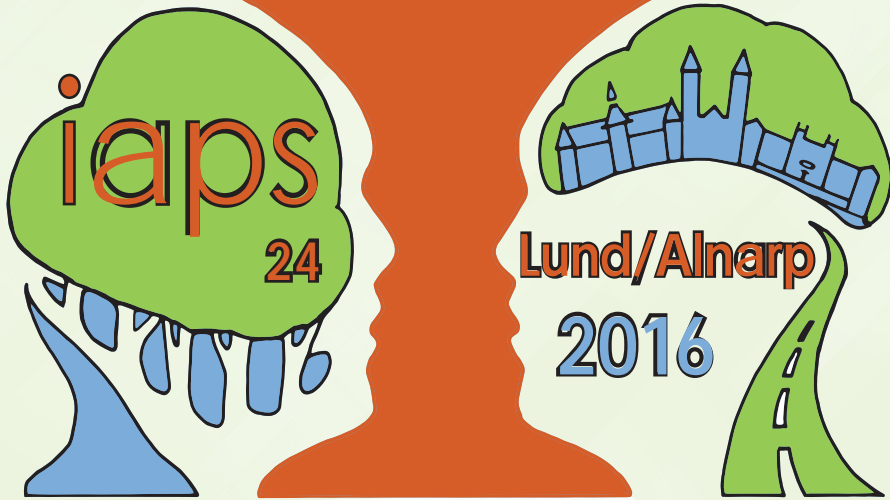


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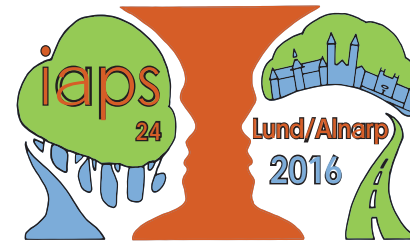


THE HUMAN BEING AT HOME, WORK AND LEISURE.

Sustainable use and development of indoor
and outdoor spaces in late modern everyday life.

CONFERENCE ABSTRACTS

LUND, SWEDEN
27 JUNE - 1 JULY 2016



INTERNATIONAL ASSOCIATION
PEOPLE-ENVIRONMENT
STUDIES

The human being at home, work and leisure.
Sustainable use and development of indoor and
outdoor spaces in late modern everyday life.

Lund University, Sweden
27 June - 1 July 2016



LUND
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Welcome

We cordially invite you to the 24th IAPS conference. The human being at home, work and leisure. Sustainable use and development of indoor and outdoor spaces in late modern everyday life. The conference is hosted by the Environmental Psychology Research Groups at Lund University and the Swedish University of Agricultural Sciences in southern Sweden.

In accordance with the IAPS mission (www.iaps-association.org), the conference will address the study of the interrelations between the social, the built and the natural environment, and the impacts on them. The conference theme turns the spotlight on to what is at the core of the bigger issues related to global sustainability – the actions and everyday lives of humans. It is what we do, feel and think every day, that shapes our individual and collective future.

The event will take place at the Faculty of Engineering, LTH, in Lund, 27 June to 1 July 2016, (www.lth.se). The associated Young Researcher Workshop, 26-27 June, will be held nearby, at the Faculty of Landscape Architecture, Horticulture and Crop Production Science, at SLU in Alnarp (www.slu.se).

We look forward to seeing you in Lund/Alnarp 2016!

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The authors of the abstracts are responsible for the accuracy of contents and spelling.

Keynote session 1

Time: Tuesday, June 28 2016: 09:10 - 10:30

Location: Lecture hall, Student Union TLTH

Everyday lives, everyday outdoor places

Cecil Konijnendijk van den Bosch¹

¹Department of Geography, The University of Hong Kong, China

Abstract

The United Nations' Sustainable Development Goals highlight urban areas and the importance of providing access to green spaces and their benefits to all people. This is in line with greater attention for urban parks and other green spaces, for example from the perspective of urban resilience and sustainable urban development. However, when the media, politics and sometimes even research address green spaces and outdoor spaces in general, often 'high-profile' green spaces are in focus. But the Highlines and Gardens by the Bay of this world only comprise a small part of the world's urban green infrastructures, and they fulfil a rather different role as compared with the neighbourhood parks, pocket parks and other outdoor spaces that service as everyday places for people's daily lives.

This presentation focuses on everyday outdoor places, looking first of all into their nature and specific functions, with specific attention for urban green spaces. A place-space perspective is applied to show how meaningful places are created from outdoor spaces. Everyday outdoor places can take many forms, from private gardens and pocket parks to streetscapes and local wildscapes. They provide a wide range of ecosystem services and benefits. From a health perspective, for example, they can offer places for restoration, while from a social perspective they can serve as meeting places, strengthening social interaction and social cohesion, and providing place identity. For children, nearby green spaces from green schoolyards to neighbourhood parks are important as places for play and learning.

The knowledge of everyday outdoor places and how these impact people's everyday lives is still somewhat fragmented. As people differ across cultures, ages, genders and such, their everyday needs for outdoor places also varies and needs to be taken into account. Everyday outdoor places are often overlooked or at least not highly prioritised in urban planning and green space management. In many cases, ongoing urbanisation and densification have resulted in a loss of green spaces. Thus innovative approaches have to be developed that promote the role of these spaces and their integration into green infrastructure plans and urban policies. Examples of such approaches are presented, with particular emphasis on innovative governance approaches that involve local residents, as well as more 'hybrid' forms of public and private space. Apart from 'place making', sound 'place keeping' will be required to ensure that local green spaces meet the needs of the local community and create better everyday environments for living, working and playing.

Keynote session 2

Time: Wednesday, June 29 2016: 09:00 - 10:00

Location: Lecture hall, Student Union TLTH

Making a difference for people and the environment: Challenges and opportunities

Jennifer A. Veitch¹

¹National Research Council, Canada

Abstract

The built spaces we inhabit consume a significant proportion of total global energy, making them an important target in addressing climate change mitigation. Building scientists, industry, and regulators are actively working to make "net-zero-energy" and "net-positive-energy" buildings not only possible, but commonplace, for both new builds and renovation or retrofit buildings. This dynamic environment creates both challenges and opportunities for people in buildings and those who conduct people-in-buildings research. These technologies will succeed only to the extent that they are developed, designed and implemented with people in mind. Our challenge is to ensure that behavioural science is part of these developments and their implementation. On the opportunity side, imagine a future in which buildings produce more energy than they consume, freeing designers to focus on creating interior conditions that more closely meet the needs of people in them without the suggestion that conditions need be merely tolerable in order to meet energy targets. To be ready for this future, researchers will need to build the knowledge base that can support these design and operation goals. Our work can make a difference for people and the environment if we broaden our scope with these dynamics in mind.

Keynote session 3

Time: Thursday, June 30 2016: 09:00 - 10:00

Location: Lecture hall, Student Union TLTH

Promoting sustainable lifestyles - Is it a moral challenge?

Birgitta Gatersleben¹

¹University of Surrey, UK

Abstract

Sustainable lifestyles are patterns of action and consumption, used by people to affiliate and differentiate themselves from others to meet basic needs, provide a better quality of life and which minimise the use of natural resources and emissions of waste and pollutants over the lifecycle, while not jeopardising the needs of future generations (Mont, 2007). It is widely recognised that current consumption patterns or lifestyles are not sustainable. In developing countries consumption is often insufficient to meet basic needs. In industrialised countries it requires too many resources, causes too many emissions, and produces unacceptable social impacts in developing countries (Scott, 2009).

As such there is now a vast amount of literature that aims to understand how more sustainable lifestyles can be promoted in Western households. In environmental psychology the majority of this research focuses on concepts such as environmental attitudes, norms and values. This research (applying and testing models such as TPB, NAM and VBN) has produced some valuable insights and there is now plenty of evidence that environmental and moral goals, values, attitudes and norms are positively associated with pro-environmental intentions, actions and policy support. Those with more egoistic, hedonistic or materialistic values and attitudes, on the other hand, express less environmental concern and action.

In this talk I will argue that the dominant focus on moral or self-transcendent (altruistic or biospheric) goals and values has limitations and I will propose an alternative approach in an attempt to open up alternative ways to promote more sustainable lifestyles.

Existing research often focuses on a relatively narrow understanding of the behaviours we need to change: notably, intentional pro-environmental behaviour, defined by Kollmus & Agyeman (2002) as "behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world". This approach necessarily limits our understanding of behaviours which may have significant environmental impact but are not motivated by environmental concerns. Moreover, existing approaches often (but not always) place people on a scale from more moral or self-transcendent to more egoistic; arguing that some people may be more environmentally friendly across the board than others. This approach, however, does not allow for people to hold multiple sometimes seemingly conflicting motives that become salient at different points in time.

I will propose that we can address some of these issues by studying consumer identities. I will draw on a range of studies to examine how consumers self-identify and what this means for environmentally significant behaviours.

Parallel session 1

Symposium: Restorative environments: Developments in Theory and Application

A symposium with five sessions

Co-chairs: Terry Hartig & Henk Staats

Terry Hartig¹, Henk Staats²

¹Uppsala University, Sweden, ²Leiden University, Netherlands

The restorative environment concept aids understanding of the health and developmental values that people can realize with natural environments, and largely for this reason it has received increasing amounts of research attention over recent decades. Much of the work done on nature experience and restoration has been informed by one or both of two theories in environmental psychology, the attention restoration theory of Stephen and Rachel Kaplan and the stress reduction theory of Roger Ulrich. The two theories differ in a variety of ways; they refer, for example, to different antecedent conditions from which people can be restored, to different kinds of restorative process, and to different outcomes in which restoration can be recognized. The conventional set of theoretical narratives continues to inspire and guide research, but the development of the field over the years has also involved efforts to refine, elaborate and integrate these theories and to identify significant gaps in theoretical coverage. This development has been accompanied by expansion in the scope of potential application, as researchers and practitioners have recognized ways in which environmental supports for psychological restoration can be more effectively recruited in the pursuit of a wide range of societal functions, such as health care, education, and public health. Although much of this work has focused on encounters with nature, other research has also sought to expand the scope of environmental coverage, emphasizing that restorative environments are not necessarily natural and that natural environments are not necessarily restorative.

The present symposium provides a snapshot of the current state of affairs in the development of theory and research on restorative environments. It brings together talented researchers from diverse countries and disciplinary backgrounds to share some of their recent work. The symposium comprises five sessions, each with five contributions. The first two sessions will cover basic issues in theory and research, including critiques of extant theory, possibilities for theoretical integration, problems in conceptualization, environmental simulation techniques, and neglected topics such as the relative contributions of top-down versus bottom-up cognitive processes and the link between restorative experience and transcendent experience. The subsequent sessions will include contributions concerned with the ways in which qualities of the natural environment and attitudes toward the natural environment figure in restorative experience; with the variety of needs for restoration and restoration opportunities that can be found in the some of the settings in which people young and old do their daily work; and with the potential significance of contact with nature in different clinical or therapeutic contexts. Through much of this innovative and exciting new work, a recurrent theme still is the classic one - the concern for restorative effects of encounters with nature.

Key words: nature, restorative environments, psychological restoration

Symposium: Restorative environments: Basic issues in theory and research, part 1

Time: Tuesday, June 28 2016: 11:30 - 13:00

Location: Room A:B, The A-building

Symposium chair: Terry Hartig & Henk Staats

Terry Hartig¹, Henk Staats²

¹Uppsala University, Sweden, ²Leiden University, Netherlands

Presentations:

Integrating environmental and cognitive psychological perspectives to understand links between nature, attention control and creativity.

Kathryn Williams¹, Katherine Johnson¹, Kate Lee¹, Leisa Sargent¹, Nick Williams¹, Terry Hartig²

¹University of Melbourne, USA; ²Uppsala University, Sweden

Recent effort to integrate Attention Restoration Theory (ART) with contemporary cognitive psychology is facilitating new understanding of restorative environments. Some researchers have drawn on Posner's attention network model along with behavioural and neuroimaging techniques to better articulate and test the neuropsychological basis for attention restoration. Other researchers have observed that nature experience supports creativity, suggesting that a different brain system – the default mode network – provides the neuropsychological basis for this outcome. In this paper we seek to integrate these different lines of inquiry to propose how sustained attention restoration can support psychological benefits beyond improved attention control.

Following ART, we suggest that natural environments promote creativity initially through the process of fascination. Fascinating environments are aesthetically pleasurable, attract more attention, and require less effortful attention. Drawing on Posner's attention network model, fascinating environments are proposed to attract a particular form of attention, exogenous orienting of attention. We more precisely specify how interaction between environmental and neuropsychological systems supports attention control by suggesting that if attention is exogenously drawn to an environment that is threatening or difficult to comprehend, then attention systems associated with alerting, endogenous orienting of attention or executive control will be activated and attention restoration is unlikely to occur. In contrast, environments that require less effortful attention – for example, unthreatening and legible environments - place little demand on these systems, enabling restoration of attention control.

Extending ART, we propose that during sustained attention restoration, conscious experience repeatedly switches or cycles between gentle exogenous orienting of attention and thinking that is not related to any particular task or stimuli, that is, 'mind-wandering'. We suggest sustained attention restoration and mind wandering are most likely to occur in environments that are complex and which allow visual and physical exploration. Aesthetic pleasure also plays a critical role by increasing the likelihood that mind-wandering is

positively toned, thus reducing the potential for negative rumination associated with depression. In neuropsychological terms, mind-wandering is linked to activation of the default mode network, a network of brain regions that are suppressed when people are focused on external tasks and stimuli. Mind-wandering can be associated with poor work performance, but there is also evidence of a range of positive outcomes including increased creativity. We propose the gentle ebb and flow between exogenous orienting of attention and positively toned mind-wandering – rather than continual fascination – promotes not only attention control, but creativity as ideas are 'incubated' and associations formed between different parts of the brain.

This integrated account enriches understanding of psychological restoration by pointing to interdependent neuropsychological pathways accounting for multiple outcomes, including creativity. It also suggests that a range of environmental characteristics linked to aesthetic experience – legibility, perceived safety, complexity and scope for exploration – may have complex relationships with psychological restoration, with all potentially playing a role in lifting mood through aesthetic experience, but with some playing an additional and distinct role in promoting attention control and creativity.

Internal processes of psychological restoration: Development of a conceptual framework and common research agenda

Mathias Hofmann¹, Nicole Bauer¹

¹Swiss Federal Research Institute WSL, Switzerland

During the last decades, many significant achievements have been made in the research on the restorative qualities of nature. Based on concepts like Attention Restoration Theory (ART, Kaplan, Kaplan & Ryan, 1998) and Stress Recovery Theory (SRT, Ulrich, 1993), a distinct line of research within environmental psychology has emerged, focusing on the benefits from contact to nature. In research drawing from ART, a common cognitive resource is assumed to be essential for directed attention and impulse control. It gets depleted during use and must be replenished recurrently, e.g., during contact to nature: The visual characteristics of nature are assumed to feature certain fascinating qualities allowing for this kind of replenishment by triggering so-called effortless attention. Complementary, SRT states that natural environments are more likely to feature certain characteristics, which, because they appeared to be beneficial during evolution, are affectively evaluated more positively which consequently leads to a reduction of stress. This line of research has seen numerous theoretical advances, its assumptions have seen strong empirical support, and numerous practical conclusions for the design of restorative and healthy environments could be drawn (for reviews see: Haluza, Schönbauer, & Cervinka, 2014; Hartig, Mitchell, Vries, & Frumkin, 2014).

Nonetheless, there still are distinct gaps in the understanding of the involved internal processes. Different research areas have brought their own sets of theories, terminology, and approaches to studying different parts of the internal processes and the links between the different elements. Knowledge exists for many specific aspects, e.g., regarding the representation of visual input in retinal and brain structures (Atick & Redlich, 1992; Milner & Goodale, 1995), the perceptual fluency in the perception of natural stimuli (Joye, 2015), the involvement of the reward system during perception of aesthetically pleasing natural stimuli

(Yue, Vessel & Biederman, 2007), the ontogenetic development of impulse control and the underlying brain functions (Steinbeis, Bernhardt & Singer, 2012) or the different attentional networks and the brain structures responsible for the corresponding processes (Posner, 2012).

We suggest the need for a conceptual framework which ties together the currently only loosely-connected concepts, methods, and evidence from cognitive psychology, neuroscience, environmental psychology, and related areas of research. We will put forward a proposal for such an integrative framework and a corresponding research agenda. Our contribution shall initiate the discussion about the value of such a coherent theoretical model for future research and about possible changes or alternatives to the model. Consequently, this shall lead to a joint advancement of the model with other interested researchers.

Activity in the brain's default mode network with exposure to environments previously rated differently on restorative quality

Joel Martínez Soto¹, Maria Montero Y Lopez Lena²

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Recent studies have shown the impact of environmental stressors in human brain response. Without considering the exogenous influences (environmental) that possibly impact the brain capacity to recover from stress, some incipient studies have documented the neural correlates of stress recovery. In spite of this, the early influences in the brain and behavior derived from the exposure to restorative environments are unknown. Early neural stress recovery has been studied through task free neuroimaging research with fMRI, which comprises the study of the brain and its resting state networks (RSNs). RSNs are composed of multiple functional circuits that are consistently engaged across participants and recording sessions. One of these networks is the default mode network (DMN), which is related to internally driven mental states (self-referential processing, planning for future and self-reflective thought mentalizing and mindwandering) that can be modified by recent experience. The present study examines architectural differences of the DMN and examines differences in functional connectivity within and between spontaneous fluctuations in DMN and three resting state-RS condition: baseline (Run1), deficit induction (stress) (Run2) and psychological environmental restoration (a high and low restorative condition, HRP and LRP respectively) (Run3).

Methods

Thirty-three healthy voluntary male participants (mean age 35.06, ± 11.06). Seventeen were randomly assigned to the HRP group (34.88 ± 10.57 y.o.a.) and 16 to the LRP group (35.25 ± 11.87 y.o.a.). Resting fMRI: Perceived stress and RS were tested immediately after all subjects were positioned in the scanner environment (G.E. 3.0T Discovery MR750 with a 32-channel head coil) to obtain a baseline level (Run1), after exposure to stressful video (Run2), and after restorative images viewing (Run3). Seeds coordinates were used for the default mode (DMN).

Results

Connectivity maps show an increased functional connectivity in the medial prefrontal cortex (mPFC) and bilateral temporal lobe for DMN during the acute stress phase. In the stress recovery phase decreased connectivity was identified in the DMN in the HRP condition. Specifically, reduced connectivity was found in mPFC.

Discussion

Increased connectivity in the mPFC after acute psychological stress suggests an augmentation in self-reflective thoughts likely related to stress-reactive rumination, or self-referential thoughts focused specifically on a recent stressor.

We showed for the first time that DMN displayed a pattern of functional recovery after the exposure to restorative environments (HRP).

Reduced functional connectivity of the DMN during stress recovery is consistent with studies about functional plastic recovery in the connectivity of the RSNs at rest.

Characterization of the post-restorative brain state may provide initial insight into the early phases of how the restorative environments can predispose our brain to a better psychological functioning and allow explore how the phenomenon of psychological restoration works in the brain.

