



Urbanity, technology and the human relationship with Nature

Freddie Lymeus

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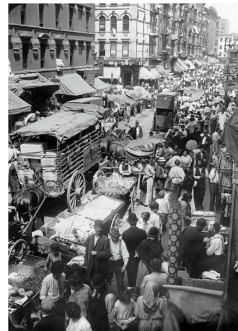
Visions of modern life

Urbanity, technology and the human relationship with Nature



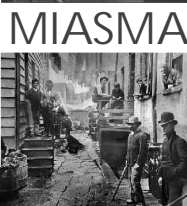
From life inter-connected with nature in:

- living environments
- sociophysical rhythms
- labour/sustenance
- "dust to dust"

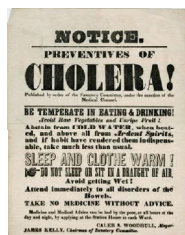


To:

- purpose-built city environments
- independence of sun and season
- labour market and indirect sustenance
- weakening of traditional beliefs and social structures



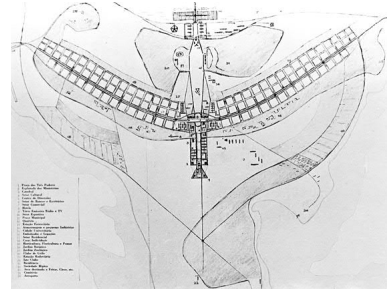
MIASMA



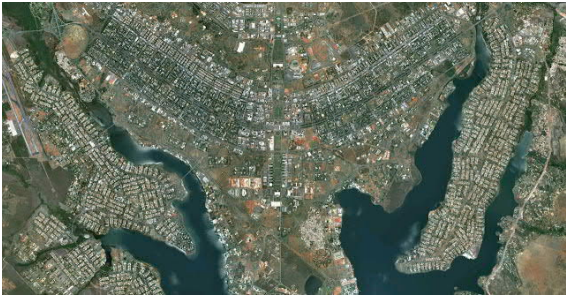
Pieter Bruegel the Elder's *The Tower of Babel* (1563)



Le Corbusier's Plan Voisin for Paris (1922)



Oscar Niemeyer's plan for Brasilia, Capital of Brazil (1956)



Brasilia, Capital of Brazil



Brasilia, Capital of Brazil



Philip Johnson's glass house (1949)



Newman (1996)

"Modern Architecture died in St. Louis, Missouri
on July 15, 1972 at 3.32 p.m."

C. Jencks
The Language of Post-Modern Architecture



See Newman (1996)

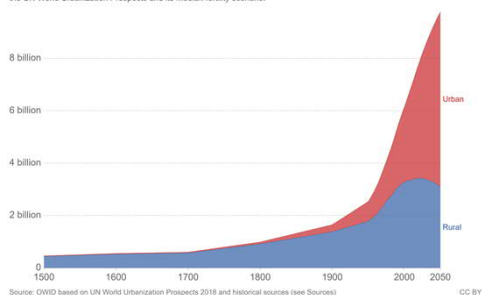


See Newman (1996)



Drottninggatan, Stockholm; source unknown

Urban and rural population projected to 2050, World, 1500 to 2050
Total urban and rural population, given as estimates to 2016, and UN projections to 2050. Projections are based on the UN World Urbanization Prospects and its median fertility scenario.



Environmental stress

Urbanity, technology and the human relationship with Nature

"Obviously cities have great appeal because of their variety, eventfulness, possibility of choice, and the stimulation of an intense atmosphere that many individuals find a desirable background to their lives.

But... "

Milgram (1970)

Environmental stress

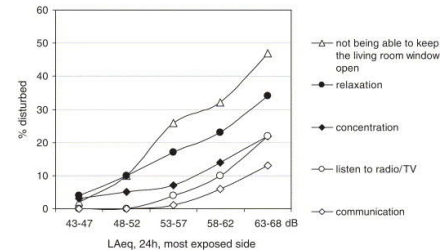
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PHYSICAL ENVIRONMENTAL STRESSORS

- Visual blight
- Poor air quality
- Noise
- Crowding



Activity disturbances indoors with windows closed in relation to sound levels at the side of the dwelling most exposed to traffic sound.



