



The Happy Marriage Between Healthcare Environments and Green Infrastructure

David Brasfield

Chairperson, Scandinavian Green Infrastructure Association

Vice Chair, Norwegian Association for Green Infrastructure

Environmental Manager, Sunnaas Rehabilitation Hospital

WGIC Berlin, June 20th – 23rd, 2017



Q & A with session participants

- Who in the audience has been hospitalized for for several days due to traumatic injury or serious illness?
- ...or has a family member who has been?
- What do you remember about your/their stay?
- What do you remember of physical surroundings that could be described as supportive and healing environments and architecture?

David Brasfield



- Architect / building engineer
- Urban planning
- Urban sustainability policy development
- Active promotion of green roofs since 2005. First Norwegian green roof conference 2006
- Health sector since 2013
- Session moderator WGIC 2012
- Vice Chair, Norwegian Association for Green Infrastructure (NFGT)
- Chair, Scandinavian Green Infrastructure Association (SGRA)



INFRASTRUCTURE



Scandinavian Green Infrastructure Association

Renaturing for livable cities



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✉ marja.mesimaki@helsinki.fi

✉ tobias.emilsson@slu.se

✉ mille@ign.ku.dk



Vision

A Scandinavia where buildings and nature are combined –

where green roofs and walls help create living, livable and resilient cities.



Mission

SGRA drives a re-naturing of Scandinavian cities together with members and other partners, by showing the value of and removing obstacles for sustainable green roofs, walls and infrastructure. Together we are dissolving the paradigm of building grey, and establishing a new and more resilient collaboration with nature.



Sunnaas hospital

The view from my office





Sunnaas hospital





Birgit and Rolf Sunnaas (Hospital founders)

For å få regnskapet til å gå opp og for å skape trivsel og et godt miljø
 satset vi den gang på naturalhusholdning. /bilde/ Vi hadde griser, høns
 kalkuner og gjess og også en del kalver. Fisk hentet vi uti fjorden og
 det hendte at vi fikk en hummer dannog vann. ~~xxxxxxx~~ /bilde/ Det øvrige arealet
 / bilde/ Vi dyrket også grønnsaker, frukt og bær, / bilde/ her høstervi
 vindruer i drivhuset. / bilde/ Det øvrige areal ble opparbeidet til park-
 anlegg. / bilde/

Sunnaas Hospital – a partially
 self sufficient eco-society for:

- Economic survival
- Well being





Mid 1950's

- Poultry, eggs
 - Pork
 - Fish farming
 - Fruits, vegetables
-
- 1 doctor
 - 17 gardeners





Ca. 1960









Innendørs grønt anlegg



Property development at Sunnaas Hospital


- Sale of property to finance new building
- Consolidation of locations, renewal and expansion of building stock
- Our outdoor areas are under press and shrinking
- New wing built in 2015, with a view onto our previously hidden, ugly and dead gray roofs.
- Previous positive experience with roof terrace, but intensely used and not very green

From Joni Mitchell's *Big Yellow Taxi*:

*Don't it always seem to go
That you don't know what you've got
Till it's gone?*

*They paved paradise
And put up a parking lot*

*They took all the trees
Put 'em in a tree museum
And they charged the people
A dollar and a half just to see 'em*

An aerial photograph of a dense urban area, likely New York City, showing a grid of streets and numerous multi-story buildings. A semi-transparent green rectangular overlay is centered in the image, containing white text. The text reads: "OMG! What kind of corner are we painting ourselves into??"

OMG! What kind of
corner are we painting
ourselves into??



Hospital strategy for development of outdoor areas

Effective area use

Green infrastructure

Ecosystem rehabilitation

Low maintenance hospital grounds

Healing architecture

Self-grown fruit, vegetables and herbs

"Organic" grounds maintenance

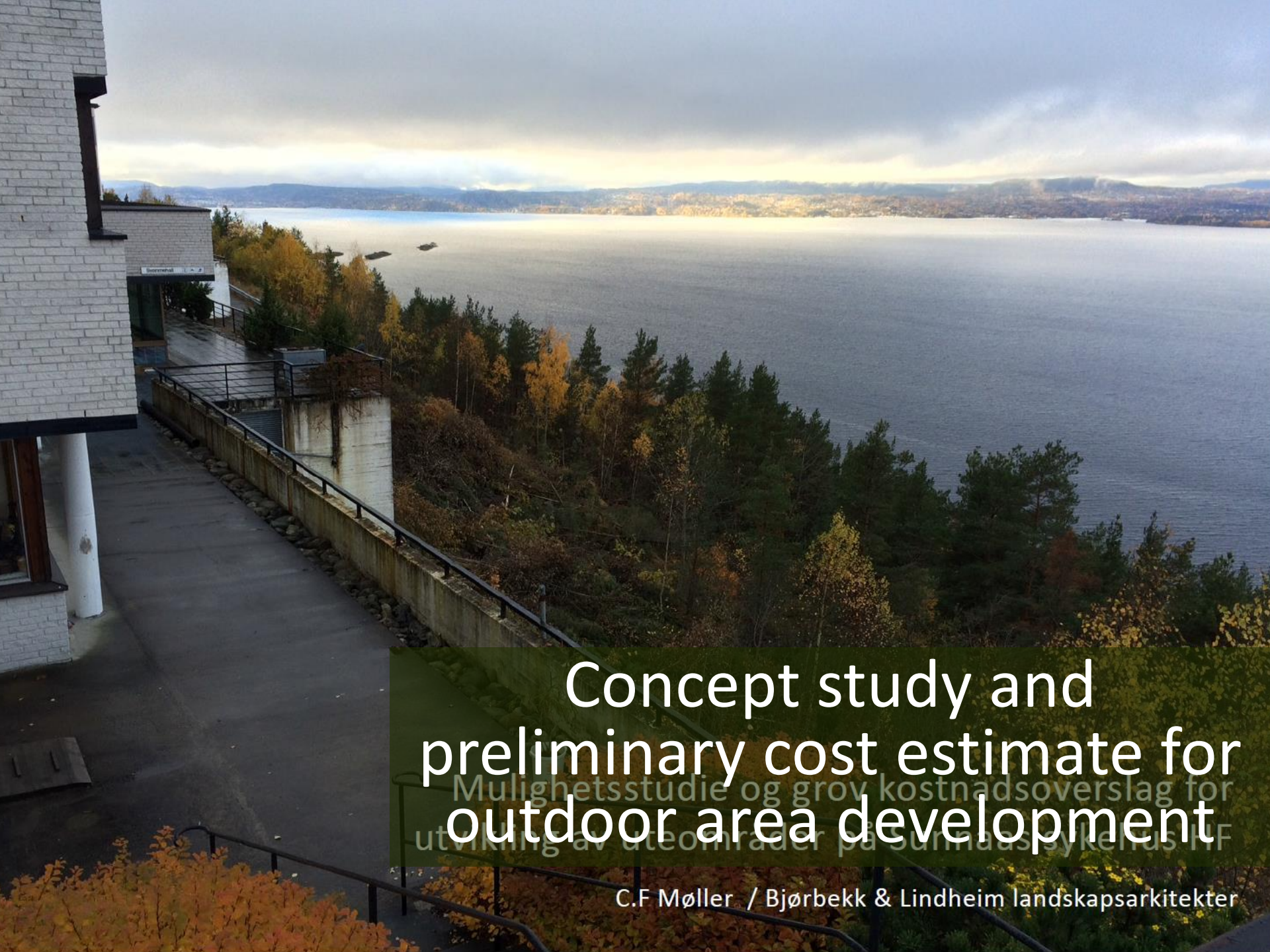
Ecosystem preservation

Water stewardship

Utilitarian plants

Possibilities: new green roof at Sunnaas Hospital?

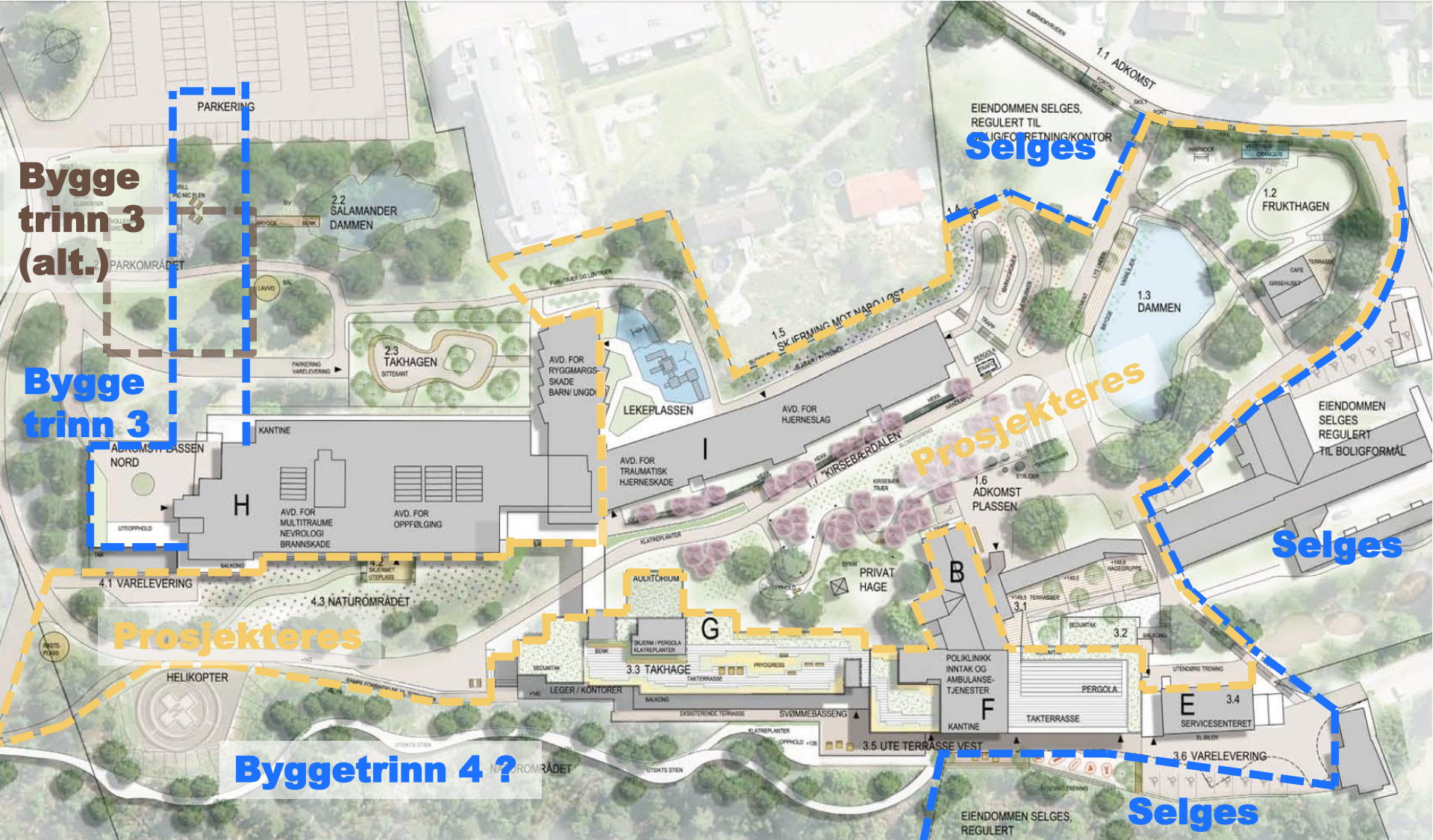
- Existing roof terrace. Next, the wild side?
- A place for contemplation
- Giving something back to our local nature amenities
- For patients with injuries and conditions causing cognitive impairments:
A place to be outside alone, without a hospital employee breathing down your neck, and without feeling like you are in a prison yard