Conceptual and methodological issues in the restorative environment literature

Patrik Sörqvist¹

¹University of Gävle, Sweden

The purpose of this presentation is to pinpoint and discuss conceptual and methodological issues in the literature on restorative environments. The discussion will focus on two major issues: (a) the tendency to confuse the definition of an effect with the explanation of that effect; and (b) the tendency to confound the contribution from top-down and bottom-up cognitive processes in the methodological setting. The theoretically-loaded concept "restorative environments" can often lead to circular reasoning when embedded in the definition of the effects of nature exposure on the restorative process. Moreover, people's perception of the environment—including the natural and the built environment—depends on two concurrent sets of processes: bottom-up processes and top-down processes. Bottom-up processes refer to processing which depends on stimulus features (e.g., colors, lines, size, etc.) whereas top-down processes refer to processing which depends on cognitive acts and representations (e.g., thinking, memory, expectations, etc.). Very few studies on "restorative environments" have properly disentangled the contributions of these two processes by orthogonal experimental manipulation.

Restoration, reflection and contemplation at the cemetery

Helena Nordh¹, Katinka H. Evensen¹

¹Norwegian University of Life Sciences, Norway

In the busy everyday lives of today's city dwellers, the need for restorative environments in which one can recuperate from stress is highly important. Several researchers have been trying to find out what type of environments that promote restoration. To mention some: Sonntag-Ostrom et al (2014) assessed perceived restorativeness in forest environments, Nordh et al (2009) looked at the potential for restoration in small urban parks, Van Den Berg and Custers (2011) explored an allotment garden as a restorative environment. The focus in the literature on restorative environments has mainly been on natural areas, but a few examples of other restorative settings can be found, such as the study by Hidalgo et al. (2006) assessing the restorative quality of historic-cultural settings. So far no studies have focused on cemeteries as potentially restorative environments. Urban cemeteries in Scandinavia constitute part of the green structure of cities. They are green lungs with park like qualities. In addition, they contain elements of history and culture. All this makes Scandinavian cemeteries potential places for restorative experiences.

In this study, we explore Gamlebyen cemetery in Oslo as a potentially restorative environment for its users. Onsite interviews with 61 visitors were performed in the summer season. Using a qualitative approach we aimed at exploring whether peoples' own description of their experiences at the cemetery corresponded with the restorative components: fascination, being away, extent and compatibility of the Attention Restoration Theory (Kaplan, 1995).

Analyses of the interviews convincingly showed that all four restorative components were found in the material. Gamlebyen cemetery was described as a place in which one could explore and discover both nature and culture c.f. fascination. It was addressed as a quiet place where one could get away and relax from city life c.f. being away. People recognized the level of maintenance at the cemetery and acknowledged the variety and possibilities for exploration c.f. extent. Several stories from the cemetery illustrated how the place opened up for deeper thoughts on life issues. We conclude that the combination of nature, culture and history makes Gamlebyen cemetery different from other green spaces in the city, in that it promoted the four restorative experiences and thereby enable reflection and contemplation.

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Parallel session 2

Symposium: Eye-tracking as an innovative tool for studying human-environment interactions: possibilities and pitfalls

Time: Tuesday, June 28 2016: 11:30 - 13:00

Location: Room A:C, The A-building

Symposium chair: Åsa Ode Sang

Åsa Ode Sang¹, Veerle van Eetvelde², Johan Pihel¹, Lien Dupont²

¹Swedish University of Agricultural Sciences (SLU), Sweden; ²University of Ghent, Belgium

Within this proposed symposium we will explore the use of eye-tracking as a method for gaining information on people-environment interaction and human perception of the environment. Eye-tracking as a research method has been developed within cognitive science as a means of understanding cognitive processes (Nyström, 2008) and has been promoted as a technique that could provide objective measurements of the importance of visual features in evaluating different types of visual stimuli (Holmqvist et al., 2011). The technique is based on recording the respondents' eye movements when viewing a visual stimulus and an analysis of the respondents' viewing patterns makes it possible to gauge the relative importance of different elements present in the visual scenes. Qualitative as well as quantitative output can be obtained from eye-tracking studies. Heat maps, focus maps, scan path visualisations etc., which all indicate the centres of attention, can be used as qualitative illustrations of the results. More quantitative data consist of spreadsheets containing eye-tracking metrics such as the number of fixations and their duration, the number of saccades (eye movements) and their amplitude and velocity, scan path length etc. This kind of data allows a more detailed study of the results since specific research hypotheses can be tested by performing statistical tests on the data. The eye-tracking technique differs to hitherto dominated methods such as preference surveys and other forms of assessment, which all indirectly probe the relative importance of different aspects of the landscape. In this symposium, results and experiences from research in human environmental perception using eye-tracking as a central research method will be presented and discussed. The studied landscapes range from forest, agricultural, coastal to urban street scape focusing on different aspects of human perception. Besides presenting results of different studies, the symposium also aims at discussing the hitherto unexplored potential of using eye-tracking in the field of environmental perception as well as acknowledging the limitations and pitfalls of the technique. In relation to the symposium a workshop on eye-tracking is proposed to be arranged in collaboration with the Humanistlaboratory at Lunds University. The preliminary presentations included are: • The effect of visual topology on viewing behaviour – Sang et al. • Complex imagery in eye-tracking studies – Pihel et al. • Influence of the photograph properties, observers' background and landscape characteristics on the viewing pattern – Dupont et al. • Analysing the readability of map representations of landscapes using eye-tracking – Xinji et al. • Transitional Street Edges: an empirical investigation through mobile eye-tracking – Simpson & Thwaites • Is visual attention related to the psychological outcomes of exercise in natural environments? A mobile eye-tracking study – Elliott et al. • Using skin conductance to indicate attention to environmental features - a pilot test - Qasem et al.

Presentations:

Complex imagery in eye-tracking studies

Johan Pihel¹, Åsa Sang¹, Caroline Hägerhäll¹, Marcus Nyström¹

¹Swedish University of Agricultural Sciences, Sweden

The use of eye tracking in landscape perception and assessment is becoming more and more popular to use in landscape studies. Eye tracking can provide additional data to either support or reject tested hypothesis, if the experiment designer have enough knowledge in the following three aspects; i) the physical eye tracking equipment and its limitations ii) the design constraints in play when performing a successful eye tracking experiment and iii) the knowledge and experience to evaluate raw data from the eye tracker to establish a measure of data quality. All three parts is imperative when designing the experiment, recording the data and performing data treatment and analysis. The presented work will describe, analyze and discuss the implications of point ii) in regards to the use of complex (photographs of environments or images otherwise not comprised of simple stimulus) images. The use of complex images are of importance when trying to establish higher ecological validity for the results derived from the experiment, than if reduced stimuli are used. This is done by using examples from published- and work-in-progress research (e.g. De Lucio et al. (1996); Dupont (2011); Nordh et al. (2012, 2010); Ode Sang et al. (2014); Pihel et al. (2015, 2014)), and relating the results and design from those studies to the design constraints enforced by the stimulus material. Several complications that possibly could become large obstacles to the design of the experiments are found to be present in photographic and other complex material, such as poor lighting control, color control, contrast control as well as other variables. The use of photographs of places also risks to force the study into a study of cases, rather than to be an experiment with results that are generalisable to other situations. The conclusion of the paper is that eye tracking, as it is growing into a rather well used method, needs to be used with a greater understanding of the three main points presented here. Having understanding of the experimental design criteria presented by the equipment's physical limitations, the design constraints enforced by stimulus and task presented to the participants, as well as the recruitment of participants has a huge impact of the quality of data. The ability to inspect and analyse data will give researchers a greater possibility to avoid unnecessary trouble with experiments that do not pan out and data that when inspected more thoroughly are to corrupt to be used in the intended analysis.

Eye-tracking as a tool to analyse human environmental perception: how photograph properties, observers' background and landscape characteristics influence the viewing behaviour

Lien Dupont¹, Veerle Van Eetvelde¹

¹Ghent University, Belgium

While in recent years eye-tracking has been introduced in landscape perception research, its potential use and applicability in the field has not been fully explored yet. One reason is that the possibilities and shortcomings of the technology first have to be investigated

thoroughly. In this paper, we provide an overview of the knowledge that we gathered so far in using eye-tracking for studying the human perception of the environment. In our studies, we selected landscape photographs to be viewed by a number of participants in order to gain information about their viewing pattern and its characteristics. Eye movements were recorded by a RED-250 eye-tracker from SMI (Senso Motoric Instruments). Three main aspects were investigated to understand their influence on the viewing behaviour: the characteristics of the landscape representation (photograph properties), the background of the observer and the characteristics of the landscape itself. A first study was conducted to evaluate the influence of the view angle of the photographs on the viewing pattern. A second study considered the role of the professional and educational background of the observer. Finally, a number of aspects which characterize a landscape (e.g. degree of openness, heterogeneity, complexity and urbanisation) were investigated to estimate their influence on the observation pattern. Statistical analyses and qualitative visualisations of the data obtained from these three studies, all showed the characteristics, tested in the experiments, to affect the viewing behaviour. Finally, a study was conducted to evaluate if eye-tracking can be used to objectively quantify the visual impact of new constructions on a landscape. An application was found in saliency maps, which are theoretical predictions of the viewing pattern. Saliency map could thus be used to predict which elements in a landscape will catch the attention. However, the reliability of these computer-generated maps for landscape photographs was first examined by comparing them with focus maps obtained from real observers during an eye-tracking experiment. The results were positive as high correlations between both were found. As such, saliency maps could be used for visual impact assessment. In particular, saliency maps of visualisations in which different versions/scenarios of a new object (e.g. building, tower, bridge etc.) are inserted, can be compared to the saliency map of the existing landscape. The correlation between both can then be considered as an estimate of the visual impact. When the correlation is low, the visual impact will be high because this indicates that the new landscape situation significantly differs from the existing one. While eye-tracking and its derived products definitely have a potential to be used for landscape related purposes, there are a number of shortcomings that need to be taken into account. The most important one in our studies is the use of photographs, which implies that observations are not made in the landscape itself but instead are based on static images.

Analysing the readability of landscapes' map representation using eye-tracking

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To discover a new perspective of landscape and to design the more attractive environments, innovative research methods and tools are needed. Eye-tracking as an effective approach of environmental psychology, has been successfully implemented in practice on multidisciplinary people-environment studies. Maps are useful tools to represent landscapes in different ways. The map visualisations express the scenic information and spatial configuration in different perspectives. We will explore the environmental visualization and evaluate the readability of landscapes represented in different types of maps (topographic map, 2D tourist map and 3D visualisation) by using eye-tracking technology. 2D tourist maps are quite common in our daily life, while topographic maps, presenting the main

environmental elements in a concise way, are more specialized. In contrast, 3D visualisation build up the whole structure from a bird's eye point of view and the degree of recognition and legibility is very high. Therefore the research questions are as follows: Which of the maps under investigation do users prefer and which are more helpful in understanding the content of the map easily and correctly? How do map users store and retrieve the visual information previously gathered from maps? For setting up the experiment, three kinds of maps representing the same virtual landscape will be created and shown to three groups of participants (10 subjects per map type) to evaluate the different types of maps. Chinese students of Ghent University from various disciplines are the respondents. The experiment consists of two parts. During the first stage, the participants are given time to observe and remember the main structure and key elements of the map projected on the computer screen, while simultaneously their eye movements are recorded using eye-tracking. In the second part, they will be asked to draw the map on a blank paper in combination with the "Thinking Aloud Method". Participants are encouraged to speak out loudly every thought that comes to their mind during the whole drawing process. This method will allow us to reveal how the information that has been stored in the mind before is retrieved from memory later. Besides, a relevant questionnaire regarding the environmental experience and map reading expertise will be completed afterwards. The test will be conducted in the laboratory of the Department of Geography at Ghent University using a non-portable 250 RED-eye-tracking system (developed by SMI), that records both eyes on a 22 inch color monitor with a screen resolution of 1280x1025 pixels at a rate of 120 Hz. The eye movement pattern is closely related to a person's cognitive process. The data derived from eye-tracking (fixations and scan path) will be compared with the result of the drawing exercise (time needed for the drawing, sequence and what elements they draw) to probe if there is any pattern or strategy of how users read the map and reconstruct the landscape. The conclusions of this experiment can be useful to formulate guidelines and recommendations for future map design of landscapes.

Transitional street edges: An empirical investigation through mobile eye-tracking

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Over recent decades our understanding of urban streets has shifted. No longer are they conceived as linear voids flanked by containing forms but are appreciated as a holistic assemblage of human process and physical affordance: a blend of social, experiential, material and spatial dimensions (Dovey 2010). Within such an understanding is the broad recognition of the importance of active and engaging street edges, providing social and experiential richness within everyday urban life (Gehl 2010; Thwaites et al. 2013). However, the practical application of this knowledge, within an urban design context, remains hindered. The design decision-making process often fails to draw together aspects of the street's spatial organisation with the way social processes become activated. Some attribute this to a lack of persuasively articulated and insufficiently developed empirical foundations spanning the multifaceted dimensions of the street (Cuthbert 2007).

In response, this paper expresses the conception of transitional street edges and details how advances in mobile eye-tracking technology facilitate their empirical investigation.

This provides a theoretical and practical framework in which the assemblage of socio-spatial dimensions within urban settings can be brought together as an integrated system focused on interconnected networks of transitional street edges.

First the characteristics of these edge realms will be explored by building upon existing theories towards a conceptual model (Habraken 1998). In doing so we see particular relevance for application in the kind of mixed-use, compact development increasingly associated with the delivery of urban social sustainability. Subsequently, we will show how mobile eye-tracking, in association with innovative representation techniques, can be utilised to examine these characteristics through offering the potential to access aspects of experience embedded within the socio-spatial nature of urban streets. We will express how this methodology makes explicit patterns of individual and shared visual attention underpinning the identification of themes of routine street experience. Thus, its contribution to the study of embodied experiences of urban street edges, and wider built environment spaces, has substantial potential in the development of urban design theory and practice.

These procedures will strengthen our understanding of how to deliver core components of urban form that are conducive to social and experiential optimisation. This forms the basis for demonstrating the importance of providing edge realms with a wider range of spatial and material richness than is currently evident in contemporary urban design solutions. We will argue that the delivery of urban environments, through the application of the transitional street edge framework, can act as a key socio-spatial cornerstone within modern everyday urban life.

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Is visual attention related to the psychological outcomes of exercise in natural environments? A mobile eye-tracking study

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Natural environments represent a means of promoting physical activity. Previous studies have demonstrated that exercising in unpleasant natural environments elicits less favourable psychophysiological responses which could lead to a lower likelihood of repeating the experience. However, the mechanisms by which this effect occurs are unclear. Attention restoration theory posits that natural environments hold attention effortlessly, allowing directed attention capacity to restore. Unpleasant natural environments may

hinder the restoration of directed attention, and lead to less favourable responses to exercise in such environments. In this pilot study, we employed eye-tracking as a way of exploring visual attention to pleasant and unpleasant natural environment scenes. We hypothesised that unpleasant scenes promote less positive responses to exercise because they elicit more effortful patterns of visual attention.

Method:

In a counterbalanced within-participants design, 32 adults undertook two conditions. In both conditions, participants completed a Stroop task to deplete their directed attention capacity. They then undertook a ten-minute, moderate-intensity treadmill walk. While walking, they were exposed to a pleasant beach scene which contained natural debris on the tideline, or an unpleasant beach scene which contained additional visitor-related litter on the tideline. Throughout the exercise, participants wore a mobile eye-tracker which recorded their eye movements. Measures of resting blood pressure and heart rate were taken after the Stroop task and after ten minutes of rest post-exercise. Measures of affective valence, affective activation, perceived exertion and time perception were taken at multiple timepoints. Restorativeness of the two scenes was measured as a way of attempting to validate the eye-tracking method. Measures of fixations and 'dwell-time' were used as simple metrics of visual attention.

Results:

Regarding responses to the two scenes, our results failed to echo those of previous studies. The only evidence of a diminished psychological response to the unpleasant beach scene was manifest in participant's perceptions of elapsed time; time appeared to drag more as the exercise progressed. Problems with eye-tracking data meant that only 23 participant's data were valid. Whilst more effortful patterns of attention were paid to the tideline of the unpleasant beach scene, these were unrelated to concurrent psychological responses. The order in which participants underwent conditions appeared to be important. This issue and other results pertaining to the validation of the eye-tracking method will be discussed in more detail at the conference.

Conclusions:

We found little evidence of different psychophysiological responses to exercise when exposed to pleasant and unpleasant beach scenes. Furthermore, these responses appear to be unrelated to patterns of visual attention. A lack of statistical power could explain some of the results although the order in which participants undergo conditions could also be important. Eye-tracking represents a novel method of exploring attention to natural scenes and of testing attention restoration theory. However, a number of methodological issues arise if this method is embarked upon. The accuracy of the equipment and analytical software, statistical power and sample size, choice of measures, and the validation of the method will be important in designing comparable future eye-tracking studies.

Using skin conductance to indicate attention to environmental features – a pilot test

Jim Uttley¹, Hussain Qasemauthor¹, Steve Fotios¹

¹University of Sheffield, UK

Eye-tracking can be used to monitor how cyclists observe their environment, indicating what environmental features are important to the cyclist for safe travel. This can inform urban design practice, one example being road lighting design guidance to ensure important features can be seen after-dark. Using eye-tracking in this way requires identification of when someone is paying close attention to what they are looking at, or when they are looking at something highly salient to them. One method is to use an ongoing concurrent response task, with instances of slow response indicating diversion of attention to something potentially significant in the visual environment (Fotios et al, 2015a). Analysis of the eye-tracking record can reveal what was being observed at this critical time. Although this method has shown benefits over other eye-tracking analysis methods (Fotios et al, 2015b) two limitations exist. First, the response task measures attention at discrete intervals rather than providing a continuous measure, introducing some uncertainty in exactly when the participant first diverted their attention. Second, the concurrent task increases demand for attentional resources, which may be hazardous in certain situations, such as with cyclists on roads with other traffic.

An alternative method for indicating salient visual features is the skin conductance response (SCR). This is a physiological response that often accompanies significant emotional or cognitive processing. Previous research has used SCR to indicate successful detection of hazards in a driving context (Kubler et al, 2014). We plan on using SCR and eye-tracking to identify types of critical environmental features for cyclists. SCR and eye movements of cyclists will be recorded as they cycle a short urban route. In preparation for this study we have carried out a computer-based pilot test to confirm whether SCR can be used to indicate significant visual behaviour. Participants were shown three types of stimulus:

1. Static, visually-distracting or salient images, interspersed with visual white noise
2. Short (5 s) video clips shot from the point-of-view (POV) of a pedestrian, showing noteworthy events such as a bus going past, other pedestrians approaching, etc., interspersed with visual white noise
3. Longer, continuous (222 s) POV video, with participants asked to look out for specific features, such as particular word on a poster

SCR was recorded during presentation of these stimuli. Participants also carried out a concurrent response task whilst observing the stimuli, pressing a key in response to a beep occurring every 1-3 s. This allowed comparison of the concurrent task method for identifying critical times with the SCR method, to confirm whether they provide similar results. Preliminary results (n = 7) indicate a SCR is more likely to occur during a stimulus event compared with other times, and there is a correlation between SCR and slower reaction times to the concurrent response task. These results suggest SCR can be used as an alternative method for identifying significant environmental features from eye-tracking data. We plan on using this method with cyclists to find out what features are important to them.