From Ohrström et al (2006)

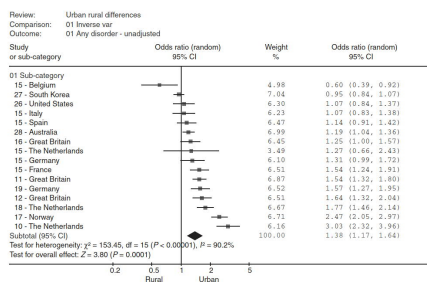
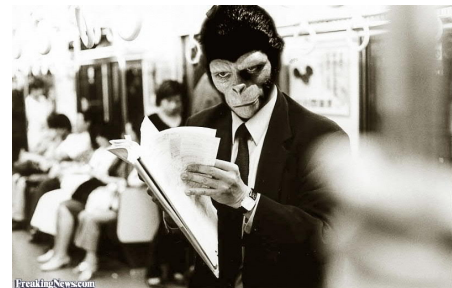


Fig. 2. Urban-rural comparisons of any disorder, unadjusted OR with 95% CI.

From Peen et al (2010)



Source unknown

Environmental stress

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ADAPTATIONS TO URBAN OVERLOAD

- Allocation of less time to each input
- Disregard of low-priority inputs
- Non-verbal demonstrations of reserve
- Superficial involvements with others
- Seeming incivility
- Reduced span of sympathy

From Milgram (1970)

Environmental stress

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Table 1
Types of latent decrement associated with performance protection under stress and high demand

Type of latent decrement	Characteristics (with examples)
Subsidiary task failure	Selective impairment of (currently) low priority task components Neglect of subsidiary activities
Strategic adjustment	Attentional narrowing Within task shift to simpler strategies Less use of working memory
Compensatory costs	Greater use of closed-loop control Strain of active control during performance maintenance Increased mental effort
Fatigue after-effects	Sympathetic dominance Post-task preference for low-effort strategies Subjective fatigue Risky decision-making

From Hockey (1997)

"It is a scientific fact that the occasional contemplation of natural scenes of an impressive character, particularly if this contemplation occurs in connection with relief from ordinary cares, change of air and change of habits is favorable to the health and vigor..."

...The want of such occasional recreation where men and women are habitually pressed by their business or household cares often results in . . . mental and nervous excitability, moroseness, melancholy or irascibility, incapacitating the subject for the proper exercise of the intellectual and moral forces"

Frederick Law Olmsted (1865)



Frederick Law Olmsted's Central Park, New York (est. 1853)

Pleasure grounds (ca 1850-1900)

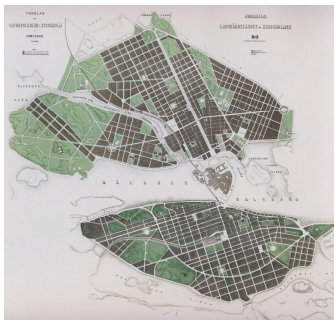
Proponents	Goals	Design	Relation to the city
Health reformers, romantics	Public health, social reform	Large curvilinear meadows	Outskirts, set in contrast to the city



Cranz & Boland (2004)



Stadsträdgården, Uppsala (est. 1864)



Albert Lindhagen's plan for Stockholm (1866)

Reform parks (ca 1900-1930)

Proponents	Goals	Design	Relation to the city
Social reformers, social workers	Socialization, development	Playgrounds, field houses	Subsumed in city block structure



Cranz & Boland (2004)

Recreation facilities (ca 1930-1965)

Proponents	Goals	Design	Relation to the city
Politicians, planners	Recreation services	Standardized equipment, courts	Suburban, car transport



Cranz & Boland (2004)

Open space system (ca 1965-present)

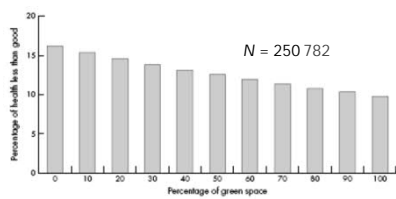
Proponents	Goals	Design	Relation to the city
Environmentalists, designers, artists	Participation, revitalization	Mixed aesthetics	Irregular network, city as work of art



Cranz & Boland (2004)

The natural solution

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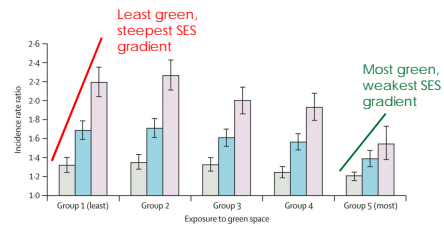


