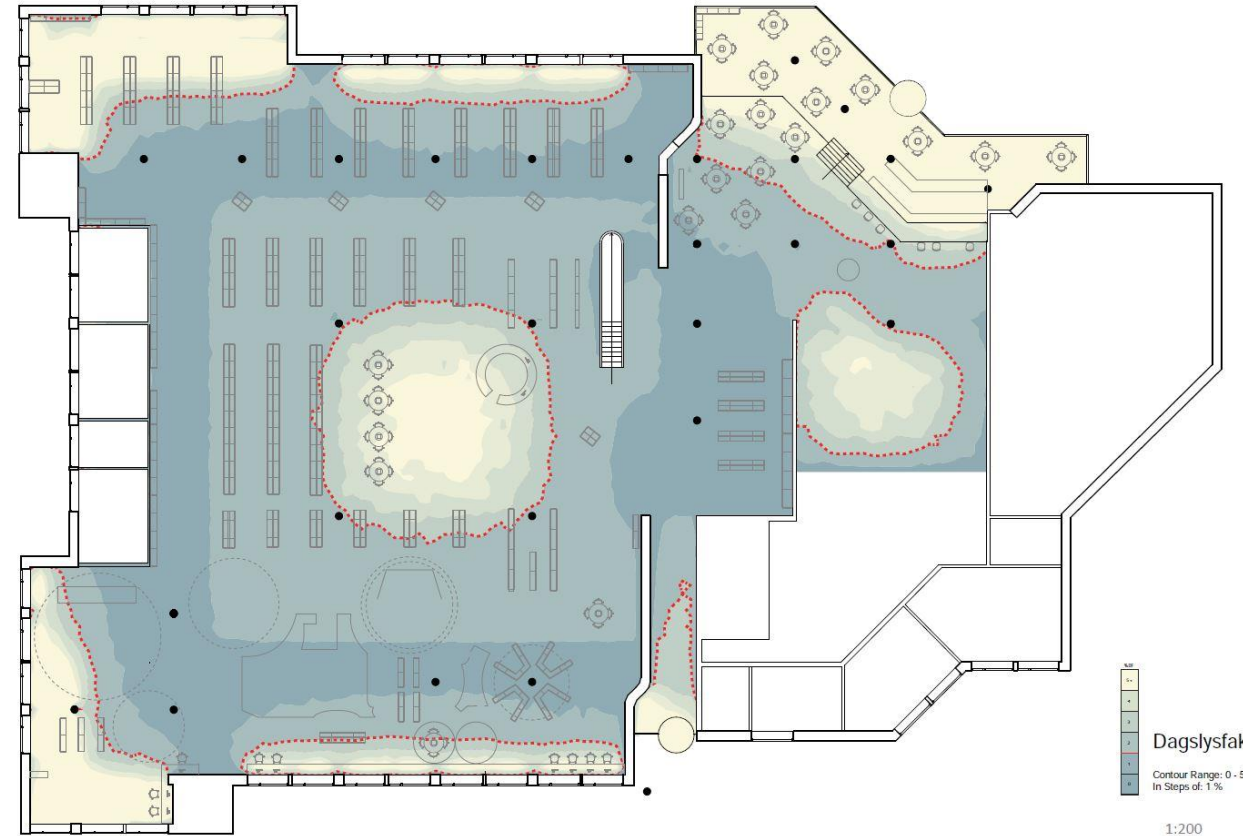