Keywords: Skin conductance response; visual attention; environmental distractions

Parallel session 3: Human acceptance of energy production

Time: Tuesday, June 28 2016: 11:30 - 13:00

Location: Full scale lab, The A-building

Session chair: Eja Pedersen

Presentations:

Understanding responses to UK power line deployment: The role of place and project-based social representations

Etienne Bailey¹, Patrick Devine-Wright¹, Susana Batel²

¹University of Exeter, UK; ²Lisbon University Institute, Portugal

Introduction:

With a projected increase in low-carbon energy generation in the UK, expansion of the existing electricity network is required (DECC, 2011). In going beyond the NIMBY (Not In My Backyard) concept, Devine-Wright (2009) has posited a place-based approach that highlights the role of social representations of place in understanding responses to energy infrastructure projects. Existing research (McLachlan, 2009; Devine-Wright & Howes, 2010; Anderson, 2013) has investigated the ways in which various types of place change are interpreted symbolically based on existing representations of place, in some cases informing responses to energy developments. However, with the exception of a recent study by Batel et al (2015), there is a dearth of research that adopts a Social Representations Theory approach to investigate the symbolic fit of large-scale power line projects in place.

Methodological approach and main findings:

Focus group interviews (n=5) were conducted with residents of the town of Nailsea, Southwest England, who were directly affected by the Hinckley Point C power line proposal. This method was deemed well-suited to investigating the ways in which the power line was co-constructed symbolically based on existing social representations of the surrounding countryside locale. Thematic data analysis suggests that those representing the nearby countryside as replete with existing grid infrastructure and farming technology objectified the power line proposal as an acceptable and 'familiar' form of place change. Conversely, those representing the countryside as a 'natural' locale symbolised the power line as 'industrial' in nature, objecting to it on this basis.

Conclusions:

This study highlights the utility of adopting a Social Representations Theory approach for exploring the congruence between place and project-based symbolic representations, and for better understanding response to UK transmission power line deployment. To enhance social acceptance of such technology, electricity network companies could seek ways in which grid proposals can be made to reflect familiarity and continuity in the character of places. Such actors could also attempt to minimise the industrial nature and impact of grid infrastructure on countryside areas in the UK. This could be achieved by avoiding areas of outstanding natural beauty, mitigating through the use of landscaping, adopting alternatives to the conventional A-frame pylon design, and undergrounding of high-voltage power lines. Keywords: power lines; NIMBYism; symbolic fit

Community reactions to windmill farms

Hanne Beate Sundfør¹, Ronny Klæboe¹

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In Norway there is a political goal to invest in renewable energy, such as windmills. It is known from international studies that windmill noise is perceived as more annoying than noise from road traffic. Large-scale renewable energy and associated technologies (RET) often meet opposition from the local communities living nearby. Previous research has suggested that one of the main aspects that might contribute to this is that RET have a different essence from rural landscapes, where they are usually deployed (referred to as landscape essentialisation). Another aspect is the Nimby-effect (Not In My Back Yard). People tend to be positive to the new development, as long as it is placed far from them.

In the current study, an environmental health impact assessment was undertaken around a windmill farm located near a coastal area at the very south of Norway (Lista). The wind farm were established in accordance with Norwegian land areas zoning regulations (an evening and night time equivalent noise level of 45 dBA), and is located in a sparsely populated area with few housing units and many part-time dwellings to minimize adverse noise impacts. After the wind farm was put into operation in 2012, the residents complained about noise and that they were surprised by how persistent and bothersome the noise turned out to be. A socio-acoustic study was required by the local health authority to look into possible causes for local complaints.

The population studied were people living within a radius of 2 kilometres to any windmill (N=240). Of these, 90 people responded to a questionnaire about their living environment, subjective health complaints, noise sensitivity, annoyance from windmill noise and a wide spectre of attitudes towards renewable energy.

We use simple exposure effect-relationships to explore how the local population reacts to windmills and windmill noise compared to what is shown internationally. We also explore how visual and aesthetic factors and attitudes might have an effect on the community reactions observed.

Preliminary results indicate that the local population reacts stronger to windmills and windmill noise than shown internationally. Reactions from respondents who did not regard the windmills aesthetically displeasing or degrading the visual landscape and those more favourable towards wind mills as a renewable source of energy, are more in line with what has been shown internationally. The results will be published in January 2016.

Key words: windmill noise, community reactions, renewable energy, annoyance

Exploration through visualization - The combination of psychological variables and social, economical and environmental data

Silke Rühmland¹, Maximilian Hinse¹, Jan Hildebrand¹, Irina Rau¹, Petra Schweizer-Ries¹

¹IZES gGmbH, Germany

In November 2015 the European Commission adopted a list of 195 key energy infrastructure projects in order to support the grid integration of renewable energy sources following the European directive on the promotion of the use of renewable energy (Directive 2009/28/EC). These projects which mean a substantial extension of the high voltage transmission grid shall help to deliver Europe's energy and climate objectives as well as form a part of the future Energy Union. As a consequence of the rising number of grid projects, significant changes occur in landscapes and daily living environments, additionally negative impacts on property values and tourism as well as intensified health risks are suspected. For the case of Germany, an increasing oppositional behavior amongst residents within the context of the German power grid extension can be observed (Zoellner & Rau, 2010). To examine relevant acceptance factors towards new transmission lines and to illustrate the process of social dynamics regarding the new energy infrastructure, a longitudinal study was conducted in three regions in Germany at two points in time (t₁ (2012): N = 611; t₂ (2014): N = 1067). Due to the different planning stages of the regional projects, all three regions were analyzed separately with hierarchical regression analysis that indicated differences between regions caused by project developments.

Although in a first step the regression analyses revealed certain influencing variables such as perceived necessity of the grid and procedural justice, as a second analyzing the combination of psychological variables and contextual data such as geographical characteristics, further social (education, living conditions), economical (income, data of the labor market) and environmental data (environmental protection expenses, types of landscape) seems promising for looking at regional energy infrastructure developments in their entirety.

The aim is to deepen the understanding of local acceptance processes and to describe the local situation more accurately. Several examples will be presented for how the combination of psychological factors and contextual regional data can be used for further exploration of local acceptance and to illustrate the dependencies of behavior not only from the technological subject but also in connection with the living environments. For example, within a comprehensive approach, several psychological variables were combined, such as the four dimensions of acceptance (support, approval, rejection, resistance; by Zoellner, Rau & Schweizer-Ries, 2008), education and engagement in a civil initiative in order to identify whether people opposing the grid extension are more often active within a civil initiative and have higher education. In addition, contextual variables like the connection between municipalities, their different types of landscapes, population density, economic factors and local power generation of RET can be integrated. All in all visualization is an appropriate explorative tool to detect unseen connections between psychological and social, economical and environmental variables.

"I'm a NIMBY", "we are all NIMBYs" or "we are custodians of this area"? The different uses of NIMBY as a discursive resource for members of local communities to negotiate responses to high voltage power lines in the UK

Susana Batel¹, Patrick Devine-Wright²

¹Lisbon University Institute, Portugal; ²University of Exeter, UK

During a long time, local communities' opposition to energy and other infrastructures to be built nearby was explained by academic research as NIMBY (Not In My Backyard), that is, as led mainly by selfish, irrational and egoistical motives. More recently, several authors started to criticise the NIMBY explanation, but in the meantime it has made its way to popular discourses, including developers' ones. Researchers started then to examine in which ways NIMBY discourses are used by developers to justify not taking into account local views in decision-making processes, and also how members of local communities themselves already avoid using potentially labelled NIMBY discourses so that their positions are not immediately dismissed by developers and other groups. This research suggests then not only that NIMBY, as a representation, has been adopted in everyday discourse, but also that using it – or not – is a resource that different groups rely upon in order to negotiate their positions about different types of infrastructures. However, analyses are lacking that further explore how members of local communities use NIMBY as a discursive resource to negotiate different types of responses – both negative and positive – regarding infrastructures to be constructed nearby. With that aim, we conducted focus groups with members of local communities in the UK to be affected by the construction of new high voltage power lines – the Hinkley Point C connection project (N=4) and the Mid Wales connection project (N=4). Analyses show that NIMBY, as a representation, is both consensual and widespread. However, it is used in a polysemic way to fulfil different functions, depending on participants' positions about the power lines and on associated identities and representations of place. These analyses highlight then the relevance of further examining representations of and relations with place and infrastructures as discursive and societal devices that can be strategically used by individuals and groups to negotiate change.

Participative implementation processes of energy balancing concepts in a neighbourhood community in Eastern Germany

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The research project „societal acceptance of energy balancing technologies and their meaning for the transformation of the energy system“ focuses on promising technologies, e.g. batteries or CHP, for energy balancing, both in terms of their technical potential as well as their societal acceptance by using a participatory and transformative research approach. Energy balancing technologies concepts, are one solution approach to guarantee security of supply within the German energy system.

Aim of the participatory approach is to develop acceptable implementation concepts and, moreover, to improve the technical systems through integrating social knowledge and the

perspectives of different stakeholders, respectively.

Four selected model-regions within Germany are considered regarding their potentials for implementing energy balancing concepts. One of these regions is an urban quarter where profound understanding of stakeholder behaviour, especially with regard to the initiating of participation processes is examined.

Methodologically, seven guided in-depth interviews have been carried out with nationwide experts to identify key criteria for the acceptance of the different technologies. Existing studies indicate that acceptance of new technological infrastructure is influenced by contextual factors, such as location, environmental protection or legal requirements (e.g. Zoellner et al., 2008). Even though inter alia participation, trust and locations have been mentioned to raise 'active acceptance' (Schweizer-Ries, Rau, Zoellner, 2008), in context of energy balancing technologies, the main criteria seem to be cost effectiveness and legal requirements as interviews showed.

Findings were validated in a subsequent workshop. Since the awareness for the necessity of energy balancing is not yet present, the acceptance criteria regarding the respective balancing technologies are by now limited in meaning. This might change within the stage of concrete implementation.

Within the participatory and transformative research approach, a stakeholder analysis was conducted in the urban quarter. Therefore ten guided, semi-structured interviews have been carried out. Its main focus was to examine the most relevant stakeholders for implementing energy balancing concepts and to sensitize for the topic. Besides locally active organizations, networks or private homeowners, local authorities, power suppliers have been identified as the most relevant stakeholders. Supplementary, workshops were carried out within the model-regions focusing on requirements for the initiation and implementation of regional planning processes for energy balancing concepts, defining realistic time frames and ranking different levels of participation options.

For environmental planning, regional participation and governance processes the workshop results indicate that a shared understanding of the regarded 'energy balancing areas' is crucial besides administrative boundaries. The subjectively constructed concept of the region ('mental model'; e.g. Jones et al., 2011), e.g. culturally, administratively or economically, is linked to the individual willingness to participate on planning energy balancing concepts. These different conceptions of 'region' have relevant implications for perceived responsibilities of local authorities and thus the decision-making process within regional planning procedures.

Next, a participation process will be displayed in the urban quarter, testing an integrative planning tool for developing regional adapted balancing concepts. Findings will identify grades to integrate the communal stakeholders in the planning process for energy balancing concepts considering local framework conditions e.g. existing climate protection concepts.

Parallel session 4 Symposium: Young people and climate change engagement

Time: Tuesday, June 28 2016: 11:30 - 13:00

Location: Black Box, The A-building

Session chair: Maria Ojala & Cecilia Jakobsson Bergstad

Presentations:

Young and skeptical: How news media use affects young people's environmental behavior ***Yuliya Lakew¹, Ulrika Olausson²***

¹Örebro University, Sweden; ²Jönköping University, Sweden

It has been long believed that media are the main source of climate change information as direct experience of such changes or alternative sources of information are very limited. Earlier media content analysis studies pointed at exaggerated sense of scientific uncertainty around climate change in Western press. It led to a long-standing assumption that media are one of the greatest contributors to public skepticism. However, psychologists have not found any direct effects of media use on people's values or behavior. A few experimental studies shed light on the mechanisms of media influence on adults' environmental views. They have provided evidence that people's existing environmental values and beliefs stipulate how skeptical media information is assimilated. The skeptics tend to become more skeptical, while people with stronger environmental beliefs are less inclined to change their minds. However, we know very little about the impact of young people's media use on their everyday pro-environmental behavior and skepticism. Younger citizens display greater inclination to embrace environmental concerns, as they have become an established arena of lifestyle politics for younger generation. Unlike the previous studies on media effects that focused on short-term influence on adults' environmental concerns, this study aims to uncover the mechanisms of long-term news media influence on youth's behavior. Departing from assimilation bias theory, we assume that existing level of climate change skepticism among young people determines how news media use affects their behavior in a long run. The idea was tested on recent survey longitudinal data from Swedish late adolescents in two points in time – news media use during election year 2010 and its effects on the next year behavior and news media use in 2011 with its effects on behavior in 2012. The results have shown that only use of traditional media encouraged adolescents acting in more environmentally friendly manner and only those who were already pro-environmentally inclined. News media use had no impact on skeptics' values or behavior. Moreover, this pattern was only observed right after the election year during which environmental issues were more visible in mass media. In a regular year neither traditional media news nor online news had an impact on young people's everyday behavior regardless of their existing attitudes. Consequently, even when traditional media increase amount of climate change related information, they are only able to mobilize those who are already pro-environmentally inclined.

Young people's distancing strategies concerning climate change: Relations to engagement, communication patterns, gender, and worry

Maria Ojala¹

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Young people are one important group to include in the efforts to combat climate change (CC). Youths are the future leaders of society and they will be the ones handling the future negative consequences of this problem. This group is also relatively easy to reach with information, since many are part of the educational system. Still, studies about young people and CC are rare. The present study focuses on Swedish late adolescents (n=624; mean age=18) and their coping and engagement concerning CC. The study takes its starting point in the psychologically distant character of CC and the fact that this could impede engagement. A common suggested solution to this predicament is to make CC more visible and concrete. Studies also show that when people are confronted with CC through media or through CC-education they become more concerned and worried. This worry could lead to more engagement, but could also lead to disengagement and a low sense of efficacy. Applying the transactional theory of coping, this study argues that young people are not just passively taking in information about CC, but are actively dealing with this problem. In addition, how they are coping could have relations to felt efficacy in dealing with the problem and to engagement. The focus in this study is on how young people actively are distancing themselves from CC. Research has found that some youths deny that CC is as serious as researchers claim or argue that the negative consequence will only be visible in the future or among people living in faraway places. These ways of de-emphasizing the threat is more common among boys, is negatively related to worry, knowledge, efficacy, and engagement, while being positively related to negative communication patterns with peers and parents. However, besides to directly distance themselves from the problem, people can also distance themselves from negative emotions felt. How this emotion-focused distancing strategy relates to engagement among young people has, however, not been investigated before. The aim of the present study is to explore how distancing strategies concerning CC among adolescents relate to environmental efficacy, pro-environmental behavior, CC-worry, and communication patterns with parents and peers. Possible gender differences will also be in focus. Senior high-school students answered a questionnaire in the classroom during school hours. Statistical analyses showed that distancing was more common among girls (as was also the case in two pilot studies), was negatively related to felt efficacy and was positively related to CC-worry and to negative communication patterns with parents and peers. Distancing, however, had no relation to pro-environmental behavior. In a regression analysis the most important predictors of distancing were negative communication with fathers and CC-worry. A mediation analysis showed that the gender difference in distancing was explained by the fact that girls worried more about CC than boys. Results are discussed in relation to the transactional coping theory, the theory of affective intelligence, and gender theories. Practical implications for CC-education are elaborated upon.

Youth as change agents: Working collectively for transformations

Elin Selboe¹, Milda Jonusaite Nordbø¹

¹University of Oslo, Norway

Part of the symposium: Young people and climate change engagement.

How do we contribute to transformations and be effective agents of change? These are questions considered by young people who are actively engaged in transformative processes related to sustainability and social justice. This presentation aims to explore youth activism and engagement with climate change in Norway, focusing on the strategies, skills and arenas they use. The analysis is based on individual qualitative interviews with 35 young and engaged change agents in Norway (15-30 years old), and will consider the perceived and experienced opportunity context for youth, as well as the personal preferences and reported trade-offs between individual and collective strategies. Results show that the benefits of collective strategies clearly outweigh the combined benefits and weaknesses of individual engagement among youth. Although the role of individual agency and initiative is considered important, it is the use of both formal and informal approaches to collective organisation that is seen as crucial strategies for sustainability transformations by the young people participating in this study. Results show how hard it is for youth to create the change they envision as individual change agents, and that they are often not being listened to or taken seriously as individuals. On the other hand, it is evident that the foundation of collective organisation is dependent on the individual engagement and motivation within each and single member. Working collectively with likeminded youth is experienced as giving hope and providing the possibility of making a difference and creating real change. However, collective engagement does not suit all young change agents, who might choose to find alternative avenues to create change outside of the formally organized collective.

The dynamics of youth engagement in climate change

Milda Jonusaite Nordbø¹, Elin Selboe¹

¹University of Oslo, Norway

Part of the symposium: Young people and climate change engagement.

What are the factors leading up to active youth engagement with climate change, and those that sustain or may lead to a gradual termination of youth activism? This presentation on the dynamics of active youth engagement with climate change will investigate these questions. The analysis is based on individual in-depth interviews with 35 young people (15-30 years old) actively involved in both climate and non-climate related issues in Norway. In exploring the beginning of their active engagement, we focus on their motivations and concerns. The results show how a combination of family support, friends, school and education ambitions, the value of 'fairness', as well as experience with nature and social debate is decisive for catalysing the engagement. Regarding the factors that may sustain or lead to a termination of active engagement is related to personal encounters with and experiences from organizational life and political institutions, along with hope for the future and a sense of self-efficacy. Sustaining the engagement among youth seems to depend on victories in various scales; such as organisational change, a successful local event or national policy postponing the impact assessments of oil activity in Northern Norway. Success

stories are evidently vital milestones for sustained engagement among youth by reaffirming that the invested efforts lead to change. These results might help indicate the incentives and barriers for engagement, as well as the kinds of experiences, support and possibilities young people need to promote their interests, engage with climate change and mobilise for transformation.

Parallel Session 5: Supportive school and preschool environments

Time: Tuesday, June 28 2016: 11:30 - 13:00

Location: Room A:A, The A-building

Session chair: Ian Simkins

Presentations:

Teachers as Placemakers

Stephen Hughes¹

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This hypothesis generating study explores how a group of fifteen primary school teachers across five sites in rural Queensland, Australia, design, manage and maintain learning spaces, as they go about their daily work. The study uses qualitative data in the form of photographs taken by the participants and in-depth interviews using photo-elicitation methods, to generate a substantive theory that accounts for how the participants engage in placemaking. Placemaking is proposed as an integrating concept to explain theoretically, how participants achieve their central purpose in relation to learning space design, management and maintenance. The application of the holistic, contextual, transactional and systems oriented perspective from environmental psychology, is a key contribution of this study.