Concept study and preliminary cost estimate for outdoor area development

Mulighetsstudie og grov kostnadsoverslag for utvikling av uteområder på Sunndals Sykehus HF

C.F Møller / Bjørbekk & Lindheim landskapsarkitekter



Concept study for Sunnaas and improvements 2016



Uterommet vest for I-bygg i dag.



Rampen. Flettverks rekkverk foreslås fjernet.



Området kan skjermes med klynger av buskfuru.



Kirsebærlund - vårfeiring med frodig blomstring.
Klatreplanter på fjellskråninger.



Blomstereng / stauder.
Buskfuru



Spisbare planter: blåbær
markjordbær og bærbusker.



SKJERMING

Langs østsiden av gangforbindelsen er det behov for skjerming mot pasientrom i underetasjen i I-bygget. Dette gjøres med buskvegetasjon som er tilstrekkelig høy for å skjermes fra veien, og lav nok til å beholde utsynet mot kirsebærlunden. Klippet hekk er egnet til formålet. Hekken bør plasseres nært inntil gangveien. Den private hagen til Leif Sunnaas skjermes med busker; - syringer i tett planting vil gi god skjerming mot innblikk fra øst.

RAMPEN

Rampeanlegget er bygget og utformet med rekkverk og håndløpere i to høyder på en slik måte at gangstien føles unødvendig avskjermet. Ifølge regelverk er det ikke krav om rekkverk langs ramper med mindre det er større høydeforskjell enn en halv meter. Håndløpere vil det være behov for. Anlegget kan med fordel åpnes opp ved å fjerne rekkverket langs kantene som kan beplantes med planter som er spiselige og har bær; rabarbra, markjordbær og bærbusker.

Det foreslås å etablere en snarvei via en trapp som tilskudd til rampeanlegget.

Trafohuset er lite pent element som er plassert sentralt og synlig i området. Dette foreslås omkranset med trekonstruksjon/ pergola med klatreplanter.

Området på østsiden av I-bygget beplantes med markjordbær, blåbær og tyttebær. Det etableres en sone med vegetasjon som visuelt skjerm mot naboene. Her foreslås det beplantning som passer til skogsområdet. Buskfuru plantes i grupper for å skape en uformell skogskarakter. - en stram hekk vil være et fremmed element i skogen.



Mulig scenario ved dammen på Sunnaas - illustrasjon fra prosjektet Teglverksdammen, ferdigstilt høst 2015, prosjertert av Bjørbekk og Lindheim landskapsarkitekter.



Hovedinngang fra sydøst



Hovedinngang i dag med parkering på beste plassen.



Stemningsskapende belysning - staude / prydgressbedd
Det er mange flotte store trær i hage- og park området som kan lyssettes og skape stemning i mørketiden.



Det er mange flotte store trær i hage- og park området som kan lyssettes - stemning sensommer.



Lyselementer som kan sittes på.

Effektbelysning - eksempel.



Mulighetsstudie og grov kostnadsverslag for utvikling av uteområder på Sunnaas sykehus HF 20.11.2015

ADKOMSTPLASSEN

Drosjer og besøkende med bevegelseshemninger som kommer med bil, benytter innkjørselen fra Bjørnemyrveien. Passasjerer bør kunne slippes av rett ved hovedinngangen. Derfor bør det være snumlighet for biler og ambulanser på plassen. Adkomstplassen må allikevel ikke bli parkerings-plass. HC-plasser foreslås plassert i umiddelbar nærhet med kort avstand til hovedinngangen.

Adkomstplassen skal være innbydende og et sted for sosial samvær. Den skal ha en utforming som genererer aktivitet og interaksjon, opphold og trivsel: Sitteplasser møblert med bord og stoler og kanskje også med en stor hammock som symbolsk minner en på å senke tempoet – dette er stedet for rekreasjon.

Skråningen mot syd kan utformes som sitteamfi med trapp, med fint utsyn mot dammen og hagen.

«KIRSEBÆRDALEN»

Det er ikke planlagt noen tradisjonell sansehage på området. Det er heller tenkt at hele stedet tilbyr besøkende sanselige opplevelser med en variasjon og mangfold av karakterer.

Det nye landskapsrommet mellom bygning G- og det nye I-bygget fører temaet og stemningen for «Frukthagen «videre; - Her vil det være fokus på blomstring og årstidsvariasjoner.

Skråningen mot øst foreslås utformet med mykere former som følger den nye stiens konturer. En lund av kirsebærtrær plantes i skråningen. Dette vil gi en opplevelsersik feiring av våren med sin frodige blomstring.

På bakken etableres en blomstereng som bunndekke. Den sørger for sanselighet og varierende farger, dufter og stemninger hele vekstsesongen. Blomsterengen tilsåes i skrinne vekstjord og den slås to-tre ganger gjennom sesongen. Denne type vegetasjon er ikke vedlikeholdskrevende, men en må være oppmerksom i etableringstiden på å hindre ugress å etablere seg. Deler av skråningen kan etter hvert bli beplantet med herdige stauder, avhengig av ønsket grad av driftsinnsats. Stauder er noe mer ressurskrevende.

Under furutrærne opparbeides det et lite skjermet oppholdssted, - et pausested.

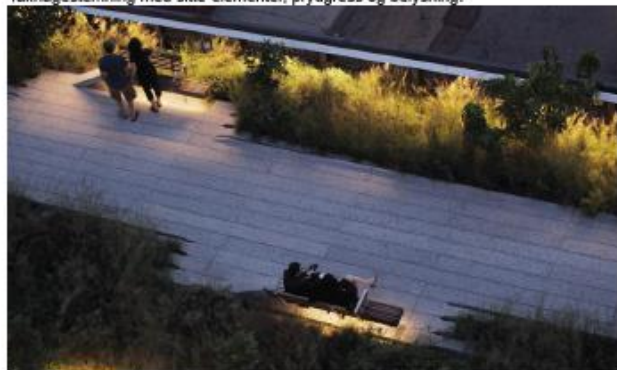


C.F. Møller & plørbekk lindheim



Takterrassen på Sunnaas

Takhagestemning med sitte-elementer, pryddress og belysning.



Mulighetsstudie og grov kostnadsoverslag for utvikling av uteområder på Sunnaas sykehus HF 20.11.2015



Takflaten på G-bygg er godt synlig og lite estetisk element i dag, utsikt fra H-bygget.

Sitte-element mellom beplantning



Sedum



TAKHAGENE, TERRASSENE

Det har forholdsvis nylig blitt etablert en takhage på Sunnaas sykehus som har blitt en nydelig oase. Herfra er det fantastisk utsikt over Oslofjorden.

Dette er et vellykket forbilde og bør gi inspirasjon og oppmuntring til å ta i bruk resterende takflater enten til grønne tak å se på eller grønne tak til å oppholde og restituere seg på.

SKJERMET TERRASSE MOT VEST

Uterommet mellom glassgangen og takterrassen er et lite utnyttet område i dag som preges av mye buskvegetasjon. Her ligger det godt til rette for å lage et skjermet terrassert uterom med ny rampeforbindelse sydyover.

Her kan det bygges en skjermet og lun terrasse med planteområder for frukttrær og plantekasser for dyrking av nyttevekster. Her er det mulig for beboerne å bli aktivert med å stelle med hagen og dyrke selv. ☺

TAKHAGE BYGG G

På takflatene til bygg G er det gode muligheter for å anlegge et skjermet uterom for pasientene.

Her kan høye pryddress svaie i vinden og danne lune oppholdssteder med variert tilbud om sitte-steder, -hengekøyer, solbenker og alminnelige benker med god ryggstøtte.



Lun solvegg og utsikt - stedet for skjermet plass ved stillerom. Skogsbunnen rundt reetableres.



Flott utsikt mot sydvest.



Stedsegen skogsbunnsvegetasjon





Utsiktsti gjennom tretopper.



Utsiktspunkt - fin eksempel.



Utsiktspunkt - fin eksempel.



Mulighetsstudie og grov kostnadsoverslag for utvikling av uteområder på Sunnaas sykehus HF 20.11.2015

NATUROMRÅDET

Naturområdet mot vest har fine kvaliteter med steden lyng-, skogsbær- og furuvegetasjon. Den ligger skjermet, med god utsikt over fjorden.