Relation between amount of green space (in a 3 km radius) and self-perceived health (controlling for urbanity, socio-demographic, and socioeconomic characteristics)

Maas et al (2008)

The natural solution

Urbanity, technology and the human relationship with Nature

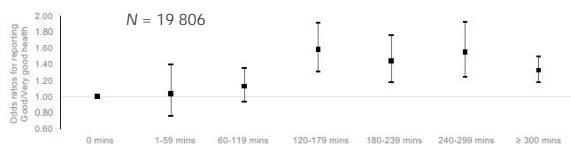


The relationship between income deprivation and deaths from circulatory disease. Based on 366 348 deaths in the English population (N = 40 813 236) during 2001-05.

Mitchel & Popham (2008)

The natural solution

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120–179 mins vs. 0 mins of nature contact per week was associated with a similar likelihood of reporting good health as, (a) living in an area of low vs. high deprivation; (b) meeting vs. not meeting physical activity guidelines, and (c) being in a high vs. low SES occupation.

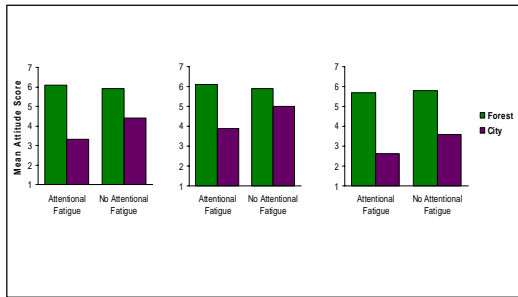
White et al (2019)

How come urban people seek nature experience?



Hartig & Staats (2006)

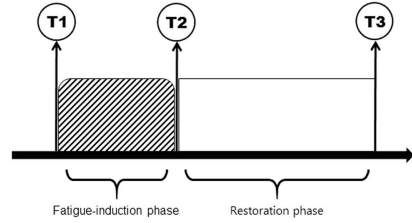
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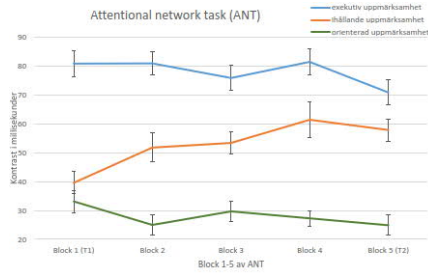
The natural solution

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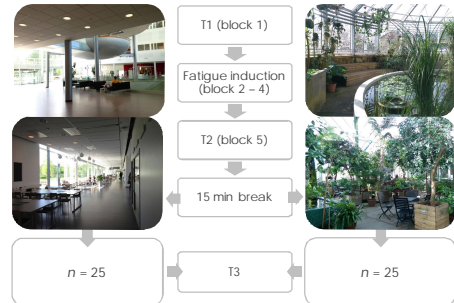


Stevenson et al (2018)

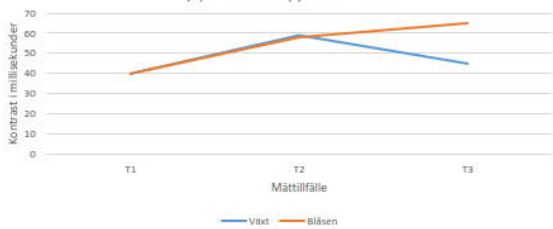
Attentional network task (ANT)



Bernhardsson (2017)



(a) Ihållande uppmärksamhet



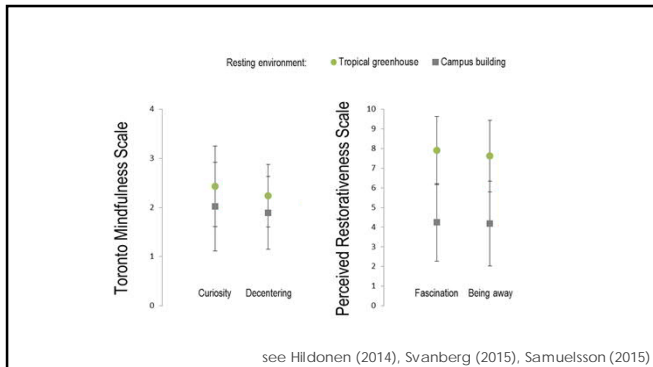
Bernhardsson (2017)