The primary research questions were constructed in classic, Glaserian grounded theory terms as:

1. What is the main concern of primary school teachers as they design, manage and maintain learning spaces as part of their daily workflow?
2. How do primary school teachers resolve their main concern as they design, manage and maintain learning spaces as part of their daily workflow?
3. What theoretically accounts for the ways that primary school teachers resolve their main concern as they design, manage and maintain learning spaces as part of their daily workflow?
4. What practical implications for primary school teachers and education facilities planners, derive from understanding how primary school teachers resolve their main concern associated with their engagement with learning spaces as part of their daily workflow?

The analysis of the rich data was completed using classic grounded theory methods and a grounded theory was developed to account for how the participants resolved their main concerns as learning space managers.

Given the important social functions of schools, the public capital invested in education facilities, and the shift from 20th to 21st century learning environments, furthering our understanding of how the occupants of school spaces experience and behave in these spaces, is considered a worthy endeavour. In the past decade, there has been an increased

interest in the design of learning spaces presumed to improve learning, especially academic outcomes for students.

This interest has sparked a range of investigations globally into how environmental variables influence learning. Scant attention has been given to how the same environments affect the behavior of teachers who have agency to design, manage and maintain the learning spaces in which they operate in on a daily basis.

The aim of this study was to enhance understanding of how teachers think about and act in learning spaces to achieve the outcomes of schooling they strive for on behalf of students and the community. Primary school teachers in the context of their daily design, management and maintenance of learning spaces form the substantive field for this investigation as these teachers are often allocated bounded spaces for significant periods of time and with the same cohorts of students.

Recommendations are offered to teachers, education facilities planners and school communities to engage in developing a place-making masterplan for schools and learning spaces. Contributions to the fields of education and environmental psychology are offered.

Participation and inclusion: Innovative research methods and tools to assess schools for the visually impaired

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The development of data collection instruments for design studies that involve the participation of children is a challenging task. This task is made even more challenging when these children are blind. This article discusses the design of data collection instruments that include the opinion of blind students to assess school buildings. The principles of Universal Design (UD) guided the development of these tools. The goal of this study was to understand the importance of adapting data collection instruments for the inclusion of disabled persons in field research in Architecture and Design. Two data collection instruments were developed. An interview tool, which included a tactile map and a 3D questionnaire were developed to assess the experience of blind children in their school environment. The study involved young pupils of a school for the blind who had not yet mastered the Braille system. The participation of these students was evaluated in a test survey. A multidisciplinary team, consisting in architects, educators, and psychologists participated in the development of the tools. The results showed that the data collection instruments were successful in allowing the participation of blind children in a test survey. An analysis of the participatory phase showed that the limitations resulting from blindness determine the specificities in the adaptation and implementation process of the instruments to evaluate schools. Specific disabilities impact everyday life. To study these impacts research methods are necessary that permit the participation and inclusion in participatory design processes of users with varying needs and perception. This approach is in line with the global trend of including disabled persons in society and giving them autonomy. People and environment studies need specific instruments to include all users' opinions. User

relations to elements of their surroundings need to be fully evaluated to determine needs, desires and satisfactions, and people of all ages and with varying disabilities need inclusion in an inclusive design process.

The relationship between new school environments and student academic performance

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In recent years, Scotland (like the rest of the UK) has experienced an unprecedented level of investment in its school estate. The majority of this investment has been focused on secondary schools (students aged 12-17 years). At the same time however, the impact of new school buildings is poorly understood and there is a lack of an empirical evidence base on the relationship between school buildings and their users (Edgerton, McKechnie and McEwen, 2010). Previous research has shown that students in new school environments showed small increases in engaging behaviour and slightly greater use of 'positive' approaches to learning (Edgerton, McKechnie and McEwen, 2011). This paper will focus on the relationship between new school environments and a key educational outcome i.e. student academic performance.

This study collected data from 55 students (approx. 16 years old) at five secondary schools in Central Scotland that were part of a rebuilding programme. Data was collected at four different points in time over an 8 year period (from pre to post construction). The data consisted of subjective measures of student behaviour, self-esteem, motivation, perceptions of the school environment and national, objective measures of academic performance. The presentation will focus on (i) levels of academic performance pre and post construction of the new schools, and (ii) the nature of the relationship between academic performance and the subjective, student measures outlined above. The findings will be discussed in terms of the direct and indirect impact of new school buildings on student academic performance over time.

Bibliography

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Redesigning a school ground: Impact on children's cognitive and social behaviour

Matluba Khan¹, **Simon Bell**¹, **Eva Silveirinha De Oliveira**¹, **Sarah McGeown**¹

¹The University of Edinburgh, UK

Generally the school grounds in Government Primary Schools in Bangladesh are barren open unsurfaced areas providing few opportunities for children to explore and socialize. The opportunities for teachers to take their classes outdoors are even fewer. However, national

policies in many countries across the world emphasize the benefits of teaching children some curriculum content in the outdoors as well as for children to play during break times. This research project investigates how school grounds can be designed and improved to support and develop children's cognitive and social behaviour during formal learning and informal play. Work followed a theoretical framework based on two central theories of child development: Jean Piaget's constructivism and Lev Vygotsky's social constructivism.

This study is part of a PhD thesis which adopts an experimental action research strategy and includes the design and development of a primary school outdoor space in Bangladesh which involved the children, teachers and community. The pre-post mixed method study design applied several quantitative and qualitative methods e.g. questionnaire survey, observation and behaviour mapping, focus groups with the children and interviews with teachers both before and after the intervention. The post intervention data were collected over a four month period after the completion of the improved school grounds in order to examine the longer term impact.

The newly designed school ground (which included a number of different behaviour settings) had a significant positive impact on children's exploration of the environment. Peer relation among children also improved to a certain extent. The settings comprising natural fixed and loose elements provided more opportunities for exploration during both outdoor classes and play time, while the settings designed so give enclosure provided affordances for children to talk to each other and interact socially. However, the opportunity to be engaged in some functional and rule games in the flat open ground and an area with some fixed play equipment also attracted children who acted as onlookers and participant observers, therefore engaging in social play behaviour.

The results showed that a school ground designed as a combination of diverse settings offers opportunities for a range of physical, social and cognitive activities by children. While this is a pilot project the results are sufficiently robust as to suggest that the replication of the project on a broader scale in more primary schools has the potential to make a greater impact on children and society.

Pedagogues and physical environment in combined preconditions for the youngest children's opportunities for interaction in the preschool yard

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Pedagogues and physical environment in combined preconditions for the youngest children's opportunities for interaction in the preschool yard

In a study where a part of the general aim was to explore "the opportunities for the youngest preschool children to participate in contexts of different linguistic developing interactions in the preschool yard" (Berkhuizen, 2014, p 161) both the physical environment and the importance of the pedagogues was regarded.

The study, which was qualitative and had an abductive explorative approach, was conducted in three preschool yards. The children who participated in the study were in the age of 1-3 years old. A method implemented in three, sequential, steps was used. These steps were taken at all the preschool yards and were as following: Mapping with field notes, film recordings and focus group interviews with the pedagogues. The mapping with field notes

can be compared to a method called "behavior mapping" (Cosco, Moore & Islam, 2010) but instead of, at this stage of the method, focus on what happening in a part of the physical environment the focus is on the children. How do two or three chosen children at a time move and what do they do in the physical environment?

The concept artefact, especially in the form of primary and tertiary artefacts, from a sociocultural perspective (Jakobsson, 2012; Kultti, 2012; Wartofsky, 1979) has been useful as an analytical tool in the study. Also an ecological direction of environmental psychology has been important. The concept "segment" (Gump, 1969), as a part of a "behavior setting", through Wicker's perspective (Wicker, 1987) has been used and compared to concepts developed in the study; "interaction junctions" and "interaction swatches".

Among the findings was seen that the pedagogues' introduction of a place and their participating in different places affected how the places were used by the young children. Also the children's access to the physical environment and different objects leaned on the pedagogues.

On the other hand the safety in the physical environment could affect where the pedagogues were situated and this affected what interaction contexts with the pedagogues the children could be a part of.

One conclusion, which can be drawn from this study, is that pedagogues affect how contexts of interactions, in which the children have an opportunity to be a part of, together with other people in the physical environment, are socially and content wise shaped. Since the linguistic development rely on the daily communication between the child and other people (Rogoff, 1990) there is a pedagogical contribution to be aware of that the pedagogues affect the children's opportunities to be a part of interaction contexts.

The presentation will best relate to the conference sub-theme "Social use of space: crowding, privacy, territoriality, personal space" and in a way to the conference sub-theme "Participation, governance, social cohesion and democracy"

Improving school buildings and the agents of change

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The architectural design process is becoming more complex, as new technical, social, environmental and economical requirements are imposed. For school buildings this scenario applies. The quality of a school building depends on known design criteria, professional knowledge and feedback from building performance assessments. To attain high performance school buildings a design process should add a multidisciplinary team, through an integrated process, contributing at an early stage to design solutions and guide user expectations. This article presents a discussion on the ways school building design can be supported by a structured briefing process. A participatory architectural programming phase is advocated and tested through a focus group, supported by a game. Different stakeholders with interests in improving schools participated in this event. The multidisciplinary team should consist in specialists in education, design professionals and

consultants in various fields as well as administrators, public officials and neighbourhood representatives. Users, or potential users (teachers, parents, students, school officials and staff), should be involved. In this paper the role of different stakeholders are discussed in relation to their specific contributions and a tool in the form of a card game is described to structure design debates and ensure a comprehensive decision making process. The briefing game was developed for the specific context of state schools in São Paulo, Brazil. The focus group simulated a briefing session. The game was tested to measure the impact of both content and application procedures on a focus group debates to produce a quality architectural programme. A facilitator conducted the event and applied the game and an architect was the professional in charge of this briefing session. Potentials users and a civil engineer involved in school building construction also participated. An observer recorded the simulated session. Different stakeholders participated in different ways. The architect, although very much interested in focusing the discussion on important design issues such as the site, flexibility, etc., at time let education specialists dominate the debate when the topic was on pedagogy, but returned later with more technical input on design issues. The parent and the engineer were less active participants, due, in part, to the fact that the focus group was a simulation, not an actual briefing session. One of the observations gained is that real engagement of stakeholders is related to real interests. Also, moments when some participants dominated the session needed the intervention of the facilitator to move forward in the decision making process. However, the overall result of this focus group showed that the method (focus group + game) is efficient as a stimulator of structured school design discussions, focusing stakeholders' attention on the topic at hand. The set of cards worked as a checklist and the method supported the elaboration of a rich architectural programme as a basis for the creative design. Although this method was specifically based on Brazilian school design situation it shows potential for other contexts, because the content and the application procedure are based on known facts, needs and global concepts of an architectural design process.

Parallel session 6: Lighting for indoor environments

Time: Tuesday, June 28 2016: 11:30 - 13:00

Location: Large lecture hall, IKDC

Session chair: Johan Rahm

Presentations:

Lighting intervention for an operating theatre

Hillevi Hemphälä¹, Per-Anders Larsson², Per Nylén³, Jonas Borell¹, Marcus Runefors¹, Gerd Johansson¹

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Introduction: The visual conditions in an operating theatre are essential for work performance and crucial for patient safety. Typically in an operating theatre, there is a high difference between the luminances at the operating cavity and the general lighting. Operating theatres often have no windows and thus no daylight. People working there might experience tiredness, especially during long surgical procedures.

The aim of this field is to study how an increased level of illuminance and an improved luminance contrast in an operating theatre can affect visual ability and tiredness.

Method: This field study was based on the results from a previous laboratory study and was performed in an operating theatre with no access to daylight. In this study two lighting situations, existing and test. The existing general lighting consisted of twelve luminaires evenly mounted directly in the ceiling across the operating theatre; each luminaire was fitted with two T5 fluorescent lighting tubes. The test general lighting consisted of: twelve + eight luminaires with T5 fluorescent tubes, with more luminaires around the operating table. The lighting situations differed regarding illuminance levels and correlated colour temperature (CCT) with both parameters being higher in the test lighting situation. The existing lighting situations had a general illuminance of 1100 lx (around the operating table 1200 lx; over the anaesthetic area 850 lx; over the operating table 1250 lx) and a colour temperature of 3000K (warm white). In the test lighting situation the general illuminance was 2950 lx (around the operating table 3800lx; the anaesthetic area 1800 lx; over the operating table 5700 lx) and the CCT was 4300 K. The existing lighting situation is representative for typical operating theatres, and corresponds to existing standards. Immediately after performing open surgery procedures in the operating theatre, personnel rated the lighting situation they had experienced. Questionnaires were obtained from 84 surgical procedures, 26 in the existing lighting system and 58 in the test. A total of 303 questionnaires were completed by 114 participants. The four occupations present in the operating theatre who answered the questionnaires were: surgeons, anaesthetist nurses, scrub nurses, and circulating nurses.

Results: All personnel (n=114) rated the lighting quality and visual ability of the test lighting better than those of the existing lighting. Tiredness was rated as lower with the test lighting except by the surgeons, who reported low levels of tiredness without significant differences between the existing and test lighting situations. The observed preferences of the test

lighting situation are possibly due to its increased illuminance and higher CCT (cooler light) from the general lighting.

Conclusion: The study indicates that an increased general lighting illuminance together with a higher CCT can improve perceived visual ability and lighting quality and decrease tiredness among operating theatre personnel.

Getting the picture of home lighting: Adding participant photography to the interview **Kiran Gerhardsson¹**

¹Lund University, Sweden

This paper draws attention to the potential benefits of using photographs in combination with interviews, that is to say photo elicitation. As defined by Harper (2002), photo elicitation is "based on the simple idea of inserting a photograph into a research interview" (p. 13). The photographs can be taken by the researcher or the participant to evoke comments. If participants are asked to produce the photos themselves, the images will hopefully encourage participants to talk and reflect. The objective of this paper is to report on the advantages of the method deployed in the collaborative interview study, My home lighting.

Daylight plays a vital role for human wellbeing; for example, daylight affects visibility and regulates the biological rhythm. In the Northern Hemisphere, where daylight is limited from October to March, most people spend their days indoors. Fortunately, to some extent, artificial light can make up for lack of natural light indoors. In addition, new lighting technology has the potential to improve physical and mental wellbeing. A deeper understanding of residents' domestic lighting preferences is therefore a good starting point. Since depth and detail was the purpose of the investigation, a qualitative interview study was considered to be the most appropriate strategy. Adding photos to the interviews was assumed to help people talk about everyday objects and habits, such as lamps and the use of light.

The sample consisted of six female and six male residents, 26–76 years old. Prior to the interviews conducted at home, participants were asked to take a series of photographs of their indoor lighting with a total limit of 25 photos. All photographs were assembled by the interviewer in an album. The subsequent interview occasion included a walk-through of the apartment and an interview which was recorded with a digital audio recorder. The interview was structured with open-ended questions and the photo album was used as an interview guide. When interviewed, the participants were asked to consider each photo at a time and talk about the lamp in the photo—why it had been chosen and how it was used. The data produced—images, observation notes, recorded interviews and notes after the interview—is currently being analysed. The analysis focuses on the comments the photos evoked and the meaning of the lamps represented by the images.

According to a number of studies, making photographs as part of the research method has several advantages, such as the possibility to obtain more information and a different kind of information (Harper, 2002). Photos can be especially effective when they involve something that is visual (Rose, 2007). This could explain why the photos of the residents'

lamps in the current study seemed to work so well. Drawing upon the experience of My home lighting and literature about previous photo interviews, the impression is that photo elicitation, if appropriate to the research question and the objects or practices investigated, can provide more information, a less restrained interview situation and a valuable aid for memory.

Keywords: domestic lighting preferences, photo elicitation, qualitative method

Preliminary results on the influence of workplace lighting on transitory mood and subjective sleepiness

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Light affects human lives in several ways. The visual effects of lighting are related to visual performance, while the non-visual or psycho-biological effects involve health and well-being. Their action spectrum curves are also different; the visual peak efficiency lies in the yellow-green wavelength region while the maximum biological sensitivity lies in the blue region of the spectrum. Thus, lighting designers can use the color of light as well as its level to provoke psychological and physiological states such as alertness or relaxation when needed. In this regard, the spatial distribution of light is also important since there is a denser distribution of melanopsin, the circadian photoreceptor, in the inferior part of the retina, which makes an important difference between light reaching the eye from above than from below.

Preliminary data from a simulated laboratory experiment where the investigation of the influence of level, color and spatial distribution of light on transitory mood and sleepiness of office workers are presented. The aim was to identify the lighting conditions that favor productivity without deteriorating wellbeing. The subjective sleepiness was assessed by the Epworth Sleepiness Scale and the transitory mood by the Scale for Mood Assessment.

The laboratory setup consisted of two office workplaces separated by a wood panel, lit with different color temperature lamps (3000/4000K). Two lighting levels were provided by a general lighting from compact fluorescent lamps (Eh 500 lx, Ev 200 lx) and the other by adding a wall washer lighting from leds tubes on the front wall (Eh 800 lx; Ev 900 lx). These conditions were randomly administered and each of the four lasted 1,5h.

The analyses were performed on 76 evaluations. The outcomes of two groups were compared based on 20 assessments carried out on a printed format and the other on a computer screen.

Based on the computation of three indices of subjective sleepiness, transitory mood and perception of lighting, the results show that the highest mood was reached under the warm light-higher level, while the lowest occurred with cool light-lower level.

The chance of dozing during the experiment was higher in the cool light-lower level and less in the warm- lower level. The mean values for warm and cool lighting both with the higher level were similar. No statistically significant differences between the two groups were found for mood nor sleepiness.

The appraisal of the lit space as well as the visibility conditions were better evaluated under

the warm light-higher level, and statistically significant differences were found between the groups, being better on the printed assessment test. Nevertheless, more visual symptoms were reported by this group. The highest number of symptoms occurred under the cool light-higher level.

In conclusion, the results show that the color of light is important for transitory mood, and the lighting level for alerting effects. A preference for warm lighting with higher level was displayed.

Methodological study on light and colour experience in spatial contexts

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So far, the only established tool available to ensure good light environments has been the international lighting standards, which are based on photometry. The photometry measure the eye's ability to register light radiation, and accordingly, it covers only a very limited part of the light experience. The project aim was to create a methodology for assessing the quality of light based on the light experience as a perceptive and emotional process. The objective was to test and evaluate methods to define quality of light based on visual perception and atmosphere. The paper describes the methods used in the project, their selection and how useful they were for the purpose as well as possible development and future applications.

Two studies were conducted in the project. One was an interview study in which 6 people were interviewed about the experience of the light environment of their office workplaces. In the second study, 20 people evaluated both light character and atmosphere of two test rooms designed as office workplaces with identical furnishings. The light and colour design was diverse in the both rooms and based on two different design concepts in order to intentionally create different atmospheres.