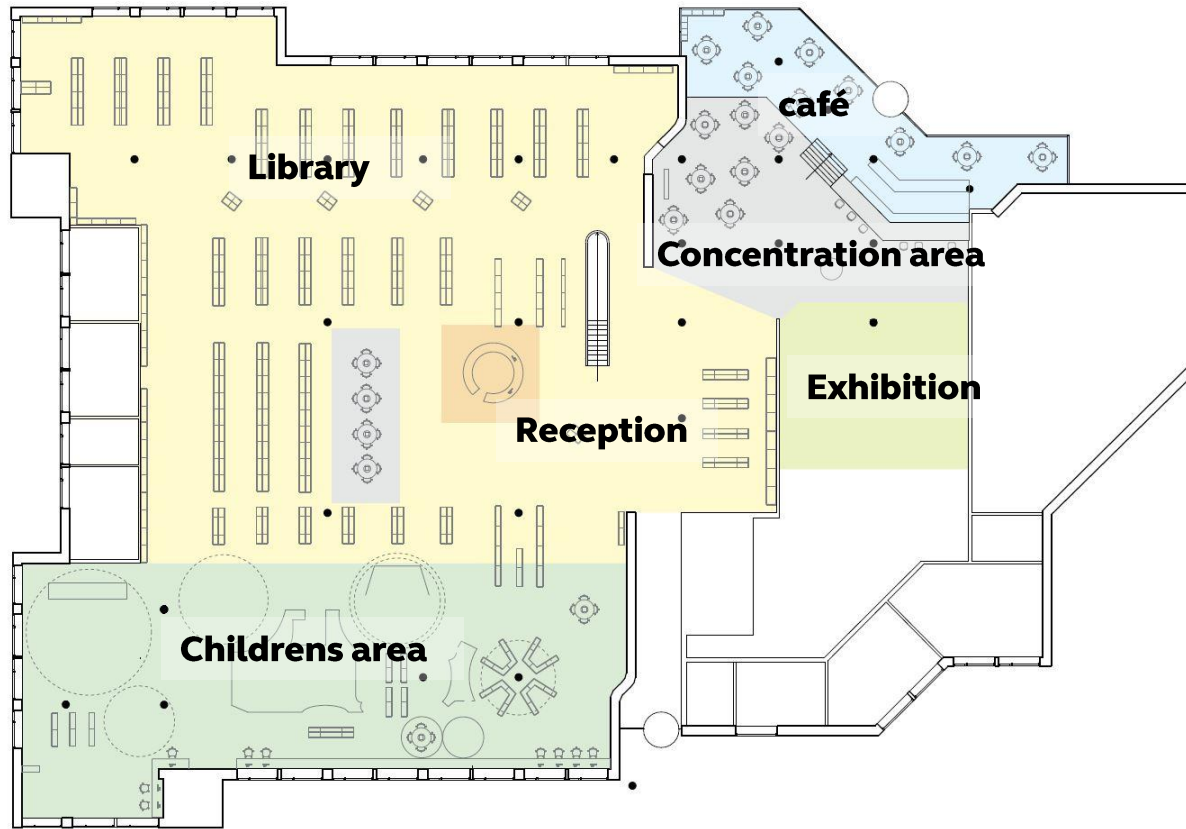
2010