Attention restoration theory

- being away
- soft fascination
- coherence
- extent

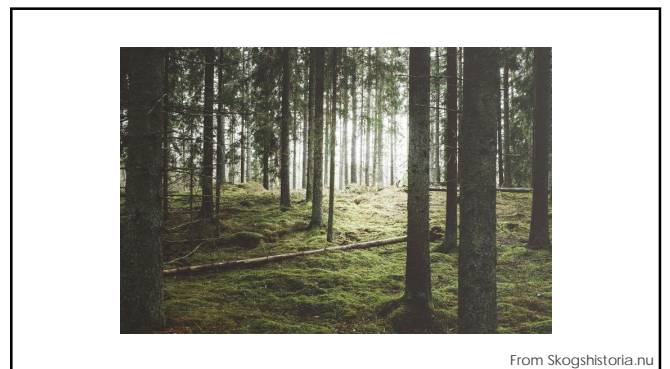
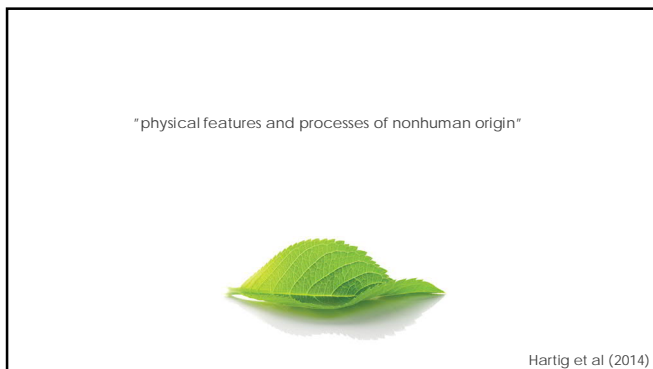
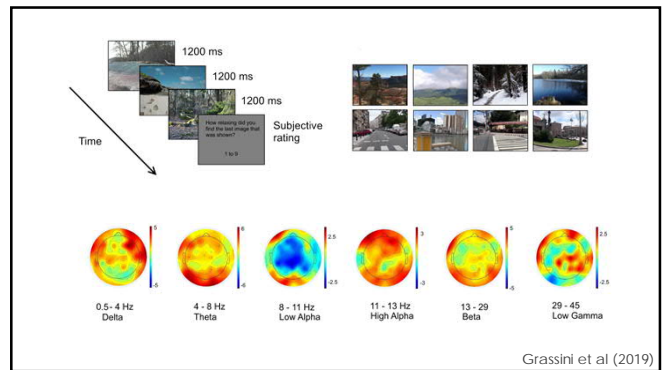
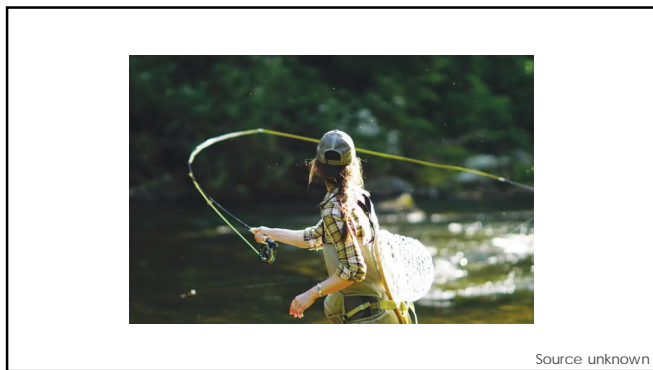
Kaplan & Kaplan (1989; Kaplan, 1995)



Psychophysiological stress recovery theory

- Stress och återhämtning som motpoler i det nedärnda psykofysiologiska responsystemet
- Responser på stimuli som signalerar möjlighet att återhämta resurser
 - milt intresse
 - mild positiv affekt
 - lugn / avslappning

Ulrich (1983)





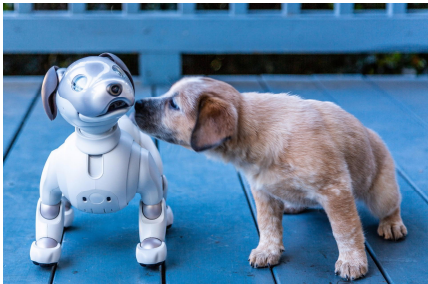
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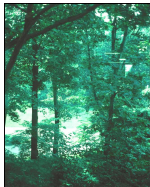
From Costplus