REETABLERING SKOGSBUNNVEGETASJON

Det er behov for å reetablere vegetasjonen i skogbunnen etter sår skapt etter bygging av det nye tverrbygget. Skogbunnen reetablert ved utlegging av toppsjikt med planter og frøbank fra lignende områder i nærheten.

SKJERMET UTEPLASS

Det er et ønske om et meditativt sted til ettertanke og ro utenfor stillerommene i bygningen. Her er det en lun solvegg med fantastisk utsikt over fjorden. Utegulvet på terrassen får tredekke med rause trinn i forkant som kan benyttes som sitteplasser. Busk- og hekkvegetasjon plantes og beskjæres for å gi en tett grenstruktur for å gi god levikning. En universelt utformet stiforbindelse i terrenget kan lett etableres fra gangveien fra Helikopterplassen.

NYE STIFORBINDELSER

En ny gangforbindelse etableres for de som vil gå lengre tur i området på vest siden slik at man kan gå via universelt utformet gangforbindelse til terrassen ved bassenget – hvor det i dag kun er adkomst via trapp.

Stiforbindelse bygges frem til Nesoddtunet med en «rasteplass» utformet som utsiktspunkt med beste utsikt over fjorden mot vest. Her bygges en plattform for bord og stoler, og med lav kant mot omgivende fallende terreng som kan benyttes til å sitte på.

UTSIKTSTIEN

Ny stiforbindelse kan bygges fra Nesoddtunet langs vestsiden frem til vestsiden av bygg F.

Her er det mulig å legge opp til en gangforbindelse utformet som «gangbro» gjennom tretopper, en sti som bukker seg gjennom og mellom tretopper med anlagte utsiktspunkter underveis vil gi store naturopplevelser!

Bronkonstruksjon: stål, tre og tauverk











Green infrastructure

(my personal definition)

Natural amenities and areas, planned or existing, delivering a range of ecosystem services in rural or urban settings

...and offsetting the need for

...Gray infrastructure – typical infrastructure built with technical solutions, based on man made and dead materials

Multifunctional delivery

- Fosters a better quality of life and human well-being, for instance by providing a high quality environment in which to live and work.
- Improves biodiversity, for instance by reconnecting isolated nature areas and increasing the mobility of wildlife across the wider landscape.
- Protects us against climate change and other environmental challenges, for instance by alleviating floods, storing carbon or preventing soil erosion, improving air quality, absorbing noise.
- Encourages a smarter, more integrated approach to development which yields more efficient use of space.

Inspired by:

http://ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructure_broc.pdf



food



raw materials
& biomass



clean
water



flood
control



waste water
treatment



air quality &
local climate

Values delivered to urban areas from ecosystem services

sequestration medicine

erosion
control

genetic
diversity

pollination



biological
control



species
habitats



recreation



Aesthetic
amenity



tourism



spiritual
experience

Nature deficit disorder and stress

Nature deficit disorder refers to the phrase coined by Richard Louv in his 2005 book *Last Child in the Woods* that human beings, especially children, are spending less time outdoors resulting in a wide range of behavioral problems.

[Nature deficit disorder - Wikipedia, the free encyclopedia](https://en.wikipedia.org/wiki/Nature_deficit_disorder)
https://en.wikipedia.org/wiki/Nature_deficit_disorder

PLAY AGAIN

What are the consequences of a
childhood removed from nature?

HOME

ABOUT THE FILM

RESOURCES

TRAILER

SCREENINGS

STORE

PRESS

CONTACT

PLAY AGAIN - OFFICIAL TRAILER



GROUND PRODUCTIONS PRESENTS "PLAY AGAIN"

MUSIC BY SIGUR RÓS AND KIMYA DAWSON ORIGINAL MUSIC BY ANDREAS HESSEN SCHEI

EDITED BY DAVID BEE CINEMATOGRAPHY BY JAMES KLATT EXECUTIVE PRODUCER LOWAN STEWART

PRODUCED BY MEG MERRILL DIRECTED BY TONJE HESSEN SCHEI

- We are deeply entrenched in a huge experiment on behaviour and well-being, where we are the test animals.
- Our self confidence is perverted by the paradigm of expertise, which of course has it's place at hospitals, but...
- ...in truth we are all life-long students of nature deficit disorder.

Stress levels increased since 1983, new analysis shows

By Sharon Jayson, USA TODAY

Updated 6/13/2012 9:17 PM

You may have felt it, but now a scientific analysis of stress over time offers some proof that there's more stress in people's lives today than 25 years ago.



By Alejandro Gonzalez, USA TODAY

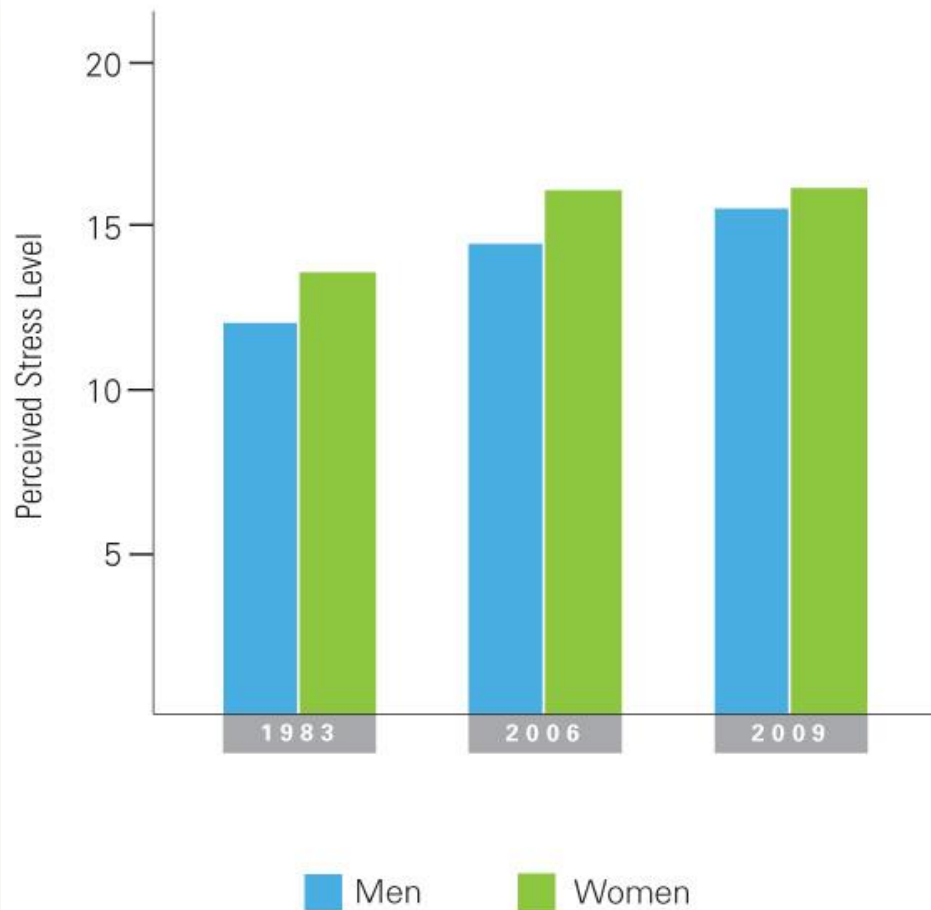
Stress increased 18% for women and 24% for men from 1983 to 2009, according to researchers at Carnegie Mellon University in Pittsburgh, who analyzed data from more than 6,300 people. It's considered the first-ever historical comparison of stress levels across the USA.

"The data suggest there's been an increase in stress over that time," says psychologist and lead author [Sheldon Cohen](#), director of Carnegie Mellon's Laboratory for the Study of Stress, Immunity and Disease. The analysis is published online in the *Journal of Applied Social Psychology*.

Distributions of Psychological Stress in the United States

in Probability Samples from 1983, 2006, 2009

By Sex



For more information, visit
www.psy.cmu.edu/~scohen/

Carnegie Mellon University
Dietrich College
Humanities and
Social Sciences

"Stress wreaks havoc on the mind and body. For example, psychological stress is associated with greater risk for depression, heart disease and infectious diseases. But, until now, it has not been clear exactly how stress influences disease and health."



Patients often come to us:

- Due to a traumatic experience
- With pre-existing levels of stress.

Psychological Stress and Disease

Sheldon Cohen, PhD

Denise Janicki-Deverts, PhD

Gregory E. Miller, PhD

DESPITE WIDESPREAD PUBLIC BELIEF THAT PSYCHOLOGICAL stress leads to disease, the biomedical community remains skeptical of this conclusion. In this Commentary, we discuss the plausibility of the belief that stress contributes to a variety of disease processes and summarize the role of stress in 4 major diseases: clinical depression, cardiovascular disease (CVD), human immunodeficiency virus (HIV)/AIDS, and cancer.

What Is Psychological Stress?

Psychological stress occurs when an individual perceives that environmental demands tax or exceed his or her adaptive capacity.¹ Operationally, studies of psychological stress fo-

ercise and sleep, and poorer adherence to medical regimens provide an important pathway through which stressors influence disease risk. Stressor-elicited endocrine response provides another key pathway. Two endocrine response systems are particularly reactive to psychological stress: the hypothalamic-pituitary-adrenocortical axis (HPA) and the sympathetic-adrenal-medullary (SAM) system. Cortisol, the primary effector of HPA activation in humans, regulates a broad range of physiological processes, including anti-inflammatory responses; metabolism of carbohydrates, fats, and proteins; and gluconeogenesis. Similarly, catecholamines, which are released in response to SAM activation, work in concert with the autonomic nervous system to exert regulatory effects on the cardiovascular, pulmonary, hepatic, skeletal muscle, and immune systems. Prolonged or repeated activation of the HPA and SAM systems can interfere with their control of other physiological systems, resulting in increased risk for physical and psychiatric disorders.^{1,2}

Author Affiliations: Department of Psychology, Carnegie Mellon University, Pittsburgh, Pennsylvania (Drs Cohen and Janicki-Deverts); and Department of Psychology, University of British Columbia, Vancouver, British Columbia, Canada (Dr Miller).