In both studies the method PERCIFAL (Klarén, U. 2011) was used to analyse the light character of the rooms, and qualities such as perceived light level, light distribution and colour of light was assessed. Short interviews with open questions were also conducted in which the test subjects were asked to describe their light experience in own words. In the experimental study the atmosphere of each room was evaluated by a number of descriptive words and semantic differentials. One purpose of the tests was to investigate the possibility of creating a concept model for light experience that includes both visual and emotional factors.

The methods used in the project were partly inspired by two other disciplines: Kansei Engineering (Castilla, et al. 2015, Schütte, 2005) and sensory science (Gustafsson et al. 2014, North, et al. 2015). Both have established concept models and analysis methods for the development and evaluation of products in the manufacturing respectively the food industries. The method PERCIFAL is so far rarely used to quantify lighting experience, but mainly as a tool to make the viewer aware of different characteristics that create the experience of light. As a quantitative method, it is probably very useful, provided that the test subjects are trained to understand the words used and the properties they describe, and

it might also be extended with more words.

The methods used to study the subjects emotional experience of light environments clearly showed that the experience of the different lighting and color scheme of the two rooms affected the perception of the atmosphere considerably. The results also gave clear indications of the difference of people's preferences in this regard. The development of methods could provide a tool for customization of light environments, which in turn would promote both comfort and energy.

Parallel session 7: Human aspects on forest management

Time: Tuesday, June 28 2016: 11:30 - 13:00

Location: Small lecture hall, IKDC

Session chair: Maria Johansson

Presentations:

A multidisciplinary approach to understanding the association between values, values attributed to natural forests and public acceptance of forest management scenarios

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In post-modern societies natural environments such as native forests are increasingly valued as places for leisure, recreation and psychological restoration. However the way humans value forests is complex, with native forests also valued for environmental and economic values, such as a source of renewable resources, carbon sequestration, biodiversity, or for the ecosystem services they provide. Some values are potentially incompatible. For example in one context an individual may value a stand of tall straight trees as potential sawn timber but in another context value the trees for the beauty and awe they inspire. To be socially and environmentally sustainable forest management needs to reflect society's values and expectations, including balancing the plurality of values attributed to forests within the wider community. To do this it is necessary to understand community values for forests, and how these relate to the trade-offs members of the public are willing to make between diverse management outcomes. Ecosystem management is inherently complex and dynamic. Socially sustainable forest management is further complicated by uncertainty surrounding the long term outcomes of alternative management strategies, particularly in the context of climate change.

The objective of this multidisciplinary study was to understand the interaction between underlying values, values attributed to forests, and acceptance of alternative forest management scenarios amongst the general public. Robust ecological modelling was used to understand the environmental, social and economic outcomes of three different management strategies over a 100 year period. The strategies were developed to reflect different value priorities: reducing the risk of large bushfire; optimizing visitor enjoyment; and providing habitat and timber. Quantitative data was collected using a large scale survey distributed by mail and online to residents of Victoria, Australia. Items in the survey asked about underlying values and what was valued about native forests. Respondents were also provided with information about the outcomes of the scenario modelling and asked to use the information to rate the acceptability of each scenario. Other items included the relative importance of the information about different outcomes when making judgements, and socio-demographic questions including interest in forests. A total of just under 900 surveys were returned. Multivariate data analysis was used to identify associations between underlying values, values attributed to forests, and the acceptability of the different management scenarios.

Findings indicate that values are not unitary: people attribute multiple values to forest, in particular a combination of experiential values and biophysical values such as ecosystem

function and biodiversity. At a more abstract level, multiple underlying core values are held by individuals. The findings support broadening the range of values usually considered relevant to human-environmental interactions to include hedonism and elements of the openness to change (stimulation)/conservation (security) dimension. These findings confirm an association between what is valued, underlying values, and the acceptability of different management scenarios. This study demonstrates a multidisciplinary approach to understanding interactions between people and the natural environment, in particular the relationship between the values and expectations of the general public and acceptance of alternative management objectives with known outcomes.

New strategies to improve social participation and engagement on forest resources management

Fatima Cruz¹, Felipe Bravo¹, Pilar Valbuena¹, Carlos Del Peso¹

¹Universidad de Valladolid, Spain

In the context on the European research project named SimWood, one of the activities is the development of Regional Learning Labs (RLLs). RLLs are the interface with researchers and forest owners, managers and practitioners in understanding the dynamics of wood mobilisation and uses of non-timber forest resources in each of the forest regions which have been taken as case studies. They were implemented in order to support the work within the forest regions for the development of the project. RLLs were initiated to ensure a broad stakeholder involvement, helping to guide the research in a constant feedback loop, and one of the results was the development of a Model Forest process in one of the areas, the Páramos y Valles" in Palencia, in the north-central area of the region of Castile and Leon (Spain).

A Model Forest is a voluntary association of people that live in a particular territory, and are interested in discovering, defining, enhancing and guarantying its sustainability; and in sharing their experiences and their knowledge to contribute to global environmental goals. The "Paramos y Valles" area has a relatively young forest and recently began to exploit its resources. In this area, Palencia Model Forest Initiative was born in March 2015 from the voluntary commitment of different partners from the territory to optimize the management of natural resources and to rise up natural, cultural, social and economic values of territory in order to achieve sustainable development. Therefore it fits perfectly with the activities undertaken within the Regional Learning Labs of the project SIMWOOD.

The first results of RLLs in Castile and Leon in one hand pointed out the lack of involvement of local people with the forest at the Paramos y Valles territory. Researchers and Páramos y Valles' RLL participants have agreed on the development of a Model Forest in Palencia. It could be a strong tool to make forest resources more visible in new local development strategies as well as to improve the engagement of both, stakeholders and population, on forest management and wood mobilization.

Disruption in landscape identity after a forest fire

Elin Ångman¹, Andrew Butler¹, Ingrid Sarlöv-Herlin¹, Igor Knez², Åsa Ode Sang¹, Ann Åkerskog¹

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This paper investigates how landscape identity, as a "psycho-sociological perception of a place defined in spatial-cultural space" (Stobbelaar and Pedroli, 2011), is affected when a catastrophic event severely impacts the local landscape. We use the major forest fire in Västmanland, Sweden in 2014 as a case. We explore the relevance of landscape and landscape identity as means for addressing the multiplicity of social values impacted by extreme events.

Dramatic changes to the landscape can interrupt relationships to place (Cantrill, Thompson, Garrett and Rochester, 2007). These can bring about a 'sense of rupture, trigger identity conflicts, cause unrest, and possibly alter institutional and social-ecological practices that define a community (Carbaugh, 1996, p. 159; Norton, 2008). The forest fire in Sweden 2014 covered an area of ca 14 000 hectares. The impact on the physicality of the landscape altered the potential use of the landscape as individual practices and customs no longer fit, as social constraints have altered. Areas for foraging, orienteering, hunting and walking have disappeared or are now unrecognizable. Such change alters how those who live in the area perceive their surroundings.

Although the fire in Västmanland is a unique case the experiences that can be drawn from it are likely to be valuable for future similar events. According to climate scenario research this type of event may occur more frequently the intensity and the consequences of such fires are expected to be increasingly severe (SOU, 2007).

Twelve residents living in the proximity of the fire area volunteered via a questionnaire to be interviewed. The perspectives of the residents was investigated via qualitative, semi-structured interviews that each lasted approximately 1, 5 hours. Transcribed interviews were analyzed with an adapted version of the framework of Cultural Discourse Analysis, CuDA (Carbaugh & Cerulli, 2013; Berry, 2009). CuDA is a conceptual framework consisting of five discursive hubs relevant for understanding the concept of "identity" connected to landscape; Attitude, Action, Feeling, Relating and Dwelling. Statements from the interviews were categorized and then the explicit meanings (statements) are compared with interpreted implicit meanings in a critical comparative analysis. Questions about the landscape and relations to the landscape before and after the fire were important. The analysis based on the empirical material is presented in detail at the conference.

The focus is on how landscape related identity is affected by landscape change, and the complexity this entails. It is not just the physicality of landscape which is altered but also how it is perceived. The findings show how a catastrophic incident results in not only a material or economic loss but also an existential loss and begins to examine what this means to the individual. This paper feeds into the developing discussion on how the idea of landscape identity can be utilised as means for analysing the everyday life.

Correspondence or conflict in the forest sector: Comparing the views of private forest owners and the general public in Sweden

Louise Eriksson¹

¹Umeå University, Sweden

The forest is an important natural resource, although hazards such as wind and climate change may severely damage the forest. In many countries (e.g., Sweden, Finland, the US and Germany), a large part of the forest is privately owned and forest risk management is thus to a large extent the responsibility of private forest owners. The government can however by means of different policies support an improved forest risk management. Since the forest is important for biodiversity, the national economy, as well as providing citizens with possibilities for recreation, forest risk management is not only a relevant issue to those within the forest sector, but to all citizens. By considering the views of different stakeholder groups, insights regarding the legitimacy of forest governance can be provided. The aim of the present study was to compare the views of private forest owners and the general public in Sweden in the context of forest risk management. The two stakeholder groups were examined by drawing on research on threat appraisals (risk perception), social trust, and acceptability. The analysis was based on questionnaire studies of individual private forest owners (year 2014) and the general public (year 2015). The study of forest owners included a randomly selected sample of forest owners (20-80 years owning more than 5 hectares of forest land, N = 3000) and the response rate was 50%. To examine the general public, a stratified sample of residents (20-75 years, in three counties: Skåne, Västernorrland, and Norrbotten, N = 3000) were examined with a response rate of 34%. Both stakeholder groups evaluated forest threats, trust in relevant actors (e.g., the Swedish Forest Agency, SFA), and acceptability of policies governing forest risk management. Different types of policies were examined, including free risk management advice and advice for a fee, information, economic incentives, and regulations. In addition, the importance of gender, age, and region were considered in the analyses. Results revealed that the general public displayed a slightly higher trust in the SFA compared to the forest owners, but were somewhat less content with the procedural aspects of forest governance. Despite the different emphasis on forest values in the two stakeholder groups, there was in general a consensus with regard to using free advice and information when governing forest risks, though regulative measures received a more positive evaluation by the general public than by the forest owners. Overall, by considering the correspondence between the general public and forest owners, the study can provide evidence on how legitimate different ways of managing forest risks are perceived to be. This information is important when formulating legitimate forest risk management.

Parallel session 8

Symposium: Restorative environments: Developments in Theory and Application

A symposium with five sessions

Co-chairs: Terry Hartig & Henk Staats

Terry Hartig¹, Henk Staats²

¹Uppsala University, Sweden, ²Leiden University, Netherlands

The restorative environment concept aids understanding of the health and developmental values that people can realize with natural environments, and largely for this reason it has received increasing amounts of research attention over recent decades. Much of the work done on nature experience and restoration has been informed by one or both of two theories in environmental psychology, the attention restoration theory of Stephen and Rachel Kaplan and the stress reduction theory of Roger Ulrich. The two theories differ in a variety of ways; they refer, for example, to different antecedent conditions from which people can be restored, to different kinds of restorative process, and to different outcomes in which restoration can be recognized. The conventional set of theoretical narratives continues to inspire and guide research, but the development of the field over the years has also involved efforts to refine, elaborate and integrate these theories and to identify significant gaps in theoretical coverage. This development has been accompanied by expansion in the scope of potential application, as researchers and practitioners have recognized ways in which environmental supports for psychological restoration can be more effectively recruited in the pursuit of a wide range of societal functions, such as health care, education, and public health. Although much of this work has focused on encounters with nature, other research has also sought to expand the scope of environmental coverage, emphasizing that restorative environments are not necessarily natural and that natural environments are not necessarily restorative.

The present symposium provides a snapshot of the current state of affairs in the development of theory and research on restorative environments. It brings together talented researchers from diverse countries and disciplinary backgrounds to share some of their recent work. The symposium comprises five sessions, each with five contributions. The first two sessions will cover basic issues in theory and research, including critiques of extant theory, possibilities for theoretical integration, problems in conceptualization, environmental simulation techniques, and neglected topics such as the relative contributions of top-down versus bottom-up cognitive processes and the link between restorative experience and transcendent experience. The subsequent sessions will include contributions concerned with the ways in which qualities of the natural environment and attitudes toward the natural environment figure in restorative experience; with the variety of needs for restoration and restoration opportunities that can be found in the some of the settings in which people young and old do their daily work; and with the potential significance of contact with nature in different clinical or therapeutic contexts. Through much of this innovative and exciting new work, a recurrent theme still is the classic one - the concern for restorative effects of encounters with nature.

Key words: nature, restorative environments, psychological restoration

Symposium: Basic issues in theory and research, part 2

Time: Tuesday, June 28 2016: 16:15 - 18:00

Location: Room A:B, The A-building

Symposium chair: Eleanor Ratcliffe & Terry Hartig

Eleanor Ratcliffe¹, Terry Hartig²

¹University of Tampere, Finland, ²Uppsala University, Sweden

Presentations:

The social context of restoration: Manipulating choice to face or avoid an encounter on a forest walk

Henk Staats¹, Fleur Kessels¹, Carlo Konings¹

¹Leiden University, Netherlands

Psychological restoration is commonly found to be associated with natural environments. However, we argue that the social context of nature experiences is a very influential component of restoration and relatively neglected in research. The goal of this series of experiments is to further understand the social context of restoration.

We examined the effects of social presence on path choice during a walk in a safe natural environment. Using computerized sequences of photographic images representing a walk through a forest an encounter was visualized with a person coming towards or walking the same direction as the participant. In the first experiment participants (N=75) were given the choice to encounter or avoid the person by choosing one or the other branch of the path and then continue the walk.

Overall, 75% chose to avoid the encounter, with direction of the person encountered not significantly moderating this percentage. At the end of the walk participants avoiding the encounter reported lower scores on restoration likelihood and likelihood of contemplation. A replication experiment provided the same outcomes.

We developed two hypotheses to explain these outcomes: (a) choosing not to encounter someone else violates norms on the interaction with people in public spaces, and this norm violation creates remorse leading to lower restoration and contemplation likelihood; (b) participants choosing to avoid the other person have higher scores on social anxiousness and this personality variable also explains the effects on restoration and contemplation likelihood at the end of the virtual walk;

To test these two explanation a new study was designed. We ran an experiment (N=150) with choice to meet or avoid the other person on the path as an additional manipulation. Half of the participants were given the choice to encounter or avoid the person by choosing one or the other branch of the path and then continue the walk, the other half was led over the path with or without the other person while not having a choice. We also included a

social anxiousness scale

Thus we investigated whether control over directions (choice/no choice of encounter) and/or social anxiety, as a personality measure, determined effects of the walk regarding restoration, contemplation, and general preference for the walk. We also included items on remorse, and items on norms while encountering other persons in natural areas as potential explanations in the post-walk questionnaire. Other elements of the experiment were similar to the previous. Outcomes of this experiment are now being analyzed. Final results will be presented at the conference.

Alone in the woods

Birgitta Gatersleben¹, Isabelle Griffin²

¹University of Surrey, UK; ²Bath University, UK

Exposure to non-threatening natural environments can promote recover from stress and mental fatigue (Bowler et al., 2010). Such restorative experiences are usually studied as solitary experiences where people can be alone without the distraction of other people. Yet when people visit natural environments they are rarely alone. How the presence of others affects restorative experiences is not well understood. On the one hand it may be distracting. On the other hand, other people may provide a sense of safety (Staats & Hartig, 2004). This research investigates how the presence of other people might influence restorative experiences, particularly with regards to distraction, safety and being away.

Distraction. Restorative environments are believed to have certain properties that promote restorative experience. Such soft fascinating qualities draw attention involuntarily and thereby help rest voluntary attention and reduce stress (ART; Kaplan & Kaplan, 1989). A stimulus that is distracting (another person) may disrupt restoration if it draws attention away from the soft fascinating features of nature.

Safety. An environment that harbours a threat or demands attention to negotiate is unlikely to be restorative (Gatersleben & Andrews, 2013). In such a situation the presence of other people may improve restoration by promoting safety. Staats & Hartig (2004) showed that the company of a friend may promote restorative experiences when people feel unsafe. What about the presence of strangers?

Being away. Although soft fascinating qualities of an environment are important for restorative experiences they may not be sufficient. Kaplan & Kaplan (1989) suggest that a restorative environment also needs to provide people with a sense of being away. But, the need to be away from other people may vary with the restorative needs of an individual. Two computer based studies were conducted examining restoration of stress and attention fatigue after exposure to a simulated walk through a built or natural environment with or without people under different conditions (safety concerns and need for solitude).

Preliminary analyses of the data (N = 165) found greater restoration after exposure to natural (versus built) environments. The presence of other people had a negative effect on experiences in the built environment but a positive effect on experiences in the natural environment. The presence of other people was not perceived to be distracting. In line

with Staats and Hartig (2004) it improved experiences when people felt unsafe. It also had a positive effect when respondents felt the need to be with others but did not damage experiences for those who wanted to be alone. It is concluded that the presence of other people can help improve restorative experiences in certain settings.

Testing the restorative potential of future urban environments using VR technology - the Cities that Sustain Us project

Pall Jakob Lindal¹, Hossein Miri², Unnar Kristjansson¹, Kamilla Run Johannsdottir², Terry Hartig², Hannes Hogni Vilhjalmsson¹

¹Reykjavik University, Iceland; ²Uppsala University, Sweden

Studies indicate that the compact city policy framework tends to neglect the role of psychological factors in urban livability and therefore question urban densification as a sensible path to increase sustainability. To make the compact city framework more psychologically oriented and more viable, restorative environmental design (RED) can provide guidance and therefore, contribute to psychological and ecological sustainability. The Cities that Sustain Us (CiSuUs) project builds on RED and has two main objectives: 1) to measure the restorative potential of possible future urban environments by utilizing virtual reality technology, and 2) to develop a user-friendly research software that allows restorative environments researchers to easily utilize powerful digital technology for their work.

In the presentation, the empirical forerunner of the CiSuUs project will first be briefly covered. That initial experiment compared the restorative effects realized by participants who navigated through one of two virtual built urban environments (VEs) on a regular computer monitor. The two VEs were “constructed” from static images shown in earlier studies to be distinctive in terms of restorative potential due to their different architectural characteristics, building height and amount of street vegetation. The results of the initial VE experiment indicated that change over time in affective balance varied with environment. Participants who “walked” through the low restorative neighborhood shifted negatively in the balance of positive and negative affects while those who navigated through the high restorative neighborhood, showed a positive shift in the affective balance. The effect was not strong, however, and we regarded the results with reserve, but they encouraged our further work, primarily with a view to boosting the quality of the virtual environments. The second experiment to be presented involves three virtual urban neighborhoods created and presented with virtual reality technology being developed within the CiSuUs project. Data collection is currently underway and involves continuous registration of cardiovascular activity during virtual “walks” through assigned neighborhoods, as well as pre- and post-walk measures of attention and affective states. In the presentation, results concerning the affective, cognitive, and physiological effects of the three virtual environments will be discussed. Finally, future directions and next steps in the CiSuUs project will be discussed.