From Heather Amos



From Washington Post

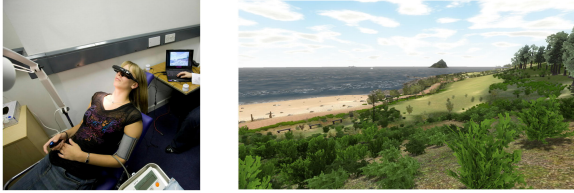


Strength of painkiller	Wall view	Tree view
Strong	2.48	0.96
Moderate	3.65	1.74
Weak	2.57	5.39
Total	8.70	8.09

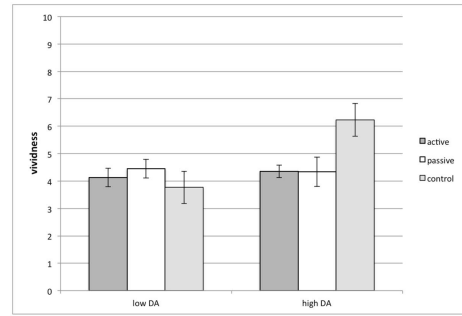
Ulrich (1984)



From Samsung



Tanja-Dijkstra et al (2014)



Tanja-Dijkstra et al (2014)

Table S3. Summary of mean change scores in mood resulting from exposure to actual versus simulated natural settings.

Study	Positive affect change score		Negative affect change score	
	Actual	Simulated	Actual	Simulated
Brooks et al. (2017)	0.3	<u>-0.3</u>	-0.2	0.0
Browning et al. (2020a)	0.18	0.01	-0.07	-0.07
Calgieri et al. (2018)	0.02	<u>-0.08</u>	-0.14	0.22
Chirico and Gaggioli (2019)	0.32	<u>-0.08</u>	-0.41	-0.31
Nurminen et al. (2020)	0.5	<u>-3.38</u>	-4.38	-2.5
Olafsdottir et al. (2018)	5.7	<u>-6.0</u>	-1.94	-3.22

Beneficial effects for positive affect (positive values) and negative affect (negative values) are shown in bold.

Harmful effects for positive affect (negative values) and negative affect (positive values) are shown in bold and are underlined.

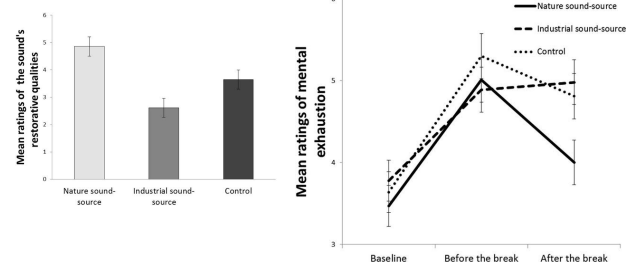
Browning et al (2020)



From qlik.com



From Siemens Energy



Haga et al (2016)



From Stocksy

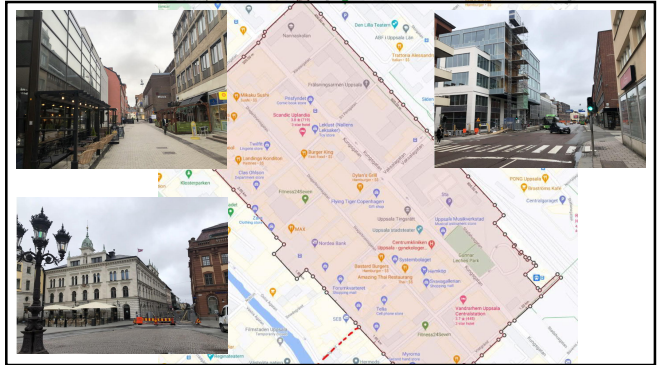


Table 6. Descriptive statistics for perceived exertion and walking speed.

Measure		Session 1, without music		Session 2, with music	
		Park <i>M</i> (<i>SD</i>)	City <i>M</i> (<i>SD</i>)	Park <i>M</i> (<i>SD</i>)	City <i>M</i> (<i>SD</i>)
Walking speed	Men	4.08 (0.58)	4.76 (0.79)	4.28 (0.55)	4.98 (0.86)
	Women	3.86 (0.65)	4.61 (0.74)	3.91 (0.78)	4.47 (0.65)

Walking speed is given in km/h.

