CHANGING CONDITIONS – CHANGING HEALTH

Urbanisation
Sedentary lifestyles
Stress
Social isolation
Obesity
Disconnection from nature
Environmental threats

PREVENTION!
### Ten leading causes of burden of disease, world, 2004 and 2030

<table>
<thead>
<tr>
<th>Disease or injury</th>
<th>2004</th>
<th></th>
<th>2030</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>As % of total DALYs</td>
<td>Rank</td>
<td>As % of total DALYs</td>
<td>Rank</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>6.2</td>
<td>1</td>
<td>1</td>
<td>6.2</td>
</tr>
<tr>
<td>Diarrhoeal diseases</td>
<td>4.8</td>
<td>2</td>
<td>2</td>
<td>5.5</td>
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<tr>
<td>Unipolar depressive disorders</td>
<td>4.3</td>
<td>3</td>
<td>3</td>
<td>4.9</td>
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<tr>
<td>Ischaemic heart disease</td>
<td>4.1</td>
<td>4</td>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>3.8</td>
<td>5</td>
<td>5</td>
<td>3.8</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>3.1</td>
<td>6</td>
<td>6</td>
<td>3.2</td>
</tr>
<tr>
<td>Prematurity and low birth weight</td>
<td>2.9</td>
<td>7</td>
<td>7</td>
<td>2.9</td>
</tr>
<tr>
<td>Birth asphyxia and birth trauma</td>
<td>2.7</td>
<td>8</td>
<td>8</td>
<td>2.7</td>
</tr>
<tr>
<td>Road traffic accidents</td>
<td>2.7</td>
<td>9</td>
<td>9</td>
<td>2.5</td>
</tr>
<tr>
<td>Neonatal infections and other(^a)</td>
<td>2.7</td>
<td>10</td>
<td>10</td>
<td>2.3</td>
</tr>
<tr>
<td>COPD</td>
<td>2.0</td>
<td>13</td>
<td>11</td>
<td>1.9</td>
</tr>
<tr>
<td>Refractive errors</td>
<td>1.8</td>
<td>14</td>
<td>12</td>
<td>1.9</td>
</tr>
<tr>
<td>Hearing loss, adult onset</td>
<td>1.8</td>
<td>15</td>
<td>15</td>
<td>1.9</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1.3</td>
<td>19</td>
<td>18</td>
<td>1.6</td>
</tr>
</tbody>
</table>

\(^a\) Including neonatal pneumonia, other neonatal infections, intrapartum events, and complications of pregnancy.

Predictions for 2030 are based on assumptions about rates of change in risk factors and improvements in healthcare.
Urban forests are probably better health resources than hospitals.

Urban foresters can provide as much health benefits as health practitioners.
THE “SILENT”, “INVISIBLE” CAUSES OF TODAY’S DISEASES

- Multifactorial
- Intertwined
- Related to/determined by culture, society, political systems, city planning, environment, climate change etc.
A BALANCED, “ZEN” LIKE LIVING ENVIRONMENT

Bring nature indoors – air quality, light, plants

“Advocates” for nature-health, spreading the knowledge
THE ROLE OF PERCEPTION

How do we perceive nature?

What determines differences? (individual, culture, type of nature, etc.)

How does the perception affect health outcome?

“Only in quiet waters do things mirror themselves undistorted. Only in a quiet mind is adequate perception of the world”

Hans Margolius
SCIENTIFIC THEORIES ON NATURE AND HEALTH

January 17, 2017
Theory → Scientific studies → Evidence
The inherent **love** for nature

**Trust** for nature, shelter and safety

**Evolution** – adapted to respond to natural stimuli, not to artificial input

Genetically **predisposed**

(Fear of snakes, not of guns, Ohman, 1986)
ENVIRONMENTAL PSYCHOLOGY

“Environmental psychology is a social science discipline concerned with the interplay between individuals and their physical environment”

(Steg et al., 2012)

Initially most about built environments
Since the 1980s more on natural environments
1. Environmental aesthetics and landscape preferences
   a) Arousal theory
   b) Prospect refuge theory

2. Psychological restoration
   a) Stress reduction theory
   b) Attention restoration theory

3. Neural mechanisms

4. Learned associations and positive beliefs
1. ENVIRONMENTAL AESTHETICS AND LANDSCAPE PREFERENCES

The experience of **beauty**

Less beautiful – less health benefits
1 a) AROUSAL THEORY
   *(Daniel Berlyne, Joachim Wohlwill)*