Relationship between restorative and transcendent experiences in nature: An exploratory analysis

José A. Corraliza¹, Silvia Collado², Esther Lorenzo¹

¹Autonomous University of Madrid, Spain; ²University of Zaragoza, Spain

It is well recognized that exposure to natural environments provide positive consequences to people. The psychological benefits that spending time in nature has for people has mainly been studied under the restorative research framework. In addition, time spent in natural environments also seems to shape transcendent experiences, also described as positive experiences. These include feelings of extreme happiness, joy, fear and a sense of harmony with the natural world, among others. Although natural environments are thought to support both types of experiences, the relationship between spiritual, mystic experiences and restorative ones has received scarce scholarly attention.

The current study explores the role of the physical environment in shaping transcendent and restorative experiences in nature. Specifically, the aim is to shed some light on the physical characteristics of natural environments that shape transcendent experience and to explore whether a distinction can be made between these and those that enhance restorative experiences. In order to do this, a set of pictures of natural environments differing in the degree of different natural elements such as greenery and water were shown to two different samples of participants. Using the Revised Perceived Restorativeness scale and the an adaptation of the Transcendent Experience scale by Williams and Harvey half of the participants rated the settings in terms of their restorative quality and the other half in terms of possibility of engaging in a transcendent experience in the setting. Our preliminary results show that a sense of fascination and being away, linked to certain situational characteristics of the environment, may assist both restorative and transcendent experiences. These findings provide some insights to the theoretical and phenomenological relationship between restorative and transcendent experiences in nature that will be further discussed at the conference.

Memories and place attachment as predictors of restorative perceptions of favourite places

Eleanor Ratcliffe¹, Kalevi Korpela¹

¹University of Tampere, Finland

1. Introduction

Places to which individuals are attached, and those associated with positive memories, are hypothesised to be restorative in times of stress and mental fatigue (e.g. Ulrich, 1983; Korpela, 1989). However, beyond study of favourite places and restoration (e.g. Korpela, Hartig, Kaiser, & Fuhrer, 2001), this relationship remains understudied, particularly with regard to memories associated with place. If memory is known to relate to place attachment (Scannell & Gifford, 2010), and place attachment may be related to restoration (Korpela, 1989), then the hypothesis arises that memory, too, may predict restorative perceptions as mediated through place attachment. There is also a need to understand how this relationship is manifested; i.e. which properties of memory relate to perceptions of place and restoration.

2. Aims

This study, in which data collection is ongoing, examines the extent to which restorative perceptions of a favourite place in Finland are predicted by a) properties of a positive autobiographical memory of the favourite place, and b) place attachment. Further, it examines the potential mediating role of place attachment in the relationship between memory properties and restorative perceptions of place.

3. Method

In an online survey paradigm conducted in English, 225 adult residents of Finland are asked to rate their favourite place on measures of perceived restoration, place attachment, and properties of an associated positive memory (such as recollection, rehearsal, imagery, narrative, valence, and arousal). Participants are recruited through advertisements amongst Finnish university student populations, and from local mailing list and social media outlets. They do not receive compensation for their participation.

4. Analyses

Scores of restorative potential will be regressed on properties of autobiographical memory and place attachment scores, controlling for familiarity, length of association with place, frequency of visit, and place type. The mediating role of place attachment in relationships between properties of memory and restorative potential will be assessed. Participants also provide qualitative data regarding the favourite place and their associated memory, which will be analysed through thematic analysis. Findings will be presented at the conference.

5. Potential implications

By researching relationships between individual experience and restorative perceptions, this study emphasises the role of top-down processing that has been implied in theoretical approaches to restoration (e.g. Ulrich, 1983) but as yet has received little empirical study in comparison to bottom-up, perceptually-driven aspects of restorative environments. Research on this topic will also be of use to conservation and heritage practitioners seeking to strengthen bonds between people and place, by highlighting potential psychological benefits of such attachment.

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Parallel Session 9: Methodological approaches to human-city interaction

Time: Tuesday, June 28 2016: 16:15 - 18:00

Location: Room A:C, The A-building

Session chair: Tony Craig

Presentations:

Residents' and retailers' perceptions: Vertical mixed uses and cohabitation issues in Montreal

Juan Torres¹, Elise Deborne¹, Louison Cuvelier¹

¹Université de Montréal, Canada

Vertical mixed uses is a form of land use diversity, which typically integrates commercial (lower floors) and residential (upper floors) uses within the same building. In order to build less car-dependent and more sustainable communities, land use diversity and especially vertical mixed uses are often recommended. However, little is known about the way this space/uses configuration is experienced by users, especially residents and retailers. What advantages and disadvantages of vertical mixed uses are perceived by those people living or working in buildings gathering residential and retail activities?

The presentation is based on a research project with 16 participants (residents n=10, retailers n=6) from 5 structures built between 2015 and 2010 in Montreal. Data was gathered from 2013 to 2014 using semi-directed interviews, field surveys, and then analyzed using qualitative methods.

This exploratory study shows a large spectrum of perceived advantages and disadvantages of vertical mixed uses. Residents evoke Street/neighborhood animation, proximity to services and products as positive characteristics; retailers appreciate the proximity of customers and their fidelity. However, conflicts were also revealed. They concern noise, the management of parking and shared facilities (waste disposal, etc.). The tenure (social housing, tenant, owner) proves to be important in understanding both the different perceptions and the influence of users on their environment. These results may be useful for planning vertical land use structures.

Keywords: residential, retail, vertical mixed uses

Comparative analysis of housing from the Netherlands and the United States

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This study compares the design of selected dense Dutch housing to that of comparable dense housing in the Midwest United States in terms of the potential engagement of social interaction, defensible space and privacy (e.g. Chermayeff and Alexander 1963; Newman,

1972; Altman 1975; Brunson et al 2001; Hanson 2003; van Nes et al 2009, Mustafa et al 2010). While control of a space or territory is partially provided through visual access, the number of people that typically access a particular spatial territory further qualifies the potential for control. By examining these two characteristics together we hope to develop a research methodology that will reveal the different approaches taken to access in the housing examples from the two countries. The analysis of unit and building plans for visual access will use Space Syntax (Hillier and Hanson, 1984), specifically DepthmapX software. The territorial analysis will be developed by mapping rooms and spaces using Robinson's Territorial Gradient (2006) to discover the gaps in, or completeness of the gradient, and to find the loci of the interior-exterior barriers. Due to the limited number of cases (three Dutch and three American), this study will be piloting the exploration of similarities and differences between the Dutch and the American designs to identify issues worthy of further study and discover the utility of the methodology. Assuming a positive result, subsequently a larger number of cases will be compared and contrasted. Findings are expected to point to the impact of both visual affordances of the spaces and their territorial gradient location on the residents' ability to control their surrounding environments. Additionally, the differences and similarities found in the Dutch and American design approaches may suggest hypotheses about the nature of cultural norms and expectations for social engagement, privacy and control in residential complexes.

Understanding the processes of symbolization of public space in transformed urban areas: A multidisciplinary approach.

Angela Castrechini¹, Enric Pol¹, María Rosa Bonet¹, Leandro Madrazo², Moisés Carmona¹, Angel Martin-Cojo², Mario Hernández²

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Along the recent decades, public policies that affect the lived environment - ranging from public space to housing – have ceased to be closed decision making processes based solely on professional criteria to become open processes involving citizens (public decision making). These public, open and participatory processes require new methodologies for professionals and citizens to contribute with their knowledge and experience to jointly define the problems that affect the spaces they inhabit and to participate collaboratively to their solution.

In recent years, Barcelona's neighborhoods have experienced changes that have led to the creation of new public spaces and the regeneration of existing ones. In some cases, neighbors had to adapt to these new urban spaces. The transformation of the city's physical structure necessarily involves a process of adaptation of the population to the new conditions determined by the built environment.

The analysis presented here is part of a research titled "PROHABIT: Analysis of the living environment to promote the implementation of the right to the city" financed by the RecerCaixa program (2015-2016). The main objective of the project is to analyze the impact that some of the recent urban transformations have had on the inhabitants for the purpose of understanding the processes of symbolization by which inhabitants give meaning to the space. Researchers in the field of community psychology and in architecture participate in this project. In fact, one of the main challenges of the project is to create a multidisciplinary framework to investigate the interrelations between inhabitants and the built environment. The research encompasses three case studies, three neighborhoods which have been

submitted to different processes of urban reform: a neighborhood with already consolidated changes in the urban structure (Trinitat Nova); one in the process of transformation (Vallcarca) and a third in which planned reforms have been finally discarded (Plus Ultra). Specifically, this communication presents the results of one of the research objectives, which was to analyze the use of public spaces of these neighborhoods. The technique applied was non-participated observation. It was aimed to provide answers to the following questions: how are the spaces structured? (structural elements, boundaries), who are the users? (age, gender, individual vs. group, local vs. immigrants/tourists, etc.); what do they do? (walking, sitting/resting, playing, walking the dog, doing sport, etc.); where do they do these activities? (specific places within the observation area); and how do they interact with the spaces (recognition of boundaries, objects)?

Between 5 and 6 spaces were observed in each neighborhood, in different days and hours (mornings, evenings and nights) during autumn. Observers registered their observation through descriptive narratives, mapping people activities, tracing people movements and taking some pictures and videos.

These observations are being analyzed to identify the processes by which people endow with symbolic meaning the spaces they inhabit. With this purpose, the findings derived from the observations are being compared with the results obtained from other sources: interviews with inhabitants, participatory activities and documentary analysis.

Study of the psychometric properties of a self-efficacy scale to prevent becoming a victim of robbery

Javier Pérez Durán¹, José Marcos Bustos Aguayo¹

¹National Autonomous University of Mexico

This research describes the process to design the Self-efficacy Scale to be used to Prevent Robbery on the Streets and the study of its psychometric properties. It is important to have tools that would allow to study the behaviors that people could engage to prevent crime and to protect themselves in an ambience of public insecurity. In Mexico, the main problem is the high crime rate. In Mexico City (CDMX) the most common crime is robbery committed on the streets and in public transportation, the figure is 51,756 per 100 thousand inhabitants (ENVIPE, 2013). The borough with the highest rate is Cuauhtemoc with a 43.3% of the total (CRISSRMEX, 2013).

Bandura (1977; 1997) mentions that behaviors to prevent a specific event are preceded by the beliefs that people have in their abilities, Bandura called that ability as self-efficacy, and defined it as the "judgments that people have the skills to organize and execute the course of action required to handle future situations" (Bandura, 1999: p. 21).

The research explores the components of the perceived self-efficacy that people in Cuauhtemoc present to prevent the robbery on the streets. It is divided into two studies: the first aimed to carry out the exploratory factor analysis in a sample of 303 adults, who involved in some activity in Cuauhtemoc. The psychometric analysis showed a structure of two factors. (a) Execution with 8 items and Cronbach's alpha value of 0.816. It has been defined as the assessment of specific behaviors that people report to have the ability to carry out. (b) Perception of self-management, with three items and Cronbach's alpha value of 0.736. The factorial structure is viable and appropriate because it aligns the theoretical and statistical criteria (Cattell, 1966).

The second study was made to corroborate the structure factor of the scale through confirmatory factor analysis in a sample of 207 adults similar to the first study. The results showed that the two factors, execution and perception of self-management are viable and rates adjusted properly to the criteria (Chi square/degrees of freedom = 1.666, NFI = 0.949, CFI = 0.979, RFI = 0.918, RMSEA = 0.058; Byrne, 1994). Execution factor remained with five items and the factor of perception of self-management with two items with factorial loads greater than 0.5.

In conclusion, the scale complies with the psychometric criteria properties, the next step is to relate it to other environmental variables, such as social and individual ones, that would help to identify elements that motivate or inhibit people to carry out crime prevention behaviors effectively.

Time quality assessment – A comprehensive view on home-work-leisure relations in a daily routine

Barbara Golcnik Marusic¹, Damjan Marusic²

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The paper discusses time quality assessment (TQA), an innovative time-people-place oriented approach for evaluation of quality of living. Bottom-up, human dimensions, real place and time, and 1:1 scale are crucial aspects. The motive is how to come to real life in certain area, real people and their daily routines, real economic frames as well as spatial qualities and characteristics as close as possible. The challenge is to shift understanding of city analysis and valuations from two-dimensional land use perspective to dynamic and comprehensive perspective taking into account relationships among users, their activities and environments these activities are taking place; analysing three key parameters: time balance, financial balance and time quality balance; reflecting the assumption that quality of time spent indicates quality of living environments; i.e. quality of time spent for certain activity in certain place has to do with characteristics of place, characteristics of use in this place or sequences of places reflecting on activity and the person involved with as well as the money the person has at hand to maintain his/her activities in the place.

Behaviour mapping as a method and tool for analysing user-spatial-temporal relationships provides a conceptual and practical framework. In relation to TQA, one of the key information offered is time-related characteristics, e.g. for how long a certain activity is going on in a certain place, in which time-unit sequence of the day the activity has been taking place. TQA evaluates quality of living with measure of good/bad time in a daily routine of a selected socio-economic profile regarding the activity as well as the environment in which the activity is taking place, and elucidates backgrounds of user's expectations, abilities and experiences in places.

Implementation of TQA approach is commented step by step: Initial analysis is related to time spent for the activities and basic qualities of activities and places. Further evaluation introduces time as the measure for quality referring to activities (activity component of time - FQAC) and places (spatial component of time - FQSC) with linkage by weight (FWAC, FWSC). The weight of each quality component describes how much each component contributes to potential quality of time, and finally shapes the activity-place relationship in a daily routine into comparable units: coefficient of time quality (KTQ) and quality time balance (TQ). The paper illustrates activity-place relations and quality time balance (TQ) for

total daily routine for three variations of the same main socio-economic profile from the same neighbourhood.

The paper shows that quality of time spent for certain activity in certain place indicates quality of living environments, that it depends on what a person can afford, and provides evaluation of quality of living environments with a measure of good/bad time. Thus the paper suggests time as the universal expression and measure of quality of living and challenges spatial planners, urban designers, decision-makers as well as ordinary people to shape their future having such concept in mind.

Exploring an urban form for social-ecological urbanism – A spatial experiential analysis of Stockholm

Karl Samuelsson¹, Stephan Barthel¹, Lars Marcus²

¹Stockholm University, Sweden; ²Chalmers University of Technology, Sweden

This talk will explore how affordances mapped in an urban landscape through public participatory GIS (PPGIS) relate to presence of a regulating ecosystem service and inhabitants, respectively. It will discuss how some of these affordances can be seen as cultural ecosystem services (CES), and whether PPGIS is a suitable method for CES mapping.

We utilise data from an Internet based PPGIS survey that asks inhabitants of Stockholm to map good and bad experiences they have of places in their everyday lives. Drawing on affordance theory, the survey is designed to capture affordances by asking both about feelings or activities related to the experience and environmental qualities of the places of the experience. We argue that a subset of these affordances can be seen as CES. The survey is socially inclusive and responses can be made via computers or portable devices. To date, the survey has more than 1200 respondents.

The GIS layer obtained from this survey will be analysed in combination with public GIS data on population distribution and temperature regulation in Stockholm municipality. We will apply space syntax methodology for identifying urban environments that on the neighbourhood scale afford access to large populations and temperature regulating areas, respectively. We will then analyse how these accessibilities correlate with inhabitants' experiences of these environments.

Urban landscapes owe their qualities to a mix of social, ecological and constructed features. We argue that urban CES are dependent not only on urban green spaces but on their surrounding spatial context. By analysing CES as a subset of environmental qualities in relation to both temperature regulation and population distribution, we hypothesise that new knowledge can be created for how to better plan urban systems in order to promote neighbourhood scale synergies between urban services and ecosystem services. We further hypothesise that such knowledge can create bridges between spatial planning, environmental psychology and urban social-ecological research.

What and where are the nature routines of Stockholm?

Matteo Giusti¹

¹Stockholm Resilience Centre, Sweden

This talk focuses on the ongoing project "Var Är Ditt Stockholm?" (VADS). VADS is a Public Participatory GIS survey currently available online that aims to identify what and where are positive and negative nature routines of Stockholmers. VADS acquires data about frequency, duration, and quality of the nature experiences existing in the landscape of the Stockholm. How positive and negative routines relate to the green infrastructure existing in the Stockholm? Nature conservation has mostly focused on the preservation of large areas of great ecological importance but that are often not easily accessible to inhabitants. When the social dimension, in terms of recreational value and personal satisfaction, is introduced in the evaluation of what is important, local green environments are considered more valuable than regional or national nature experiences (Soga et al. 2015). This talk presents the preliminary results of the project and explores the innovative understanding of how culture and qualities of the green urban infrastructure can be assessed and merged together.

Parallel Session 10: Saving energy in the home

Time: Tuesday, June 28 2016: 16:15 - 18:00

Location: Full Scale Lab, The A-building

Session chair: Thorbjörn Laike

Presentations:

Exploring relationships between housing conditions, energy consumption, health and well-being among social housing tenants: Findings from the EnerGAware project

Christine Boomsma¹, **Rory Jones**¹, **Sabine Pahl**¹, **Alba Fuertes**¹

¹Plymouth University, UK

Social housing (i.e. affordable housing) tenants are at risk of experiencing fuel poverty; a key concern for this group is how to achieve adequate levels of warmth and comfort in the home within a limited household budget (DECC, 2014). These tenants tend to be keenly aware of the cost of fuel and sometimes need to balance or choose between spending money on food or fuel (Anderson et al., 2010). There is an urgent need for further investigation into the barriers and opportunities to increasing comfort and reducing bills in this population sample.

The multi-disciplinary EnerGAware project (energaware.eu) aims to develop a game that can help social housing tenants to reduce their energy consumption by increasing energy understanding and providing behavioural strategies. The first phase of this research project included a large tenant survey to capture responses from over five hundred social housing tenants in South-West England; findings from this survey will feed into the game development. The majority of respondents were in receipt of welfare benefits (e.g. unemployment allowance), half of the respondents did not have any educational qualifications, and just over a third of respondents considered themselves to have a disability. The survey measured social housing tenants' perceptions of their home (in terms of: satisfaction, perceived comfort and problems they experience in their home); energy-related attitudes, beliefs and behaviours; socio-demographics, health and mental well-being.

The results are indicative of a strong negative effect of condensation, damp and mould problems on tenants' self-reported health and well-being. Being able to keep comfortably warm in winter was also an important factor, while issues with overheating were associated less strongly with health. Worries about energy bills also had a negative effect on health and well-being, and tenants reported better health if they felt satisfied with their home. With regards to energy consumption, tenants felt relatively in control of their energy use, but they also indicated that they were unsure about how energy was used in their home. Further relationships between housing conditions, energy-related beliefs and behaviours, and health and well-being are explored.