Boothe (2021), Cederlund & Poprzenovic (2021)

Table 7. Results of the analyses on choice of music.

Music feature	Park <i>M</i> (<i>SD</i>)	City <i>M</i> (<i>SD</i>)	Main effect of environment		
			<i>F</i> (<i>0.20</i>)	<i>p</i>	η_p^2
Tempo, bpm	114.11 (9.84)	125.20 (10.04)	10.44	.004	.343
Tempo, subjective ratings	2.91 (0.79)	3.16 (0.41)	1.21	.285	.057
Valence, Spotify API	.475 (.127)	.489 (.116)	0.35	.559	.017
Valence, subjective ratings	3.76 (0.67)	3.67 (0.56)	0.165	.688	.007
Energy, Spotify API	.563 (.148)	.654 (.157)	4.891	.039	.196

Note. a) The Spotify API metric for valence and energy assign songs a value between 0 and 1, where a 0 denotes low valence/energy and a 1 denotes high valence/energy.

Boothe (2021), Cederlund & Poprzenovic (2021)

Table 8. Descriptive statistics for the Perceived Restorativeness Scale.

	Being away		Fascination	
	Park <i>M</i> (<i>SD</i>)	City <i>M</i> (<i>SD</i>)	Park <i>M</i> (<i>SD</i>)	City <i>M</i> (<i>SD</i>)
Session 1, without music	8.47 (1.48)	4.87 (1.87)	8.03 (1.93)	5.40 (2.43)
Session 2, with music	7.40 (1.85)	5.48 (2.46)	6.58 (1.62)	5.10 (2.27)

Note. Scores on the PRS range from 0 to 10, with higher values denoting more restorativeness.

Boothe (2021), Cederlund & Poprzenovic (2021)

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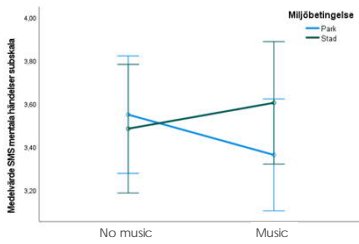
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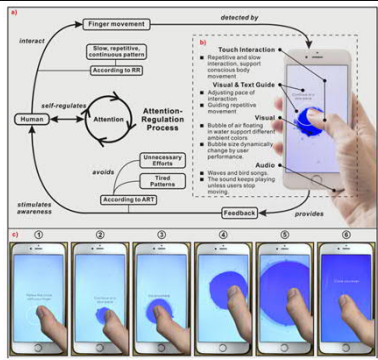
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Boothe (2021), Cederlund & Poprzenovic (2021)

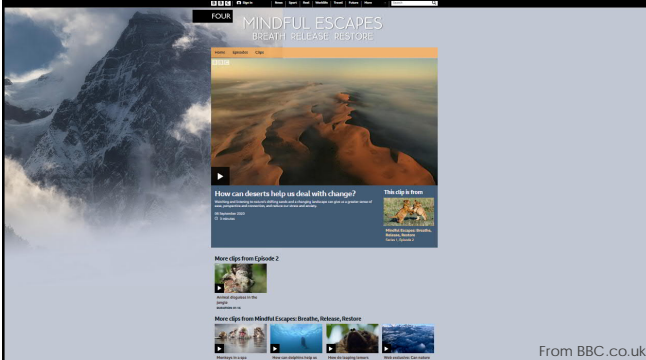
State mindfulness of mental processes as a function of walking setting and listening to music in head phones

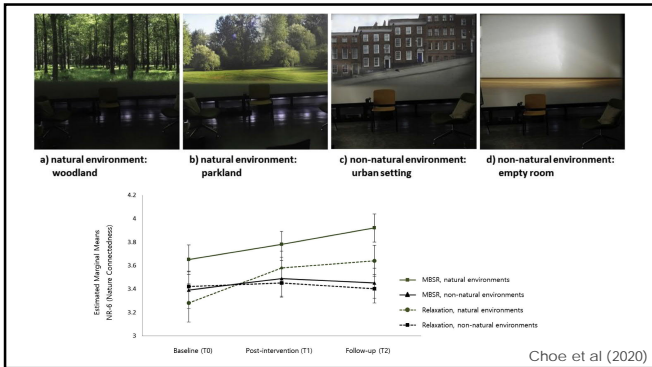
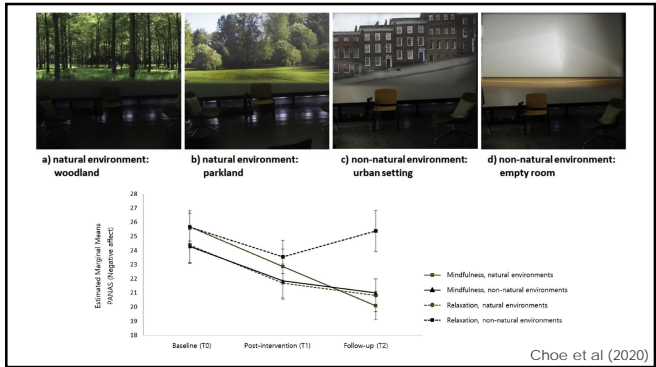