Henning
Larsen —

Gentofte



Gentofte



Gentofte

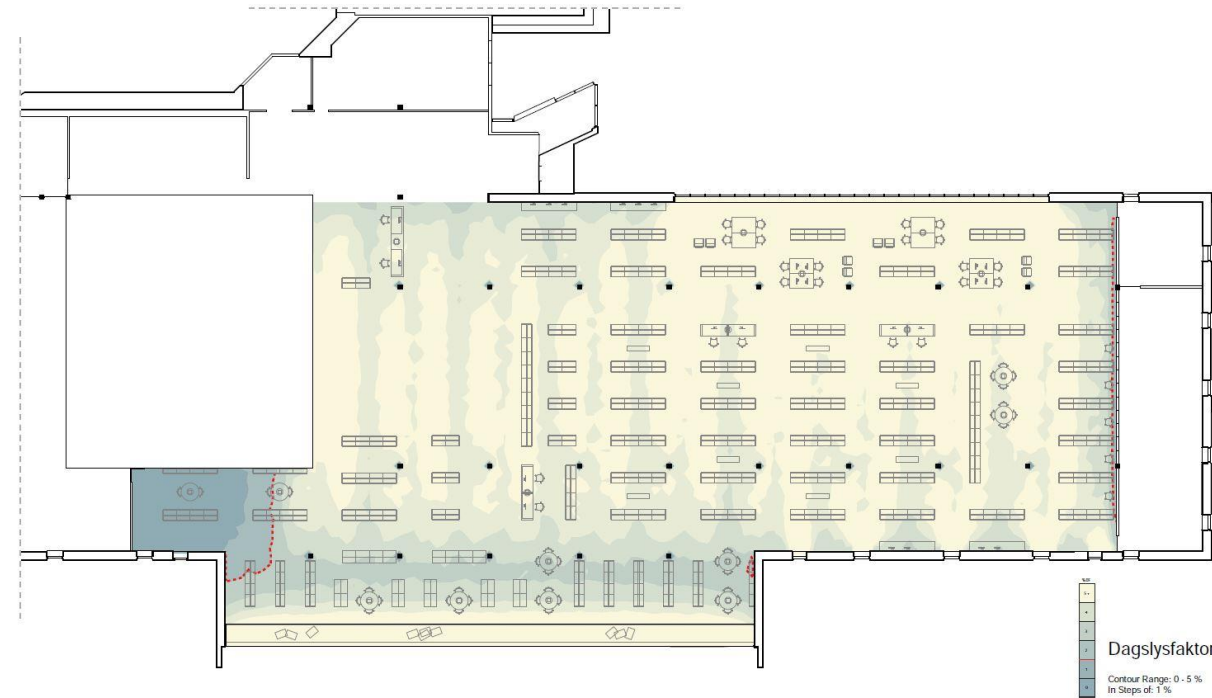
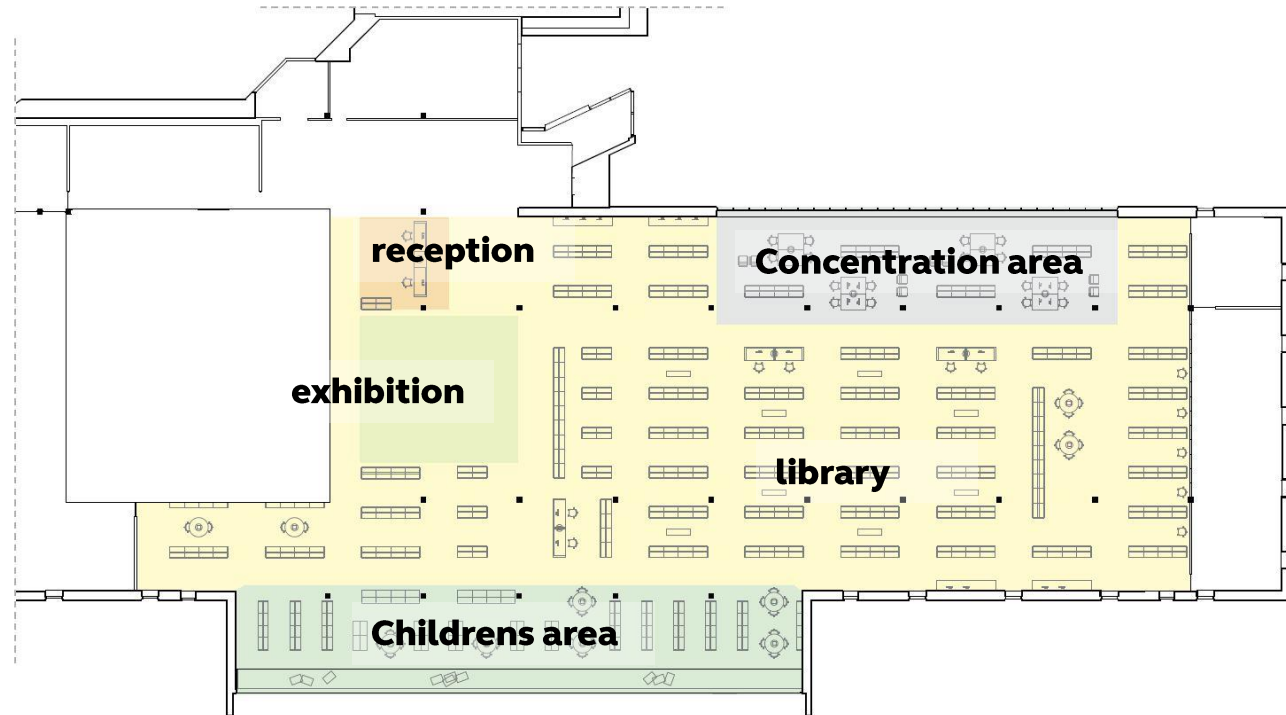