- Aesthetically pleasing nature elicits an optimal level of arousal
- Aesthetically pleasing contains an **optimal blend** of arousal-increasing and arousal-decreasing features
- “unity-in-variety”
1 b) PROSPECT-REFUGE THEORY

(Jay Appleton)

- The potential of an environment to satisfy a biological drive
- “see without being seen”
- “hide and seek aesthetics”
- Panoramas AND shelters
- Landscape paintings and design
2. PSYCHOLOGICAL RESTORATION

Beyond beauty and aesthetics
Relaxing and restorative environments
2 a) STRESS REDUCTION THEORY

Roger Ulrich

• Immediate response to nature
• Non-conscious
• Physiological reactions – stress recovery, relaxation
• The savannah – vegetation, trees, and water, no threats
• We are prepared to react to nature but not to built settings
Stress recovery during exposure to natural and urban environments

Figure 2. Changes in pulse transit time (PTT) during stress and recovery.
2 b) ATTENTION RESTORATION THEORY

Rachel and Stephen Kaplan

- The universal meaning of nature to people
- General, positive value to everyone
- Cognitive mechanisms

Directed attention (energy demanding)  Fascination (no effort)
RESTORATIVE ENVIRONMENTS ACCORDING TO KAPLANS

• Being away
• Fascination
• Coherence
• Compatibility

Clearing the head, recharging directed attention capacity, “hear” unbidden thoughts, reflections on one’s life
Humans seek for certain **characteristics/qualities** in green areas

Eight experience values

Can be stored in geographic information systems (GIS)

Helps area-specific planning

*(Berggren-Bäring, Grahn, Stigsdotter)*
THE EIGHT EXPERIENCE VALUES

Experience values

Rich in species  Prospect

Wild  Cultural-historic

Refuge  Serene

Festive  Space

Grahn and Stigsdotter
EXPERIENCE VALUES AND MENTAL FATIGUE

Experiences especially important for mental restoration:

• *Serene*: undisturbed peacefulness, being on one’s own

• *Space*: independent and special ‘universe’

• *Wild*: wilder nature, nature on its own terms, untouched and vital
DOES SIZE MATTER?

The **experience** is the most important

If you **perceive** the value it is good enough – “perceived sensory dimension”

“**Pocket parks**”: grass, trees, tree canopy are most important for potential stress recovery

**Access** is more important
DOES SHAPE MATTER?

How the park is perceived
How much it is visited
How children play

Better
Perceived Restorativeness Scale (PRS) (Hartig, Evans, Korpela & Garling, 1997)

Please indicate on the 7-point scale the extent to which the given statement describes your experience in the setting (0 = Not at all; 6 = Completely).

0. 1. 2. 3. 4. 5. 6.
□□□□□□□□ Being here is an escape experience.
□□□□□□□□ Spending time here gives me a break from my day-to-day routine.
□□□□□□□□ It is a place to get away from it all.
□□□□□□□□ Being here helps me to relax my focus on getting things done.
□□□□□□□□ Coming here helps me to get relief from unwanted demands on my attention.
□□□□□□□□ This place has fascinating qualities.
□□□□□□□□ My attention is drawn to many interesting things.
□□□□□□□□ I want to get to know this place better.
□□□□□□□□ There is much to explore and discover here.
□□□□□□□□ I want to spend more time looking at the surroundings.
□□□□□□□□ This place is boring.
3. NEURAL MECHANISMS - THEORIES

The basic biological mechanisms behind the automatic reactions to nature

What are the particular inputs/stimuli that evoke automatic, physiological reactions?

What happens in the brain?
The visual information is easier processed in the brain.

Objective difference between natural patterns and patterns of most built environments.

Fractal patterns ("Neuro-aesthetics")
- aesthetically appealing, subjectively preferred (Hagerhall, Purcell, & Taylor, 2004)
- EEG activity in the brain: wakeful relaxation
(Hagerhall et al., 2004)
(Hagerhall et al., 2008).
4. LEARNED ASSOCIATIONS AND POSITIVE BELIEFS

People spend time in nature when on vacation, during leisure time, when spending time with family and friends.

Built environments are more often experienced while at work, doing chores, and other more stressful circumstance.

People believe that being in nature is good for your health.

Placebo?
RECOMMENDED READING FOR NEXT WEEK