Boothe (2021), Cederlund & Poprzenovic (2021)



Niksirat et al (2017)





frontiers in Virtual Reality

ORIGINAL RESEARCH
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Design Considerations for Supporting Mindfulness in Virtual Reality

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Mindfulness practice involves bringing one's attention to the present moment and holding it there as they unfold with a non-judgmental attitude of acceptance. Although mindfulness has been shown to reduce stress and improve mental health, it can be challenging to learn mindfulness techniques. Recent years have seen an interest in using virtual reality (VR) to help people learn mindfulness by immersing users in virtual settings that support an external focus of attention and reduce everyday environmental distraction. However, the literature currently lacks an understanding of how VR should be designed to support mindfulness. In this paper we describe the iterative design and evaluation of Place, a VR app that supports mindfulness practice by situating the user in a virtual forest environment. We present findings from our design process in which prospective users tested Place and provided feedback on the design in focus groups. Our findings draw attention to factors that influenced the user experience and acceptance of VR for mindfulness, and we describe how the design was altered to address these factors. We end by discussing key design choices that designers should consider when creating VR for mindfulness. Our contributions include insight into the importance of following an iterative design process when creating a VR mindfulness app, and a framework that can be used to inform the design of future VR apps for mindfulness practice.

OPEN ACCESS

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Mindful engagement, psychological restoration, and connection with nature in constrained nature experiences

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HIGHLIGHTS

- We examine mindfulness in urban nature, restoration, and nature connection.
- We synthesise mechanisms underpinning mindfulness in nature and positive outcomes.
- We identify three mechanisms: perceptual sensitivity, decentering, and non-reactivity.
- We apply a model of mindful engagement in nature to constrained nature experiences.
- Understanding these mechanisms can inform nature experience interventions and design.

See Hyland (2015), Purser (2018), Safran (2014), Walsh (2016)



Visions of Rosendal, Uppsala: from Rosendals fastigheter, Rudbeckia, Woodhouse

Landscape and Urban Planning 228 (2022) 104409

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Comment

The City Mindful: Commentary on "Mindful engagement, psychological restoration, and connection with nature in constrained nature experiences"

Freddie Lymeus

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HIGHLIGHTS

- The mindfulness construct holds potential for landscape and urban planning.
- Conceptual, individual-level understandings of mindfulness are identified.
- Applications must be value oriented and transcend the psychological "here-and-now".

ABSTRACT

This commentary complements Marsland et al.'s thoughtful and valuable perspective by attending to some additional matters of theoretical, ethical, and practical importance. First, I argue for how consideration of multiple levels of complementarity between processes in mindfulness and nature experience allow more powerful interpretations than building on apparent synergies. Second, I outline how an understanding of mindfulness as a practice and training can illuminate relationships between states, traits and values of equal relevance for human health and sustainable transitions. Third, I discuss some caveats and considerations in planning for mindfulness, pointing to insights that researchers and professionals committed to sustainable cities can gain from "McMindfulness" debates and other controversies around meditation before outlining some tentative ideas for how urban environmental design could support mindful living and mindful action.

"physical features and processes of nonhuman origin"



Hartig et al (2014)



From morland-house.com



From Greenspace Information for Greater London

Sustainable parks (present-future)

Proponents	Goals	Design	Relation to the city
Environmentalists, community groups	Human health, ecological health	Restored ecosystems	City-nature - continuum



Cranz & Boland (2004)

Technological nature

Urbanity, technology and the human relationship with Nature

- Nature as shaped by technology
- Technology as shaped by nature
- Technological nature as stress mitigation
- Technological nature as nature replacement
- Technology as augmented nature