**Henning
Larsen**

Albertslund



Albertslund

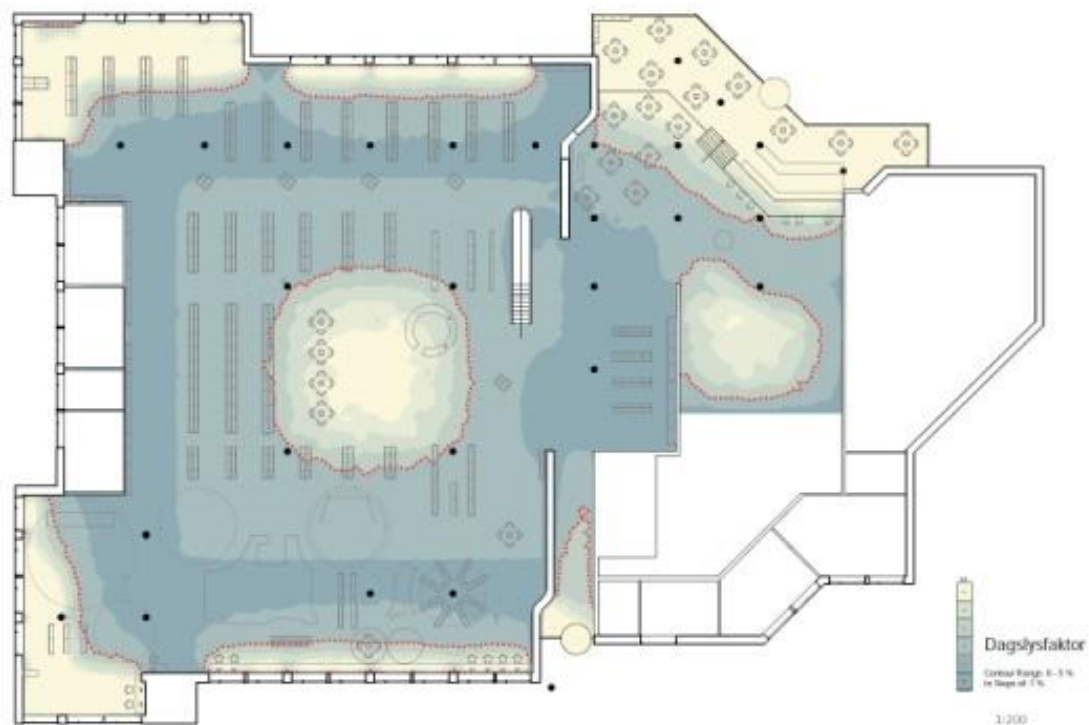


1:200

Albertslund

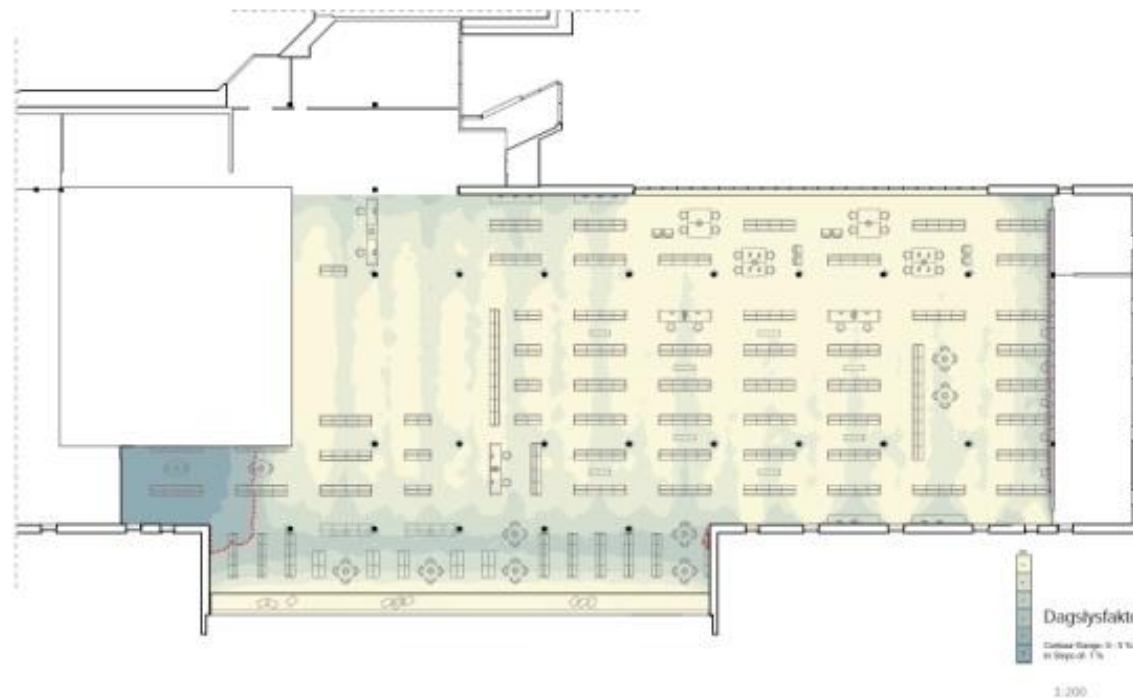


Gentofte



/ **varieret kontrast** mellem lyst og mørkt

Albertslund



/ **jævn fordeling** af dagslys

Undersøgelsen viste....

/ design med fokus på at opnå en **jævn fordeling** af dagslys fik **ikke** en bedre evaluering. **12% flere** ønskede at opholde sig **50% længere** tid i Gentofte

/ design med overvejelser om **dagslys og rumlighed** modtog en **bedre** evaluering