Corresponding Author: Sheldon Cohen, PhD, Department of Psychology, Carnegie Mellon University, 5000 Forbes Ave, Pittsburgh, PA 15213 (scohen@cmu.edu).

Paper for conference, *Plants for People*
International Exhibition Floriade 2002

Health Benefits of Gardens in Hospitals

Roger S. Ulrich, Ph.D.

Center for Health Systems and Design
Colleges of Architecture and Medicine
Texas A & M University
College State, TX 77843

INTRODUCTION

This paper selectively reviews scientific research on the influences of gardens and plants in hospitals and other healthcare settings. The discussion concentrates mainly on health-related benefits that patients realize by simply *looking* at gardens and plants, or in other ways passively experiencing healthcare surroundings where plants are prominent. The review also briefly addresses other advantages of gardens and plants in hospitals, such as lowering the costs of delivering healthcare and improving staff satisfaction.

It might be asked at the outset: why is worthwhile to focus exclusively on gardens located in hospitals and other healthcare facilities? One important reason is linked to the



“One of the most important lessons to be learned from human behavioural science (ethology) is an innate preference for plants.

Vegetation does not only mitigate today’s urban climate – but much more: **vegetation has to mitigate today’s urban architecture... green plants not only provide health factors to our body, they may become vitamins for our soul.”**

Source: “[The Conflict about Beauty – Aesthetics Between Nature and Architecture](#)”. Prof. Dr. Bernd Lötsch





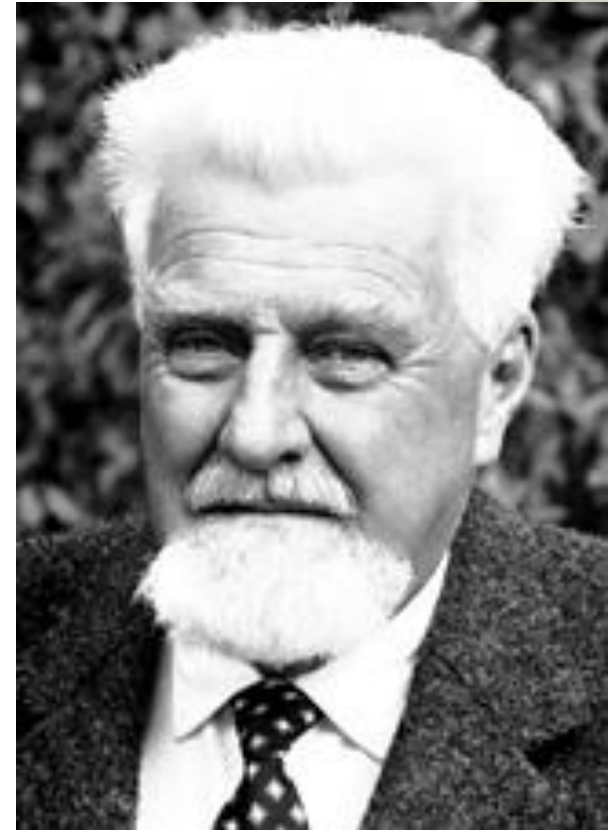
“Our image of the world arose out of a dialogue with Nature, and is adapted to it as are fins to water, as are wings to air, leaves to light or roots to earth, as otherwise eyes and ears, hands and brain could not function, operate or guide us in order to survive. This adaptation dialogue between the Nature around us and the Nature within us has been going on for millions of years, has formed every fibre of our being, from the retina to the nervous system. Thus, deep inside, Man has remained terribly old-fashioned, carrying around with him the traces of his biological evolution, which took place only in the natural environment and in the social associations of small groups. So, **even today every baby is born with the instincts of Cro-Magnon man** (Stone Age hunters in limousines).”

“The self-inflicted estrangement of the environment is running out of man’s control, away from human adaptation patterns that have evolved over millions of years, now causing him to become more and more neurotic.”

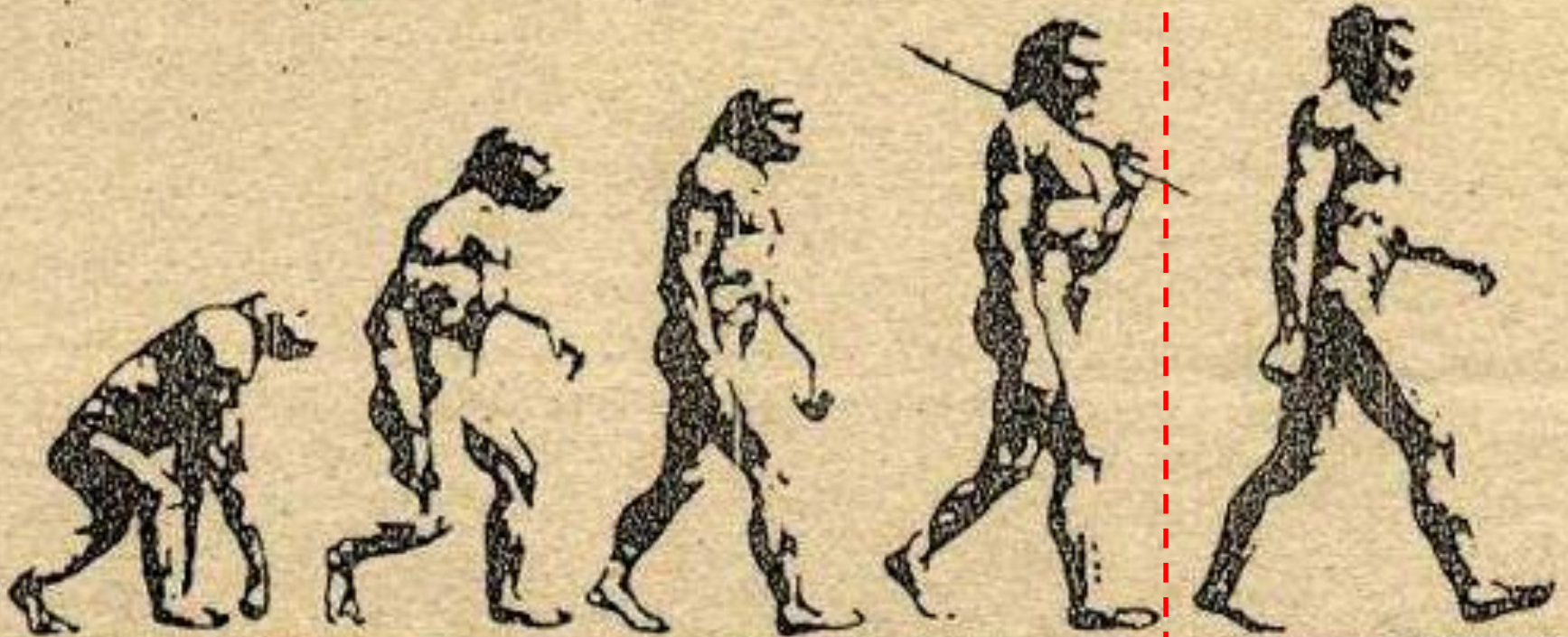


Konrad Lorenz 1903-89, Austria

- Nobel Prize in Physiology and Medicine 1973
- Pioneer in Darwinist biology
- “Cognitive epistemology” The evolutionary theory of cognition