The survey findings provide an insight into the important inter-linking factors that surround

health, well-being and energy use in this sample of vulnerable tenants. The results emphasise the challenging role that managing energy consumption can play in these tenants' lives. They also highlight the need for involving tenants in the co-production of energy saving initiatives to draw on their knowledge and ensure their specific needs and constraints are taken into account. Finally, we discuss the implications of the findings for the development of the EnerGAware game and other initiatives aimed at helping social housing tenants manage their energy use and ensure a comfortable home.

How do lay-people estimate energy consumption in their homes?

Laura Cowen¹, Birgitta Gatersleben¹

¹University of Surrey, UK

How do lay-people make sense of the energy they use in their homes? If we do not understand how people conceptualise their energy consumption, how can we design feedback and information that is useful to the people who are meant to use it? Mains gas and electricity are, for the most part, invisible and householders typically don't see, or otherwise directly experience, the consumption by their appliances. They can only infer indirectly how much is being consumed. What are the cues that people use to help them infer how much energy is consumed by a given appliance in their household?

Baird and Brier (1981)¹ found that people appeared to infer the amount of electricity consumed by a household appliance from the size of the appliance. Other possible cues that people use to infer energy consumption of an appliance include the visibility of the appliance (Kempton & Montgomery, 1982)², the running time of the appliance (Chisik, 2011; Kempton & Montgomery, 1982)², the frequency with which they interact with or think about the appliance (Schley & DeKay, 2015)³, and, tentatively, the amount of human labour replaced by the appliance (Kempton & Montgomery, 1982)². The existing literature, while interesting, is sparse (and spread across more than three decades), varies greatly in methodologies (psychophysical approaches, quantitative surveys, and qualitative and ethnographic interviews), and found only a small number of different possible cues each.

As part of a larger qualitative study, we interviewed 10 householders about their perceptions of the energy consumption of the appliances in their homes. With the aid of card-sorts, they talked about the relative energy consumption of the appliances and how much energy they thought each appliance consumed. Any cues that they mentioned using to infer the energy consumption of an appliance were noted and then grouped into themes during analysis. As well as inferring consumption from usage of the appliances, interviewees mentioned using cues such as the physical characteristics of the appliances (eg size and the number of appliances) and the amount of activity they perceived the appliance as doing (eg producing heat). There was some indication, too, that interviewees sometimes had multiple cues available, which increased or reduced the amount of energy perceived to be consumed.

Following on from the qualitative study, we are now conducting a study to quantitatively test whether people associate these cues with energy consumption. Kahneman and Frederick (2002)⁴ claimed that when people are asked a difficult question, they may substitute it for an easier, associated question and answer the easier question instead.

Estimating the amount of electricity consumed by an appliance in one year is arguably a difficult question. An easier question might be, therefore, what is the size of the appliance? Or how much heat does the appliance generate? Strong associations between a cue like the size of the appliance and the perceived energy consumption of the appliance could indicate that people use size as a heuristic when judging energy consumption. How people make judgements about the energy consumption (and potential savings) of their appliances

Psychological determinants of the adoption of high-cost energy-efficient facilities in households

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¹Hokkaido University, Japan

The installation of energy-efficient facilities, such as photovoltaics and hyper-boilers, is essential to increase energy saving in households and help to prevent of climate change, but the cost of adoption for such facilities creates a barrier. Therefore, debates concerning the economic issues have been the primary focus, while psychological aspects have been discussed less. Indeed, although many studies have examined the psychological determinants of day-to-day pro-environmental behaviors relevant to energy saving in households, only a limited number of studies have specifically addressed the psychological determinants relating to the adoption of expensive facilities. Such an oversight is due to demographic factors, such as yearly income and type of dwelling, being considered as the primary factors that account for the variance in adoption. This study seeks to address such assumptions by exploring the psychological determinants relating to the adoption of expensive energy-saving facilities. For this purpose, this study employed Bamberg's (2013) self-regulated stage model of behavioral change (SSBC). Various models, proposing that behavioral intention directly predicts pro-environmental behavior, have been attempted. However, these models inevitably encounter the problem that the association between behavioral intention and behavior is rarely stable, especially when the cost for the target behavior is high. Alternatively, the SSBC proposes that implementation intention, which is triggered in a specific contextual situation, should be sited between behavioral intention and actual behavior. The SSBC then assumes four necessary stages in order to achieve a change in a target behavior, including altering goal-, behavioral- and implementation-intentions as critical factors for transition to next stage.

We administered a web survey in Hokkaido, Japan. A quota sampling method was used to capture a representative sample of the target population with regards to sex and age, and 312 residents provided valid responses. Variables derived from the SSBC and demographic factors were measured in the questionnaire. Our analysis of the questionnaire data indicated the strongest predictor of adopting energy-saving facilities was implementation intention. Demographic factors such as type of dwelling and housewives also predicted the adoption of energy-saving facilities, while yearly income had no effect. Unsurprisingly, people living in detached houses tend to adopt more facilities than those living in apartment house. However, a surprising result was that higher income did not necessarily predict greater adoption of energy-saving facilities. In addition, behavioral intentions did not directly predict adoption, but did so indirectly through the mediation of implementation intentions. These results suggest the value in fostering implementation intentions, including

the acquisition of planning abilities to be able to consider under what conditions, when, and where to implement facilities. In other words, a desirable new behavior may not be practically executable without some feasible plan in place, even if behavioral intention is formed. In sum, we succeeded in demonstrating the usefulness of the SSBC model, which was originally developed for habit change, for understanding household adoption of expensive energy-saving facilities. Furthermore, our results revealed that intentions could be formed independent of certain demographic factors, suggesting that the potential for spreading energy-saving facilities next ends beyond any specific demographic.

Motives and values above and beyond individual and collective energy behavior: a comparison of photovoltaic adopters in Italy and Austria

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Energy transition is no desirable development goal; since December 2015 (COP 21, Paris) it is an essential and contracted development goal of all UNFCCC parties. Solar energy plants (photovoltaics) are expected to contribute to a low emission energy future; and a variety of energy policies, among them financial incentives, support their diffusion. But, an emerging field of scholars advise policy makers that economic incentives may also promote self-enhancement values or an anthropocentric relationship of humans with nature, which in turn support short-term thinking and reduce the awareness for bigger-than-self problems or the willingness for collective action.

I investigate households of different photovoltaic programs to understand their potentially diverging motives, values and relationships towards nature as well as the relevance of diverging renewable energy policies.

The study sites (Pustertal in the Province of Bolzano/South Tyrol, Italy and Murtal in the federal state of Styria, Austria) are comparable in the socio-economic, biophysical and historical context. They were selected because of their contrasting photovoltaic programs: high financial support for individual adoption of photovoltaics in Pustertal versus lower financial support for individual adoption, with supplementary support of citizen solar power plants in Murtal. I screened hundreds of articles and conducted 22 interviews with stakeholders and end-users to frame the research. Afterwards, I surveyed three different groups of households: (a) individual photovoltaic investors, (b) participants in collective photovoltaic projects (only in Austria, as there were no citizen solar power plants in the Italian study site at the time of data collection), and (c) as a control group, households who did not become active in photovoltaics until data collection. I collected 580 questionnaires (response rate of almost 50%) with the Drop-off/Pick-up method, postal and electronic, to assess respondents' motives, their energy behavior, values, and relationships towards nature.

In my presentation I am going to demonstrate that governance strategies can have both, intended and unintended effects. I use demographic variables to characterize a "typical" individually acting citizen and contrast him/her with a "typical" collectively acting citizen. Economic motives are a significant driver for both, individual and collective photovoltaic actors, but the stronger economic incentives, the lower households' biospheric or altruistic motives, social values or ecocentric relationship towards nature. This is critical, as my results also show a significant link between behavior, values, and the relationships individuals have

with nature. I am going to emphasize a better understanding of this link and demonstrate how socio-psychological patterns held by households might be associated with governance strategies, raising the question: How might governance shape the future direction of a society?

Investments in energy efficiency and mental health: the role of thermal satisfaction, financial stress and social isolation

Wouter Poortinga¹, **Charlotte Grey**¹, **Shiyu Jiang**¹

¹Cardiff University, UK

Living in a cold, energy-inefficient home has been linked to poor mental well-being. Previous research has shown that those with poorer mental health are more likely to live in cold and mouldy houses. However, few studies have been conducted to examine whether energy-efficiency improvements lead to better mental health. This paper presents the emerging findings of a controlled field study examining the health impacts of energy-efficiency investments in Wales. Three-hundred and sixty (n=360) households were surveyed before and after energy-efficiency improvements had taken place. Four-hundred and fifteen (n=415) households from matched control areas were surveyed at the same time. A series of repeated-measures ANOVAs will show if the energy-efficiency investments have improved the mental health, subjective wellbeing, and self-rated health, as compared to the control group. Regression-based mediation analyses will subsequently explore the role of thermal satisfaction, financial stress and social isolation in the association between energy-efficiency and mental health.

A demographic perspective on energy refurbishment of private residential housing

Alejandra Matovelle¹

¹University of Applied Sciences (HSG), Switzerland

Energy refurbishment and modernization of the housing stock play due to their potential for energy savings and therefore CO₂ reduction a key role in municipal climate protection concepts. However, their practical realization encounters large problems. The diversity of homeowners is manifold. In Germany most of the housing stock is owned privately. Private homeowners differ by factors like age, gender, income, family structure and life-style. Consequently general strategies and instruments do not address specific needs. The low refurbishment and modernization rate of about 1% of the German housing stock per year is one indicator for the limited success of the existing strategies and instruments. Private homeowners are addressed by specific strategies and instruments, including legal requirements, information and financial support. But the group of homeowner is again manifold in itself.

Facing demographic change that is characterized in Germany by an ageing population, immigration and—at least before the entering of refugees in 2015—by shrinking population we carry out a research project aiming at developing target specific strategies aiming at increasing energy refurbishment in the private housing stock. We follow a case-study approach in six German cities differing in size, demographic and economic structure. In a first step we carried out analyses to capture the present situation.

We have reached more than 500 private homeowners in the six case-study cities, including a range of age from (25 to over 86 years). 9% of the respondents have a migration background. 79% have already had experience in carrying out energy refurbishment or modernization. Most of these (44%) use natural gas, followed by fuel oil (14%) as energy carrier for heating and domestic warm water preparation. The most often refurbished building elements are windows (31%) followed by the boiler.

Based on this survey we are developing types of homeowners that provide the basis for target group specific instruments and strategies with a focus on the municipal level. These types will represent differences in motives and perceptions as well as socio-demographic factors, the energetic situation of the building and the building location including e.g. land price, current and future risk of vacancy. To come up with such an innovative approach of types of homeowners we apply an integrated transdisciplinary approach combining statistical analyses and focus group discussions that include a variety of stakeholders as well as scientists from other disciplines. The situation of elderly people and migrants with regard to energy refurbishment is largely neglected in both research and practice so far and thus in the project of special interest, even more in view of the prospects of demographic change in Germany.

At the conference we present the methodological approach as well as the types of homeowners and their assumed relevance for target group specific strategies and instruments.

Keywords: CO₂ reduction, demographic change, migrants

Sub-theme of conference:

4. Human environmental perception
3. Environmental design and the meaning of built environment.

Users' evaluations of housing estates characterized by modernist planning

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This paper's objective is to present the impact generated by housing estates characterized by modernist planning, such as those provided by the Brazilian government to low-income people. Users' evaluations of their estates, regarding aesthetics and functional aspects, are considered. Social housing provision has been part of national, state and local government programs in Brazil. Nonetheless, such housing provision has not fulfilled housing demands neither in quantitative nor in qualitative terms. In this sense, even though many problems have been related to the modernist planning, this has been the dominant approach to social housing design in Brazil. Therefore, five housing estates with a modernist planning and constituted by four storey blocks of flats located in the metropolitan region of Porto Alegre, in southern Brazil, were investigated: Rubem Berta - with 4,992 units in 39 nuclei, each nucleus formed by four blocks in a circular layout, each block with 32 apartments, in a total of 128 units per nucleus; Sapucaia - with 1152 units distributed in 36 blocks, with 32 apartments per block (8 units per floor); Guajuviras - 576 units distributed in 39 blocks, 27 blocks with 16 apartments each (4 units per floor) and 12 blocks with 12 apartments each (3 units per floor); Loureiro da Silva - 416 units distributed in 26 blocks with 16 apartments each (4 units per floor); and Angico - 96 units distributed in 6 blocks with 16 apartments

each (4 units per floor). A total of 234 questionnaires were applied as follows: Rubem Berta - 97; Sapucaia - 30; Guajuviras - 32; Loureiro - 45; and Angico - 30. Moreover, 40 structured interviews in Rubem Berta and a number of interviews corresponding to about a third of the questionnaires sample in each of the other four estates were carried out. Additionally, data gathering means included observations, physical and photographic surveys of the occupied estates in order to compare with the original designs and to quantify occupation of communal open spaces by illegal constructions used for different purposes (i.e., garages, small shops, extra room). According to the nature of the data from questionnaires, nonparametric statistical tests were used to analyse it, such as frequencies, cross tabulations, Kruskal-Wallis one way of variance and Spearman rank correlation. The data from the interviews were analysed on the basis of frequencies and meaning. Results indicate, for example, that housing estates with a modernist planning tend to provoke negative users' responses concerning their appearance and use of open spaces. Communal open spaces were illegally occupied by buildings for private use such as garages. These occupations negatively affect the appearance of housing estates, tend to make wayfinding more difficult and to increase perception of insecurity. The findings emphasize the importance of housing design concerning users' attitudes and behaviors and the provision of more sustainable social housing, and the fact that the provision of social housing is not just a question of number of housing units produced but also of adequate planning.

Parallel Session 11: Green space and health

Time: Tuesday, June 28 2016: 16:15 - 18:00

Location: Black Box, The A-building

Session chair: Sigrun Kabisch

Presentations:

Community and district parks for leisure time spend

Beyza Sat Gungor¹

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The key provision for human wellbeing in urban areas is urban green areas. Green area hierarchy; especially in residential areas with high population in metropolises have significance for daily life. People escape from intense work pressure and traffic jam of metropolises to those urban green areas to take a breath even they cover a small size. The neighborhood and community parks are peak used daily for this reason. In the hierarchy of urban green areas not only the functions and size of the green area is important, but also the accessibility is important. Neighborhood parks' accessibility varies between 500 to 800 meters. The urban green area hierarchy that considers function, size and accessibility ordered as below;

- 1-pocket parks,
- 2-neighbourhood parks,
- 3-community parks and,
- 4-district parks.

Regional and national parks come after this but these are in the upper urban scale order. So we didn't consider those green areas in this study. Mostly visited parks in urban areas are community and neighborhood parks. At issue to this study; a survey conducted in 2014 summer with 278 visitors of neighborhood and community parks in Toledo, Ohio, U.S. Use frequency, use purpose and accessibility to the parks determined by considering 4 seasons and weekdays and weekends. General results show that visitors mostly prefer weekdays to visit parks rather than weekends. Use frequency increases from twice a week to three or more times a week in the spring season. For weekends visitors prefer to visit parks once a month. The duration of the visit doesn't change for weekdays and weekends and take mostly for 1 hour; just for the summer time duration increases from 1 hour to 2 hours. Visiting purpose accumulates on the two options that are to accompany the children and to exercise (running, walking etc.). Additionally there are interesting correlation results of visitors' preferences that give idea for designing urban green areas.

Recent nature visits: Can motives and attentional focus explain perceived restorative experiences, creativity, and emotional well-being?

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Exposure to nature has been related to restorative experiences and improved well-being in an increasing number of studies over the past two decades. Natural environments are thought to enhance stress reduction and improve psychological well-being via three theoretically justified and empirically supported mechanisms: they encourage physical activity (the physical mechanism), they provide a setting for social encounters or for escaping social pressures (the social mechanism), and they contain special qualities that alleviate stress (the stress reduction mechanism). However, the psychological processes related to nature visits are still largely underrepresented in research. We do not know if the benefits of a nature experience result from conscious efforts to reduce stress, or if these benefits are rather an unconsidered side-effect of an activity with another primary purpose. Psychological qualities such as motives and attentional focus may help explaining why one chooses to visit natural environments and why some visits are more restorative than others.

The objective of this study was to examine how motives and different objects of attentional focus are connected to perceived outcomes of everyday nature experiences. The study examined recent nature visits by Finnish survey respondents (n=565, Natural Resources Institute Finland) who had already participated in a nationwide survey on outdoor recreation. The respondents were asked detailed questions about their previous visit to a familiar place or route in nature. In this study, we assessed motives and objects of attentional focus that were related to the abovementioned physical, social, and stress reduction well-being mechanisms of nature experiences. The underlying assumption was that motives guide the direction of attention. Thus, in the final exploratory structural equation model (ESEM), motives were specified as (latent) independent factors, focuses of attention as mediators, and the post-visit outcomes (restorativeness, creativity, and emotional well-being) as (latent) dependent exploratory factors.

Overall, the models explained 55% of perceived restorativeness, 22% of creativity, and 44% of emotional well-being. Those whose goal was to reduce stress reported greater restorativeness and emotional well-being. A stronger motive to be alone showed a positive indirect – but, interestingly, a negative direct – connection to emotional well-being. Additionally, greater focus on one's own thoughts, on the activity, and on the environment was associated greater restorativeness and emotional well-being. The results indicate that both goals and attentional focus are important aspects that are strongly connected to the outcomes of nature visits.

Residential green space and use of ADHD - medication by children in the Netherlands

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Objective

Given the stress reducing and attention restoring effects of contact with nature, children that suffer from attention deficit hyperactivity disorder (ADHD) may benefit especially from such contacts. At the same time, the probability of frequent contact with nature is likely to increase with the amount of green space in the vicinity of home. To the extent that more frequent nature contacts reduce the severity of ADHD-symptoms, in greener neighbourhoods children with ADHD may less often get ADHD-medication prescribed. The present study investigates the hypothesis that the prevalence of use of ADHD-medication among children is lower in greener neighbourhoods than in less green neighbourhoods.

Method

Data on medication use were provided by a health insurance company. For all children in the database between 5 and 12 years of age in 2011, regardless of whether they used ADHD-medication or not, data on green space in their residential environment was added (n = 248 270). The percentage of green space was based on land use within circles of 250 and 500 metres around the home. Included categories were urban parks, nature and forest areas, and agricultural areas. The health insurance database only included gender and age of the child. Additional socioeconomic data at the neighbourhood level were provided by Statistics Netherlands, and included level of urbanity, average residential property value and percentage of non-Western immigrants. Multi-level logistic regression analyses were performed, with neighbourhood as second level and individual and socioeconomic neighbourhood characteristics as covariates.

Main findings

The percentage of green space within both 250 and 500 metres was indeed negatively related to the prevalence of use of ADHD-medication. However, subsequent analyses showed that this association only existed in poorer neighbourhoods. In the lowest residential property value category, having 45% of green space within 250 metres resulted in an over 10% lower prevalence than having 25% of green space. The strength of the association diminished with increasing property value. At the same time, residential property value is an important predictor in itself, as is the percentage of non-Western immigrants, both with higher values being associated with lower prevalences. Finally, additional analyses showed that residential property value was negatively associated with the percentage of green space.