**Hvordan kan den viden om lys
og mennesker være med til at
informere et design?**

***Frederiksbjerg
School***

Aarhus, Denmark, 2017

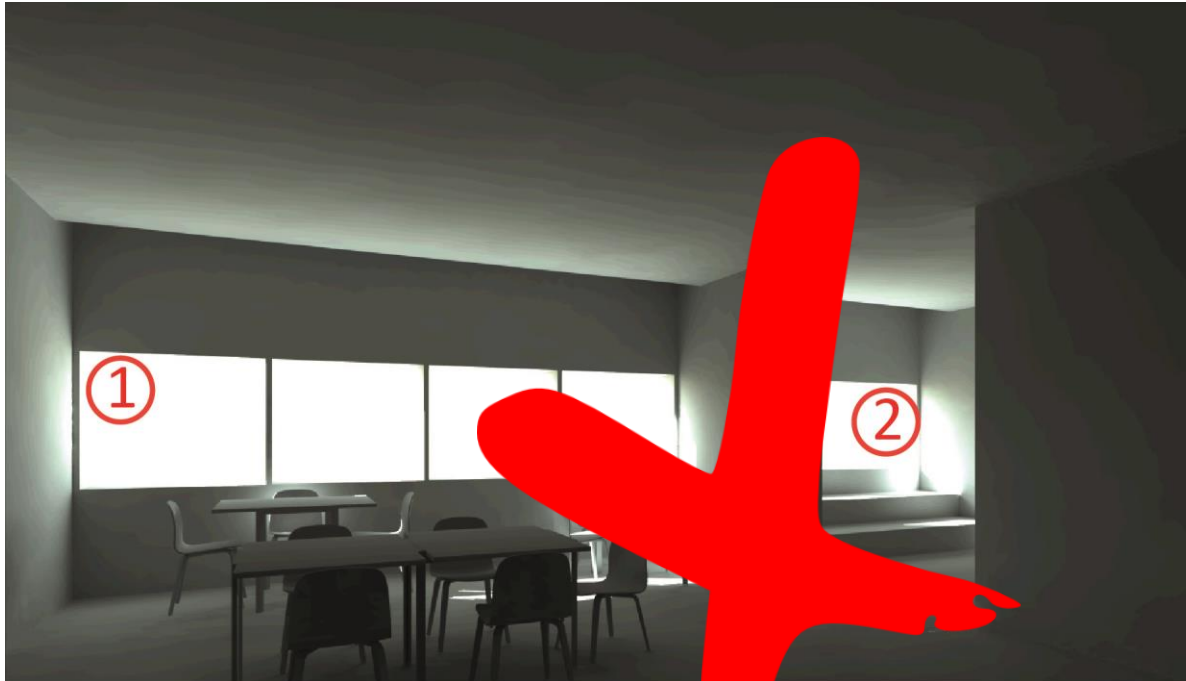


En ny måde at lære på...

Katederundervisning...



Gruppearbejde...



Daylight is distributed in the space through **unvarying window** placement spanning from one opposite wall to another **(1)**
A big window area for an area with secondary character **(2)**



Varied placement of windows creates **dynamic** and **varied views** to the outside **(1)** Window niches encourage **play** and **activity (2)**.
A cozy corner is created by a wall and window niches **(3)**

Omkostningerne ved ekstra dagslys er nemme at måle : Et stort vindue koster mere end et lille vindue. Men VÆRDIEN af dagslys er straks sværere, for hvilke kvaliteter giver dagslyset ?

Henning Lygum, ingeniør, City Development



The sky



The landscape



The street





**Henning
Larsen** —

Ny forskning i lys, lyd og indlæring

/ combining the audio and visual human experience



Ny forskning i lys, lyd og indlæring

/ combining the audio and visual human experience

70 – 90 dB (annoying)



40 – 60 dB (quiet)

**"...som små kyllinger samler
børnene sig under lampens skær
og dæmper stemmen..."**





Findings:

- **Vores data peger på et fald på mellem 2 – 8 dB**
(eller mellem 2,5% -7,5% fald i gennemsnitligt støjniveau)
- *1 dB: Mærkbart med særligt udstyr i et lydtæt rum*
- *2-3 dB: Mærkbart i et “normalt miljø” (men måske bemærker du det kun, når adspurgt)*
- *4-6 dB: Meget mærkbart i “normalt miljø” (elever vil mærke forskellen)*
- *7-8 dB: Signifikant. Det vil være meget tydeligt.*
- *10 dB: 50% forandring, der er meget hørlig*

Anbefalinger; for en ny politisk agenda

/ stil krav til **lysoplevelser** (herunder mørke)

/ tænk **dagslysdynamik** frem for **dagslysmonotoni**

/ udfordre **separationen af indeklimakrav** og **tænk holistiske løsninger**

Følg ikke lovgivning blindt – brug
din **mennekelige fantasi**,
empati og et skvæet **sund fornuft**

More information

www.henninglarsen.com

LinkedIn: Henning Larsen

Instagram: Henninglarsenarchitects

Contact

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jstr@henninglarsen.com