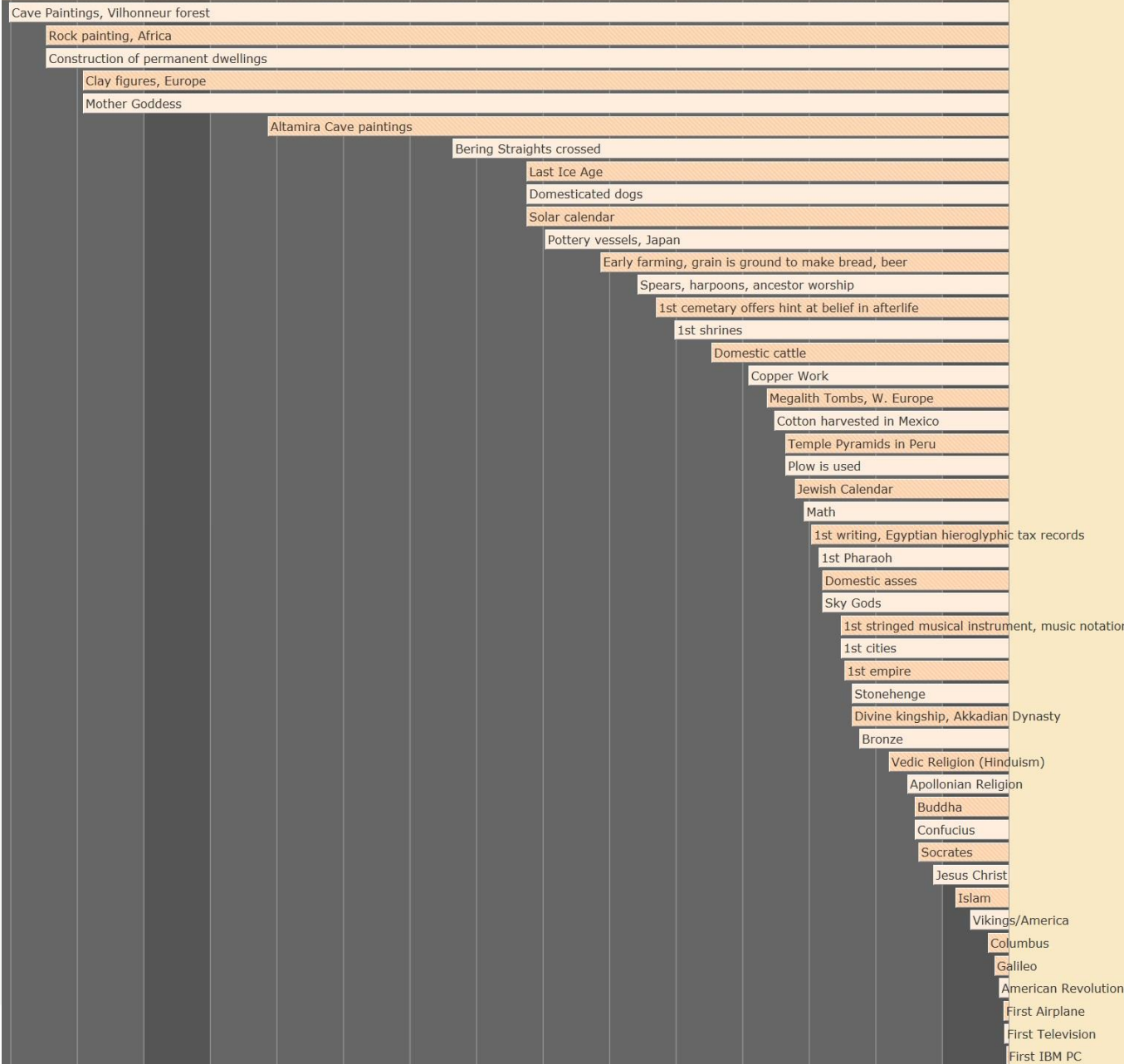




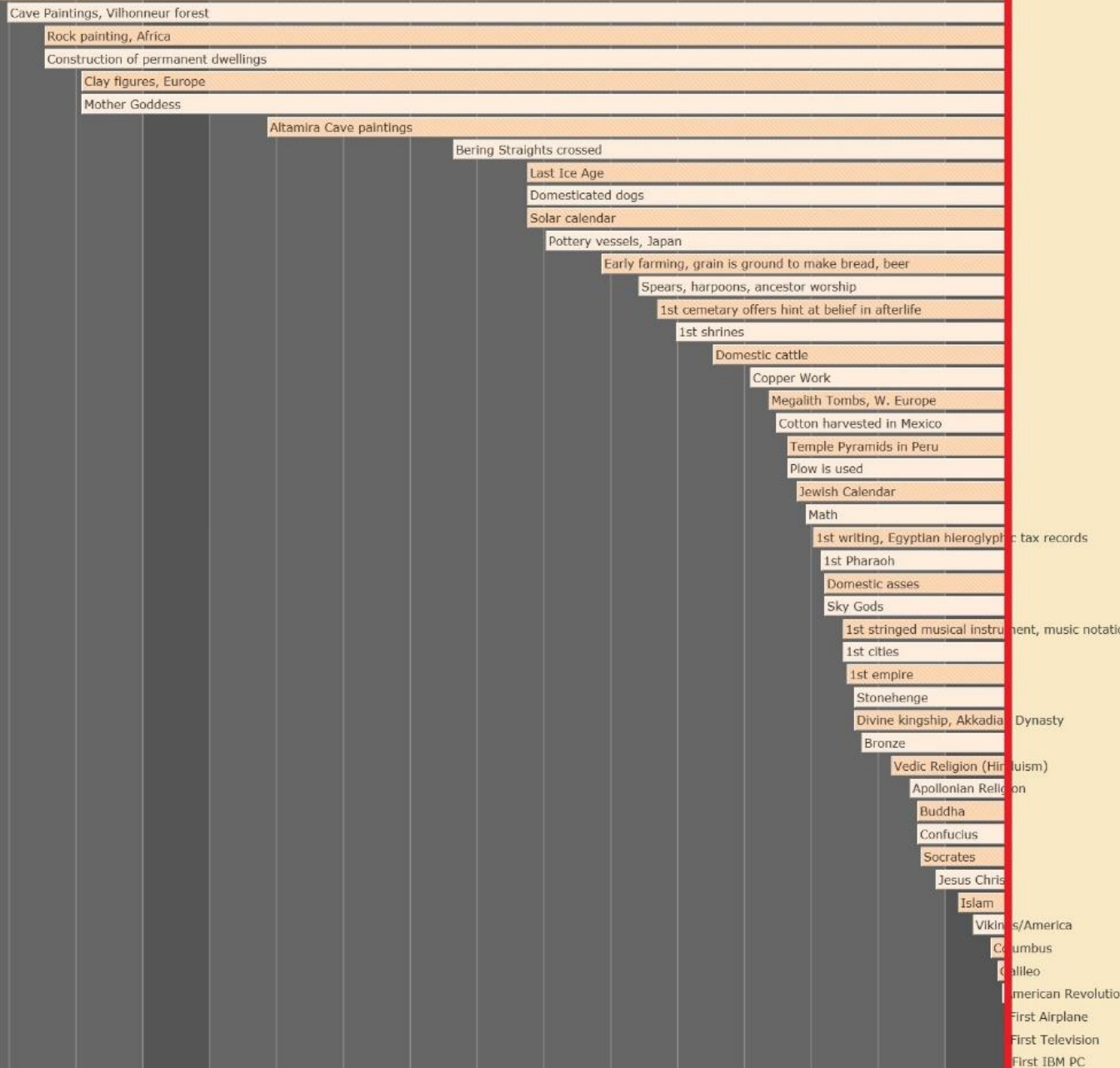
195 000 years



About 195 000 years ago we appeared on the
Omo River valley in Ethiopia



During the last 27 000 years we started doing things commonly associated with "civilization"



Then came the industrial age over the last 200 years, shown in red, where we started making radical changes in the amount of green in our surroundings



Conclusion: not enough time for our cognitive capacities to evolve and adapt to radically changed man made surroundings



View through a Window May Influence Recovery from Surgery

Roger S. Ulrich

Science

New Series, Vol. 224, No. 4647 (Apr. 27, 1984), pp. 420-421

Published by: [American Association for the Advancement of Science](#)



**Professor, Department of
Architecture and Centre for
Healthcare Architecture, Chalmers
University of Technology**

<https://mdc.mo.gov/sites/default/files/sources/2012/10/ulrich.pdf>

The Bible



Institut for Arkitektur og Design Skriftserie nr. 29



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 ScienceDirect

Urban Forestry & Urban Greening 6 (2007) 199–212

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GREENING

www.elsevier.de/ufug

Health effects of viewing landscapes – Landscape types in environmental psychology

M^a.D. Velarde^{a,*}, G. Fry^b, M. Tveit^b

^a*School of Experimental Sciences and Technology, Rey Juan Carlos University of Madrid, CI/Tulipan sln, 28933 Móstoles, Madrid, Spain*

^b*Department of Landscape Architecture and Spatial Planning, Norwegian University of Life Sciences, PO Box 5003, N-1432 Aas, Norway*

Abstract

The visible landscape is believed to affect human beings in many ways, including aesthetic appreciation and health and well-being. The aim of this paper is to analyse the range of landscapes used in environmental psychology studies, and the evidence of health effects related to viewing these landscapes. A literature review of publications linking landscapes and health effects was conducted. This reported evidence of health and well-being effects related to exposure to visual landscapes. The results of the review include an overview of the types of landscape used in the studies, the evidence on health effects, the methods and measures applied and the different groups of respondents. The analysis reveals a predominance of studies using only coarse categories of landscapes. Most landscape representations have been classed as “natural” or “urban”. Few studies were found to use subcategories within these groups.



EVIDENCE OF THE LINKS BETWEEN NATURE AND HEALTH THE TOP TEN

REVIEWS

The following three recent reviews address the subject of the links between nature and health and include many of the individual studies (detailed below) that point to a beneficial effect of nature on various indicators of health:

Pretty J, Griffin M, Peacock J, Hine R, Sellens M and South N, A countryside for Health and Well-Being: The Physical and Mental Health Benefits of Green Exercise Report for the CRN, February 2005

Review detailing studies showing links between nature and health. Also contains two studies: one of 10 outdoor activity projects from the UK and a lab-based intervention looking at synergistic effect of treadmill exercise whilst viewing natural scenes. (SEE EVIDENCE NUMBER TWO) Review also contains model of the links between food and exercise and nature.

Bird W, Natural Fit – Can Green Space and Biodiversity Increase Levels of Physical Activity? Report for the Royal Society for the Protection of Birds, October 2004

Review of studies showing links between nature and health commissioned for the RSPB. Report also contains data on potential health cost savings to be gained with promotion of greenspace.

Henwood K, Exploring the linkages between the environment and health: Is there a role for environmental and countryside agencies in promoting benefits to health? A report for the Forestry Commission. February 2001

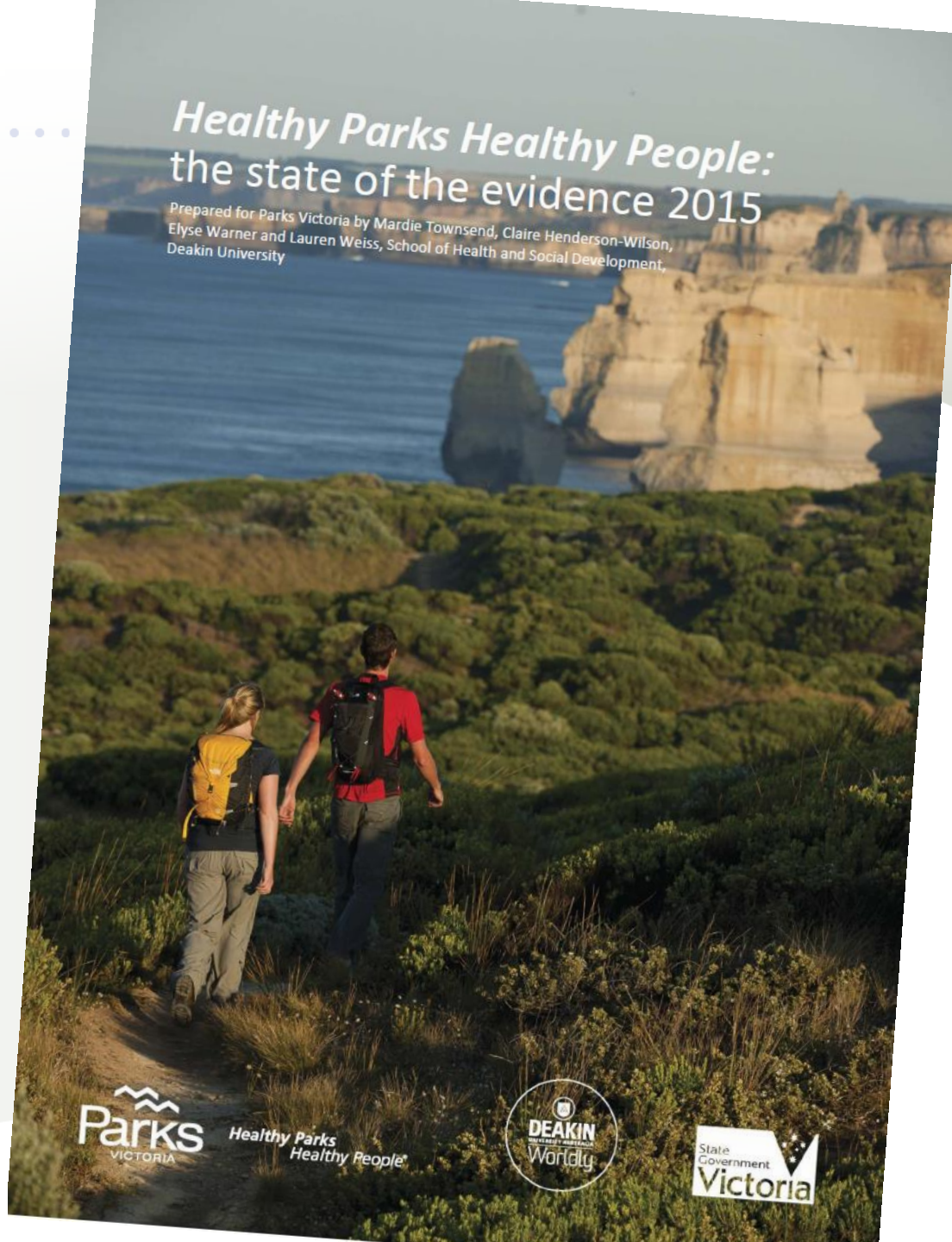
Review of studies showing links between health – both mental and physical health – and nature. Report makes recommendations for policy-makers working in forestry, parks and countryside.

TOP 10 STUDIES THAT SHOW A SIGNIFICANT RELATIONSHIP BETWEEN HEALTH PARAMETERS AND CONTACT WITH NATURE.

PHYSICAL ACTIVITY AND HEALTH : STUDIES LOOKING AT 'GREEN EXERCISE'

Healthy Parks Healthy People: the state of the evidence 2015

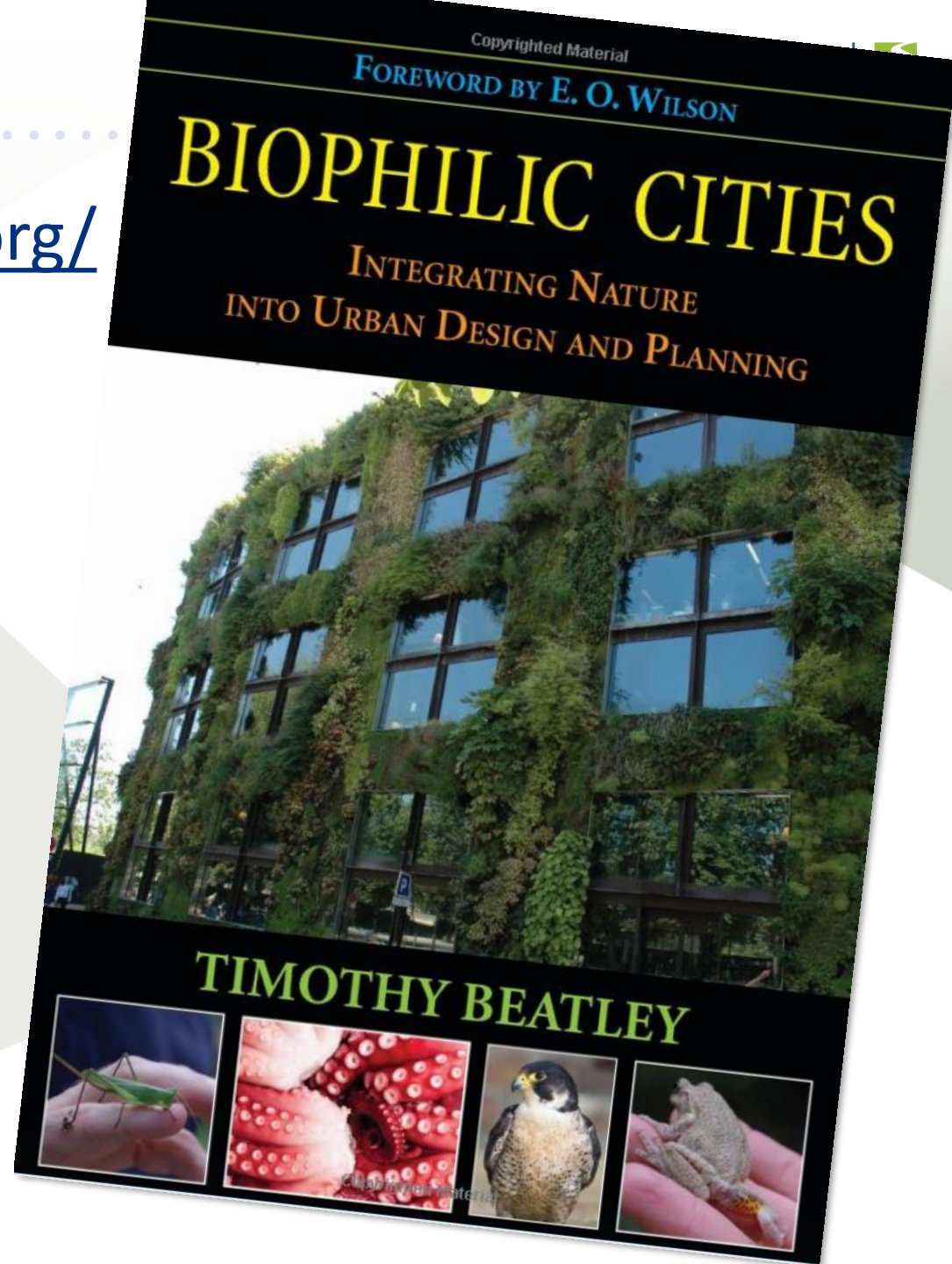
Prepared for Parks Victoria by Mardie Townsend, Claire Henderson-Wilson,
Elyse Warner and Lauren Weiss, School of Health and Social Development,
Deakin University



Healthy Parks
Healthy People



<http://biophiliccities.org/>





<http://www.healinglandscapes.org/>

Top Read Content

1. [Gardens in Healthcare Facilities](#)
2. [Blog](#)

Recent TLN Blog Entries

[Access to Nature DVDs – Spring Sale!](#)

If you have not seen the terrific award-winning DVD series “Access to Nature for Older Adults.” this is your...

[See Gardens in Healthcare and Related Facilities](#)



Forest bathing i Japan – Shinrin yoku





NATUR OG FRILUFTSLIV I REHABILITERING
- EN KARTLEGGINGSSTUDIE

NATURE AND OUTDOOR LIFE IN REHABILITATION
- A DESCRIPTIVE STUDY

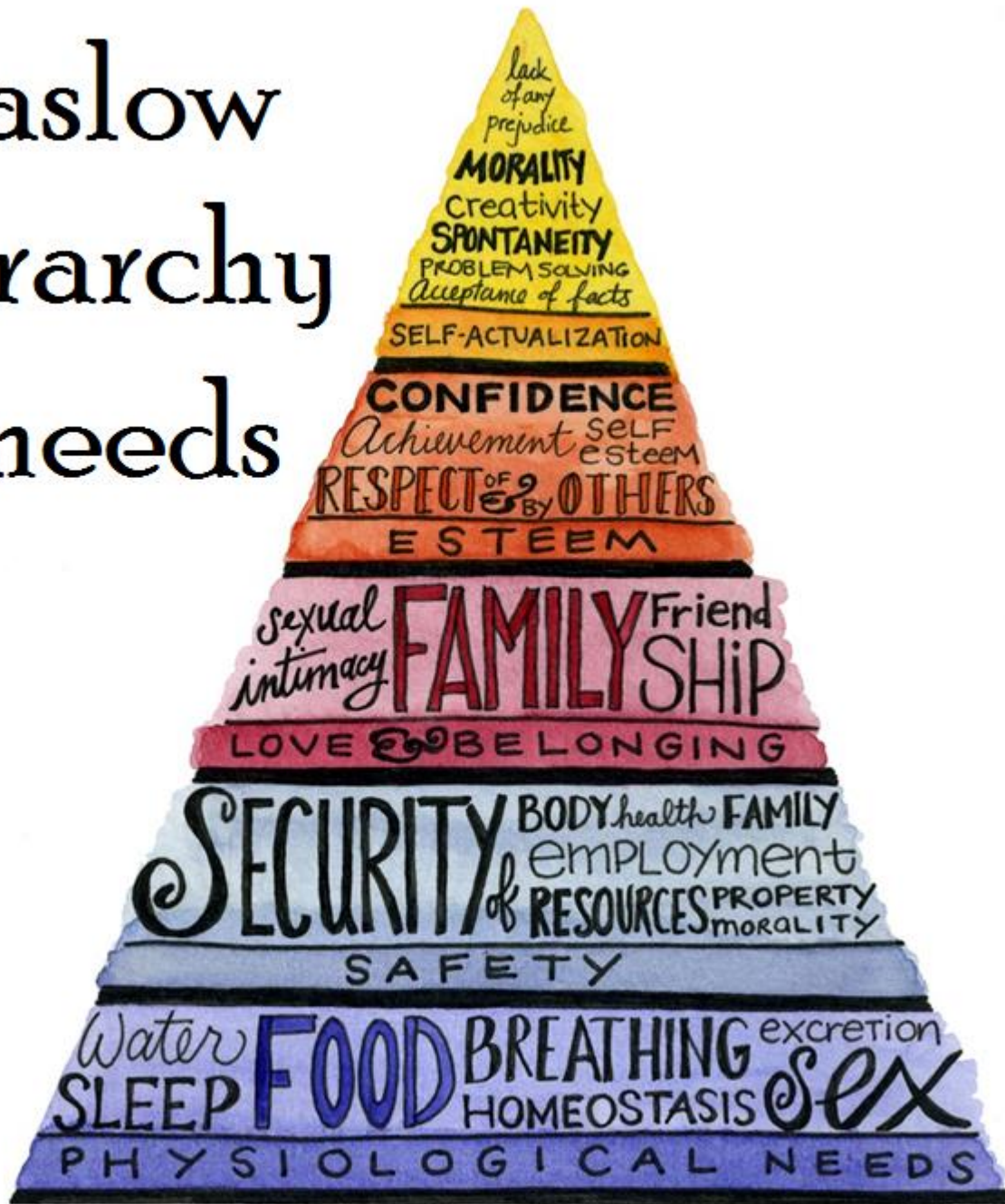
ERLE BREIMO MORSTAD

UNIVERSITETET FOR MILJØ- OG BIOVITENSKAP
INSTITUTT FOR HUSDYR- OG AKVAKULTURVITENSKAP
MASTEROPPGAVE 30 SEP. 2011

<http://brage.bibsys.no/xmlui/bitstream/handle/11250/186059/Masteroppgave%20Erle.pdf?sequence=1&isAllowed=y>



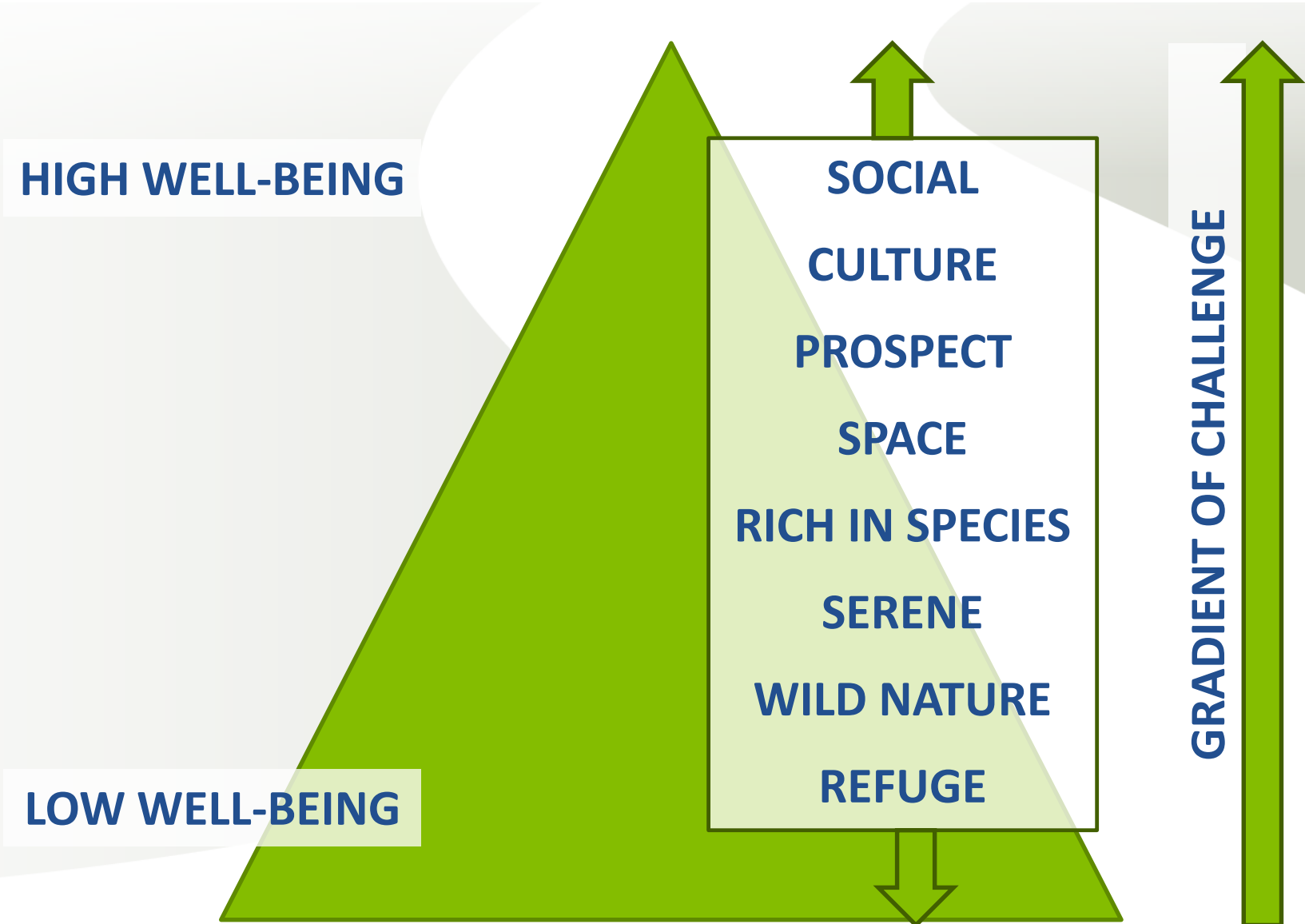
Maslow hierarchy of needs



<i>Air</i>	unpolluted air
<i>Water</i>	clean water for drinking and cooking
<i>Food</i>	adequate supplies of nutritious and non poisonous food
<i>Shelter</i>	protection from wind, cold, rain
<i>Security</i>	protection from threats to the person or property
<i>Hygiene</i>	protection from infectious or contagious disease and from toxins and pollutants
<i>Education</i>	socialisation in the skills and information needed in a given society
<i>Healing</i>	care and treatment for the sick and infirm
<i>Housekeeping</i>	resources for food storage and preparation, cleaning (of people, clothes and homes), waste disposal
<i>Work</i>	gainful labour
<i>Means of exchange</i>	money, credit, or other forms of trading power
<i>Information</i>	access to prevailing media of information and communication (books, newspapers, postal and telecommunications services, etc.)
<i>Transport</i>	private and public transport, roads, railways etc
<i>Personal relationships</i>	family life, intimate relationships, acquaintance and friendship networks
<i>Religious</i>	spiritual or ritual practices
<i>Involvement in group activities</i>	participation in political, social, or economic, activities
<i>Play</i>	social, cultural, and physical recreation



Healthcare garden design considerations



Denmark

<https://www.regionh.dk/nythospit alnordsjaelland/derfor-bygger-vi/inspiration/PublishingImages/Sider/Regionens-retningslinjer-for-nybyggeri/helendearkitekturmarks 11.pdf>

(The Danish Capitol Region's recommendations for healing architecture)

Region Hovedstaden



Region Hovedstadens anbefalinger for Helende Arkitektur

REGION



Region Hovedstad

REGION



FOREST & LANDSCAPE

Restorative Green Outdoor Environment at Acute Care Hospitals

Case Studies in Denmark

Shureen Faris Abdul Shukor



<http://sl.ku.dk/rapporter/forest-landscape-research/restorative-green-outdoor-environment-acute-care-hospitals-2012.pdf>

Healing architecture

Nature and daylight will be fully integrated into the building and reflect the healing atmosphere of the scenic surroundings. Conceptually, the landscape is conceived as a forest and the hospital as a pavilion. The landscape design takes its point of departure from the site's moraine formations. To support the healing of each patient the wards at the top levels will have a view over the surrounding landscape.

New North Zealand Hospital



photo credit © Herzog & de Meuron - Vilhelm Lauritzen Arkitekter

New North Zealand Hospital

ION HOSPITAL

ION HOSPITAL



photo credit © Herzog & de Meuron - Vilhelm Lauritzen Arkitekter

New North Zealand Hospital



photo credit © Herzog & de Meuron - Vilhelm Lauritzen Arkitekter

New North Zealand Hospital



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New North Zealand Hospital



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New North Zealand Hospital



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United Kingdom

USING THE OUTDOOR ESTATE

the hidden health benefits of great site design

An alternative vision for hospital grounds and management of NHS Scotland's outdoor estate based on user centred design

The Green Exercise Partnership

Anne Lumb, NHS Greenspace Project Manager GEP
Office: 0141 951 4488
Mobile: 07774161018
email: anne.lumb@snh.gov.uk



USING THE OUTDOOR ESTATE

the hidden health benefits of great site design

Why it's important to take healing outdoors:

*An alternative vision for hospital grounds and management of
NIH and NCI in user centred design*

- Reduction of pain, stress, and depression;
- Helping create a stronger immune system;
- Improved recovery and mobilisation;
- Reduction of aggressive behaviour;
- Improved physical fitness;
- Increased patient and staff satisfaction
- Improved staff retention, and
- Reduction in length of hospital stay

The Green Exercise Partnership

Anne Lumb, NHS Greenspace Project Manager GEP
Office: 0141 951 4488
Mobile: 07774161018
email: anne.lumb@snh.gov.uk





Practice Guide

Greenspace design for health and well-being

Targeted at the NHS but relevant to any setting where health and wellbeing is a consideration

Applicable to all projects: large or small, new build or refurbishments

A non-technical document, written in an accessible style, image-led

Rooted in 'real life' with lots of examples of good practice from across the UK

Aberdeen Royal Infirmary

Therapeutic Roof Garden



Slide credit: Rev. James Falconer, NHS Grampian



Slide credit: Rev. James Falconer, NHS Grampian



ABERDEEN ROYAL INFIRMARY

Roof Garden

relax • reflect • rejuvenate

"I was confined to a hospital bed for three months, due to an accident that had paralysed me. The moment I will remember forever and a key turning point in my recovery, was being helped out to a small patio outside the hospital. I lay there all day and into the evening, in awe at the sky, trees and fresh air. The effect of that day transformed my journey forward, inspiring me to make the most of my new situation. I discovered that the power of nature to heal is profound and so it is a great pleasure to be an Ambassador for the roof garden. I am sure it will help many people."



Slide credit: Rev. James Falconer, NHS Grampian



Slide credit: Rev. James Falconer, NHS Grampian



Slide credit: Rev. James Falconer, NHS Grampian



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Slide credit: Rev. James Falconer, NHS Grampian



Slide credit: Rev. James Falconer, NHS Grampian



Slide credit: Rev. James Falconer, NHS Grampian

"In those long months in the spinal unit, how I craved the feel of sun or rain or the smell of cut grass. I needed weather. I remember drawing hope from the tree branches I could glimpse outside a high window, as I lay prone...."

At a Salisbury hospital in 2012, a most amazing concept garden was created.... a place of calm and peace and privacy.... patients on ventilators could be wheeled outside in their beds, or relatives could seek solace.... Already the psychological improvements in patients there have been far-reaching and users have given the garden a 90 per cent approval rating....

I can remember, as if it were yesterday, an occasion when I tried to get into the courtyard (that will become the garden) by myself to have a good cry. I was desperate to be alone.... I was full of tears, snotters and frustration.... imagine how it would have felt instead to be able to hide in a corner next to a deep flower bed.... How comforting that would have been...

We all know that even if gardens can't cure spinal cords, they can heal the inside of our heads....."



Slide credit: Rev. James Falconer, NHS Grampian

Two sources of inspiration in Norway:

St. Olavs Hospital, Trondheim

Kronstad Psychiatric Hospital and Clinic, Bergen

An aerial photograph of St. Olavs Hospital in Trondheim, Norway. The image shows a complex of buildings, including several modern, multi-story structures with light-colored facades and dark roofs, interspersed with older, red-brick buildings. The hospital is surrounded by green spaces, trees, and parking areas. A semi-transparent dark box is overlaid on the upper portion of the image, containing the text "St. Olavs Hospital Trondheim, Norway" in white. The overall scene is a dense urban environment with a mix of architectural styles.

St. Olavs Hospital Trondheim, Norway













"This is like hiking in the mountains!"

Nurse Oddveig Hegge, recalling a patient's remarks about the roof garden













































GRØNT SYKEHUS

UTEMILJØ I SÆRKLASSE VED ST. OLAVS HOSPITAL



<http://sjukehusbygg.no/wp-content/uploads/2015/09/Grønt-sykehus-utemiljø-i-særklasse-ved-St.-Olavs-Hospital.pdf>



<http://sjukehusbygg.no/wp-content/uploads/2015/09/Grønt-sykehus-utemiljø-i-særklasse-ved-St.-Olavs-Hospital.pdf>



QUIET: On the roof of the Women's and Children's center, architecture students from NTNU have built a contemplation shelter.

<http://sjukehusbygg.no/wp-content/uploads/2015/09/Grønt-sykehus-utemiljø-i-særklasse-ved-St.-Olavs-Hospital.pdf>



Roof gardens on The Knowledge Center

<http://sjukehusbygg.no/wp-content/uploads/2015/09/Grønt-sykehus-utemiljø-i-særklasse-ved-St.-Olavs-Hospital.pdf>

**Kronstad Psychiatric Clinic
and Hospital
Bergen, Norway**

Construction completed 2013







COME AWAY,
O HUMAN
CHILD!
TO THE
WATERS AND
THE WILD
WITH A
FAERY, HAND
IN HAND,
FOR THE
WORLD'S
MORE FULL
OF WEEPING
THAN YOU
CAN
UNDERSTAND.
W.B. YEATS.



HAVE
STENG
GREY
-12

ARK





COME AWAY,
O HUMAN
CHILD!
TO THE
WATERS AND
THE WILD
WITH A
FAERY, HAND
IN HAND,
FOR THE
WORLD'S
MORE FULL
OF WEEPING
THAN YOU
CAN UNDERSTAND.
W.B. YEATS.

*Come away,
O human child!
To the waters and
the wild
With a faery, hand
in hand,
For the world's
more full of
weeping than you
can understand.*

From "The Stolen Child", William Butler Yeats. 1886



Kronstad Psychiatric Clinic, Bergen







Kronstad distriktpsikiatriske senter

DAGEN

← HÖVUDINNGANG





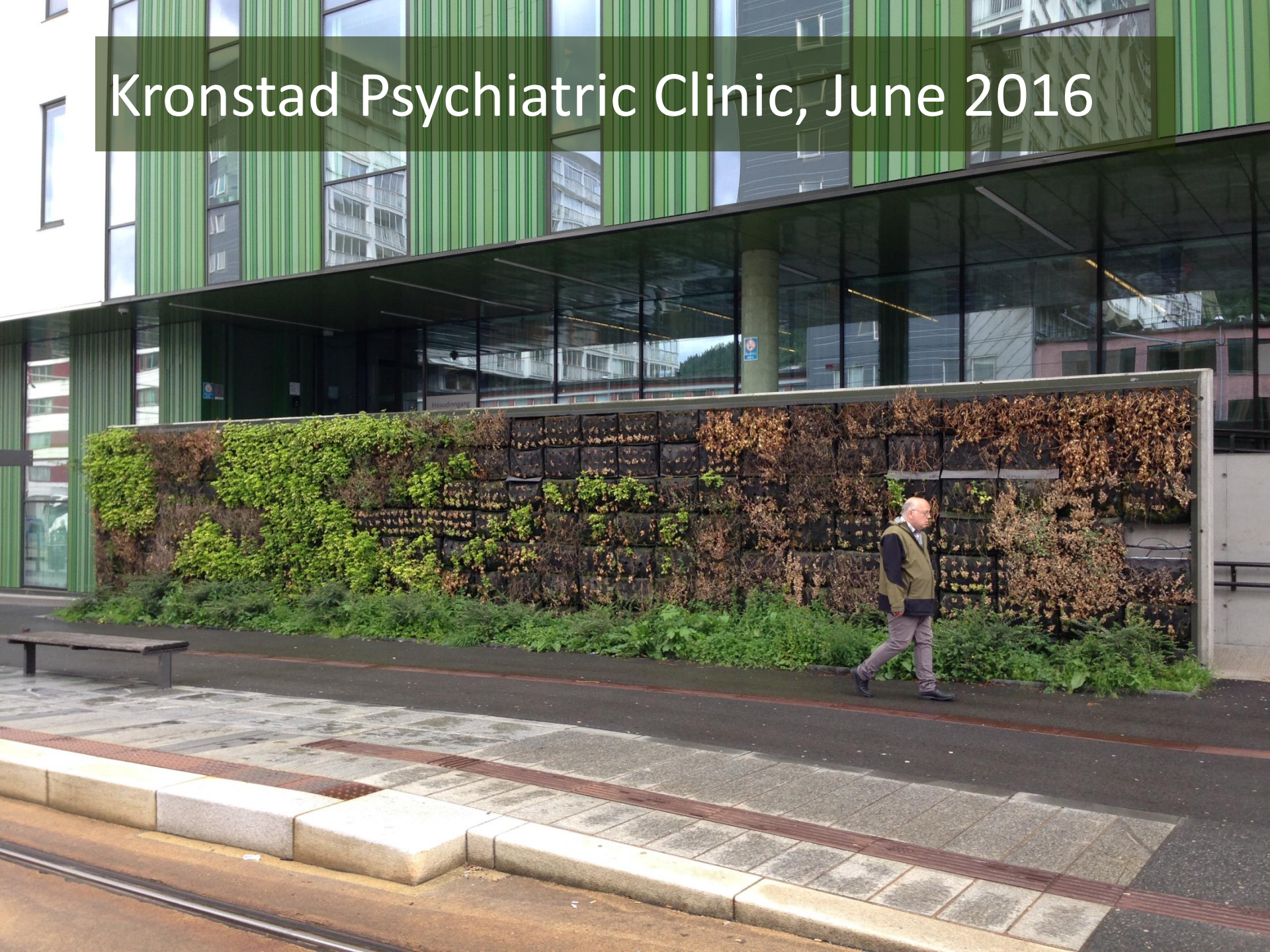








Kronstad Psychiatric Clinic, June 2016































Buildings

Guidance Document for Members

Support green and healthy hospital design and construction



Coming white paper
supplement to:

Healthcare Without Harm's
online support community
for sustainable hospitals

Global Green and Healthy Hospitals
Building Guidance Document

*Resilience to climate change
through use of green
infrastructure*

X

*Healing benefits to patients
and «care for the carers»*

Research also suggests there is a direct relationship between the built environment and therapeutic outcome; the design of a health facility can positively influence patient health, as well as caregiver performance and satisfaction.

Natural areas should be protected in order to preserve the health of underlying ecosystem services. Working with the shape and natural function of the land can facilitate building design and other site development that are compatible with underlying natural processes. This includes maintaining site hydrology, directing natural water flows and minimizing site disturbance.

White paper – Green infrastructure in hospital settings

- Theoretical background on healing benefits
- Design principles and solutions
 - Resilience to climate change



- Healing environments (landscapes)
- Case studies
- Sources of guidance

White paper – Co-author



Jerry Smith , FASLA, EDAC, LEED

- Landscape architecture representative on the Environmental Standards Council of The Center for Health Design
- Steering Committee of the Green Guide for Health
- Advisory Board of the Therapeutic Landscapes Network
- Development of the Sustainable Sites Initiative (SITES), serving on the Technical Core Committee and on the Human Health & Well-being Sub-Committee of SITES
- Faculty Fellow in Landscape Architecture - Ball State University
- Principal\owner of Smith\GreenHealth Consulting
- Council of Fellows of the American Society of Landscape Architects.





Thanks for listening!