Conclusions

The hypothesis that more green space is associated with a lower prevalence of use of ADHD-medication was confirmed, but only for poorer neighbourhoods. More wealthy families may have better possibilities to compensate for a lack of nearby public green space. At the other hand, it is unclear to what extent lower prevalences indicate fewer or less severe ADHD-symptoms or a lower tendency of parents to accept medication as a treatment for their child. For example, it has been shown that in the Netherlands non-

Western immigrants perceive the same ADHD-related behaviour as less problematic and are less likely to present this behaviour to their family doctor. Presently, a follow-up study is being conducted, looking at family doctor contacts related to ADHD-symptoms of the child, to be completed in the spring of 2016.

Links between relationship with nature, outdoor recreation and wellbeing among adult urban population

Ann Ojala¹, Marjo Neuvonen², Liisa Tyrväinen¹

¹Natural Resources Institute Finland

Green areas play an important role in urban residents' wellbeing. There is increasing evidence that there is positive linkage between visiting green environments and self-reported indicators of general and mental health (e.g. Mitchell, 2012; Keniger et al. 2013; Tyrväinen et al. 2014). There is also evidence that green environments promote physical activity (e.g. Li et al. 2005; Neuvonen et al. 2007; Mytton et al., 2012). However, we do not know much about how individual characteristics, such as relationship with nature, promote visiting green areas and so, physically active lifestyle. The links between relationship with nature and the actual use of nature for recreation are unclear, and have not gained much attention so far in the literature. The aim of this study is to analyse what are the underlying linkages between relationship with nature and physical activity outdoors. We hypothesize that stronger relationship with nature is linked to increased visits to natural environments and more physically active lifestyle. Higher relationship with nature is related to better general and mental health, partly moderated by intensity on physical activity in nature. The analysis is based on the randomly assigned age stratified survey data. The sample consists over 25-years old Finnish speaking respondents living in Helsinki, the capital of Finland. The data was gathered by the National Institute for Health and Welfare (THL) and Natural Resources Institute Finland (Luke) during 2015. The response rate was 46.9 per cent (n=3752). In the survey, respondents were asked large variety of questions, including questions concerning wellbeing, general and mental health (e.g. STAI, Marteau and Bekker 1992), relationship with nature (NR-6 Nisbet and Zelenski, 2013), frequency of visiting outdoors and physical activity level. We use path analysis (SPSS AMOS 22) to analyse the data. If the hypotheses are supported, the future interventions for deepen the relationship with nature support active lifestyle and so better health.

Unpacking the relationships between green spaces and social cohesion: a brief overview of evidence and practice across

Clare Twigger-Ross¹, Owen White¹, Rolands Sadauskis¹, Jonathan Baker¹

¹Collingwood Environmental Planning, UK

In this paper the social benefits of publically accessible, good quality green spaces, both in urban and rural settings are explored. This is part of a larger project for DG Environment on the Health and Social Benefits of Biodiversity and Nature. This paper focussed on evidence to investigate the hypothesis that having access to shared, green public spaces can contribute to increased social cohesion and reduced social tension, particularly for minority groups (e.g. ethnic, religious) and the socially excluded (e.g. immigrants, economically

deprived).

Social cohesion is a term used to cover a number of different but related concepts (Demireva, 2014; Hartig et al, 2014; OECD, 2011; Forrest and Kearns, 2001; Berger-Schmitt, 2000). Broadly it can be divided into two core domains:

- 1) Social inclusion, social order and reductions in inequalities; and,
- 2) Bonds of trust, shared social and cultural norms, social networks, social capital, social solidarity, place identity and attachment.

A systematic approach to reviewing the evidence was taken using searching of electronic databases of articles as well as drawing on grey literature reports, and case examples identified by members of the project team through informal discussions with experts in the European Commission and other agencies. The total number of references drawn on was approximately 70 articles and papers with the large majority being peer-reviewed. The main focus of the review is on EU cases, however non-EU examples have been included where they help illustrate the links between nature and social benefits. A number of key findings emerged from the review which will be presented together with some case examples:

- Access to nature and greenspace is a precondition for the realisation of their social benefits. The evidence suggests that accessibility depends on multiple factors, such as gender, age, relative income, and education, and that physical access to green space in itself does not necessarily imply that social benefits will be realised by all sectors of society / communities.
- Greenspaces, including urban parks, community gardens and forests are an important factor in community identity, and can strengthen people's attachment to their communities and the extent to which they identify with it.
- Further, greenspaces, parks and playgrounds can provide places in which people interact, and that this can strengthen communities and help people from minority groups or different cultural backgrounds become better integrated in and to identify with their community.
- Finally, The evidence suggests that green spaces, particularly in urban areas can act as a 'third place' in which people can come together and engage in shared social activities, thus generating social capital. Community gardens and allotments can also act as 'social capital multipliers' whereby motivated individuals and groups can lead to wider involvement and enhanced social benefits.

The implications of the findings will be discussed in relation to design of future interventions to develop the positive relationships between access to nature/greenspace and improving social cohesion.

Parallel Session 12: Children and young people in the city

Time: Tuesday, June 28 2016: 16:15 - 18:00

Location: Room A:A, The A-building

Session chair: Ian Simkins

Presentations:

Place habit as the immaterial phenomenon of children's place attachment

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A majority of the study of children's place attachment is commonly rooted in the dualistic transactional process between child and place, which views place as a material/physical phenomenon and a fixed binary idea: either/or. An attachment may be developed because of a child's positive cognitive response to a place or because the physical and social aspects of a place are predicted to stimulate a child's motivational system to play and explore. The successful bonding between children and place depends on either the value of things (object or place) or the repeated satisfaction or the emotional pleasure derived from being with the object or place. Influenced by existential-phenomenological theories, this study attempts to fill the existing research gap by arguing that place in the study of children's place attachment can be viewed as an immaterial/metaphysical phenomenon, which facilitates the understanding of the child and place as undivided, totality phenomena of a wholeness experience of people-in-world. Using this approach, this study aims to uncover the immaterial phenomenon of children's place attachment and the nature of the process through which children's place attachments are formed.

Twenty-five children (14 girls and 11 boys), aged 9–12, were selected for and participated in this study. The children were from middle to middle-low income families and live in Jakarta, Indonesia. Based on grounded theory, this study found that the immaterial phenomenon of children's place attachment as 'place habit'. 'Habit' or 'habere' in Latin word, means to hold, hence to occupy or possess, hence to have, or to dwell ('habitare'). Therefore, the word 'habit' in 'place habit' denotes an act to hold, to occupy, to possess, to dwell a place. This study found place habit, as an act to hold or to possess or to have or to dwell a place, is the results of the undivided totality of the interplay of the child's body habit-in-place and their emotional experiences of being-in-place. Place habit, as the immaterial phenomenon of children's place attachment, reveals that the common speculation about children's place attachments as being 'loves for favourite places' is not something that should be taken for granted. Moreover, a child's emotional condition and the intrinsic quality of the place are not the only attributes that affect their 'love for favourite places'. However, the nature process through which place habit is formed occurs through the children's repetitive habitual movement to, rest in and encounter with their favourite places in a particular time-space routine, and all of which trigger the dynamic emotional experiences in children. This study contributes to the idea that the phenomenon of children's place attachment could be viewed through the immateriality of place. This may have implications for how we look at the urban environment not only as physical and social entities predicted to contribute

to the development of a child's place attachment but also as an immaterial/metaphysical phenomenon contributing to the development of a child's place attachment.

Key words: place habit, metaphysical phenomenon, place attachment, children

The daily places of young people's lives

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Ways in which young people use and experience the physical environment depends on the nature and quality of those places. This study is a qualitative examination of how young adolescents experience home, school and neighborhood. Rather than impose, suggest, or confirm specific interactions between the youth and their environments our objective was to understand what role these places play in their lives from the youths' perspective. Our work most closely relates to the sub-themes; #3. Social use of space: crowding, privacy, territoriality, personal space and #6. The interplay between urban and rural areas.

Adolescents from low to middle income families between the ages of 12 and 15 living in a large urban area, a small city, a suburban community and a rural community participated in the study with parental consent and participant assent according to the University's IRB requirement. Thirteen youth (girls =7) were interviewed multiple times by the same interviewer over several weeks/months.

Grounded theory methodology guided the project. Initial interviews were organized around a log kept by the participants. This was later changed to separate interviews for home, school and neighborhood. All interviews were audio recorded and later transcribed. Each transcript was read by two of three researchers. Major themes were identified and discussed during team meetings. The themes were grouped into four categories, attributes of the space, interpretation of the space, personal issues for the child, and rules. Atlasti was used to determine the frequency of each theme.

The most frequently mentioned themes were noise, crowding, privacy/personal space and access. Youth articulated ways in which noise and crowding at home, in school and in the neighborhood interfered with their activities. Privacy issues were especially prominent. Achieving privacy at home was dependent on whether the child had his or her own bedroom. Those who shared a bedroom used their bed as a private, personal place. Regardless of how personal space and privacy was achieved it was, as one child stated, "important to have a place to be myself". This suggests the need to retreat from public scrutiny. Privacy at school was important but expressed in terms of having a private conversation with a friend.

Access refers to the ability to move about the community and gain access to places or people important to the child. Participants in urban communities could travel independently because of sidewalks and public transportation but access to some parts of their community was limited by fears of criminal activity. Participants in suburban and rural areas were dependent on adults for access to friends and places for leisure activities. The latter communities offered safety but limited the range of activities. One child stated that when he lived in the city he saw his friends outside of school but this changed when he moved to a rural area. Physical attributes of home and school affected how youth used personal space and gained privacy. Neighborhood design provided opportunities for independence but safety concerns limited access.

Children's mobility is also part of parent's ways of life. A psychological and time-geographical exploratory crossed-analysis

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During the last decades, social sciences and environmental psychology studies added important contributions to the knowledge of children's mobility and its evolution in different social and spatial contexts. Thanks to evolution of mobile technologies that track the movement of people, the accuracy of spatial and temporal data is improved and can lead to physicalist approaches as walkability or urban design considerations.

Nevertheless, children's mobility is related to by the social and cultural context which participates as much as the physical context. But, when considering social context most studies tends to focus on parental perceptions of dangers. Few of them are interested in the effects of family routines on children's mobility patterns. Temporal dimension is of great interest when considering how it structures family's relations and practices to urban spaces. Choosing an ecological approach of mobility we postulate that evolution of children's mobility is also part of parent's ways of life. We consider that children's mobility should be understood in the context of their family's interactions with urban environment. In other word, our approach aims to understand children's mobility in relation / coordination with the mobility of their parents. A main hypothesis is that nowadays children's urban practices are more and more formally scheduled in space and time. A second hypothesis is that mobility may produce informal and unexpected practices within the flow of planned activities. Despite their scarcity, they are fundamental in children's experience of the city and in children's spatial identity.

To answer these objectives, an exploratory survey was carried out with families living in several residential areas of Rennes-city and its bordering suburb. 10- to 13-year-old children and their respective parent (11 families) were involved in the survey. In order to collect data describing both time-space patterns and social dimensions involved in children's mobility, we combined a mixed survey-protocol. In-depth data about children's and family's experiences, practices, and routines in the context of their everyday life were collected from 1/ GPS data collection over 48h; 2/ individual semi-directed interviews administered to children and their parents.

Three main results will be presented. First, we will draw a general picture of time-budgets and spatial indicators describing the dataset. It will be analysed in regards with statistics coming from standardized household-travel-survey. Second, we will analyse children's and parent's mobility behaviors by comparing the time-space travel-patterns in terms of routines and homology. We will then discuss the effects of this travel's homology on children's autonomy. Third, we will describe emerging informal activities within children's planned activities in city. The analysis is grounded on two conceptual frameworks derived from ecological psychology and time geography. Indeed, we will discuss how revisiting behavior settings (usually based on ethnographic data) combined with pockets of local order could be useful tools for depicting time-space arrangements from our specific dataset. This analysis is based on both GPS data and discursive data in order to explain the different dimensions which are engaged in the time-space arrangements. These ones will be enriched by discursive data about children's autonomy.

Children's place attachment in a residential area of culturally unfamiliar design. - How they verbalize their impressions of favorite places in a very new town in Japan?

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Since the historical change of enlightenment in the late 19th century, Japanese people have been more or less intent of introducing foreign culture, mainly the Western culture, into their domestic culture. So they have been of introducing foreign architectural design and modernism. At first, the introduced designs looked unfamiliar, but gradually, they became socially acceptable and familiar, and sometimes even gained attachment.

We are interested in how Japanese people, especially children, become attached to the residential environment of newly introduced design. There have been many studies on children's place attachment in many part of the world (ex. Cooper Marcus, 1979; Senda, 1982; Korpera et al., 2002; etc.). However, these studies have mainly dealt with suburban and downtown ordinary residential areas.

Three research questions were set for the investigation. 1. Are children in a town with culturally unfamiliar design attached to their residential environment? Does uniqueness / cultural unfamiliarity of design matter? 2. Which places in the environment do children feel important? Are there other attached places than their residences? 3. How they verbally express their favorite places? Retrospective, concurrent or else?

The town we have chosen for the investigation is called Makuhari Bay-town. Makuhari Bay-town is said to be a unique example of realizing perimeter block planning and the continuous residential buildings are surrounding 'patios'. The architectural design for each building also is novel to Japanese people as well, and the architects even include an American architect, Steven Holl.

We conducted 5 point scale questionnaires to 3rd graders of one of the elementary schools in the town (N=149) and found that children felt familiar with their town and seemed to be attached to it. Then we conducted best 5 ranking questionnaires of their favorite places. The result showed that there are many favorite places other than their home condos.

From the result of the ranking questionnaire and additional preparatory interviews to 4th – 6th graders (N=21), we extracted 25 favorite places in the town. And showing the photographs of the 25 places, we conducted follow up group interviews to 2-3 children of 5th graders at each time (N=16), where they voluntarily talk whatever the place on each photo reminds them. All the protocols were text analyzed.

From the results, we found that children are likely to talk more about what the place is for and is like than about their own reminiscence there. We argue that they are more eager to explain their collective knowledge than to talk about their personal reminiscence. In other words, they seem to value sharing collective knowledge of their favorite places with local group above self retrospection of the experience there. This is quite different from what

adults talked about their favorite places in childhood in previous studies and brings further questions for future studies.

Keywords: Place attachment, children's environment, introduced foreign design

Analysis of factors affecting school travel mode choice in Dalian, China

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In last thirty years, with rapid development of urbanization and social economy in China, huge neighborhood, large schools and more motor traffic have changed the school travel mode. More and more students have to be accompanied with parents with car instead of walking and biking to and from school. This study examines the relationship between urban space layout, transport planning, distance and school travel mode choice of students in a middle school of Dalian, China.

A set of data was collected by questionnaire among 160 students from ages 13-15. The results of two aspects from questionnaire showed: on the travel mode, 53% of students travel with parents by car to and from school, 39% of students walk to and from school, 6% of school trip depend on bus, light-rail and school bus, only 1% of student go by bike. On the relationship between distance and travel mode choice, 100% of school travel are walking within 400m, 42.1% and 83.3% of students with parents drive by car between 400m-600m and 800-1600m, over 1600m walking students are no longer exist. Based above the results, two sets of school trip maps (includes actual paths and virtual walking and public paths) within 400m -1600m were compared and analyzed. The factors affecting school travel modes choices were summarized as following: (1) Location planning of large neighborhood and school extend the school trip; (2) Links from public transport stops to the neighborhood area or school are not friendly for pedestrian; (3) Low-quality of walking and biking paths were provided. In conclusion, neighborhood and school planning, road and public transport planning, and walking and biking environment should be planned in coordination for more school trips by walking and biking and public traffic.

Active transportation, adolescence and urban form: contrasting experiences in Montreal

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Adolescence is a time of multiple changes, including in mobility behavior, perceptions and expectations. This period is well conceptualized as different from previous (childhood) and following ones (adulthood). However, the studies on the changes that occur during adolescence, particularly in terms of active mobility (walking and cycling), are rare. What environmental factors for active transportation appear as meaningful for youth during adolescence?

The presentation is based on a research project with 69 participants aged 12-17 years old attending secondary schools in central or peripheral locations in the Montreal metropolitan area. Data was gathered between 2012 to 2014 from personal mobility diaries, semi-

directed interviews, focus-groups and guided tours, and then analyzed using qualitative methods. Our results highlight shifts in terms of environmental perception and mobility behavior a) during adolescence and b) between youth attending central and peripheral schools. Adolescents' behaviors and discourses show how walking and cycling play key roles as tools for autonomy gain over the years. These tools appear however more effective in central contexts, where urban compactness brings destination proximity more public transit efficiency and varied transportation options. These results are discussed in light of the enabling environments approach.

Sustainability and identity as main controlling factors for designing public parks, Khalbooh Park – Case Study

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Key words: Sustainability, Identity, Public Parks, Khalbooh Park

Oman is a developing Gulf country that started the modern era in 1970 depending on its oil revenue. In order to meet a contemporary life style, Oman started rapid development with an extensive program of infrastructure upgrading and urban development. Implementing modern urban concepts and planning systems was adopted from developed countries. Western Public open spaces concepts-such as Public parks, squares and plazas were also introduced. However, the set regulations of urban planning in 2000 were not implemented. This is due to the fact that Design Guidelines have not been legislated to have the power of law, and therefore the provision of public open spaces has been kept optional.

This paper aims to beneficially raise student experience as well as the local authority's attention to the importance of Public park designs as an ethical activity, either of axiological recreation amenities or of social justice and fairness. In addition, this paper endeavors to provide an example of re-designing Public parks according to sustainability and identity for researchers and professionals in the field.

The research methodology is depending on a case study, Khalbooh Park-Muscat, that was designed by a group of SCD students supervised by the author. In addition, a questionnaire was distributed to the Khalbooh Park visitors, interviews with two of the most responsible persons reviewing the related reference data and visual materials through field study and personal observations.

This paper starts with the study of importance, meaning and definitions. Then, a historical glance of Muscat Public Parks will be presented. The case study, Khalbooh Park, will be elucidated; analytically studied then the concept and the final project is going to be discussed and analyzed. Finally the conclusion and recommendations will be demonstrated. The paper succeeded in revealing all the problems of the current design of khalbooh Park as an example for other Public Parks in Muscat, the Capital. Accordingly, this paper provides a successful model of a Public park design in Oman that responded to a broad sector of visitors' with a variety of age group, gender, and people with special needs. Moreover, the final project reflects two of the recent trends of design; sustainability and identity. In addition, the research succeeded through the interviews of two high ranking officials in Muscat Municipality to shed light on the importance of the subject.

Parallel Session 13: Supportive health care environments

Time: Tuesday, June 28 2016: 16:15 - 18:00

Location: Large lecture hall, IKDC

Session chair: Patricia Ortega

Presentations:

Control in Healthcare Environments: What Do Patients Want?

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The theory of supportive design is a conceptual framework proposed by Ulrich (1991). In this framework, positive distraction (e.g., a view to nature), social support (e.g., sufficient seating for visitors), and perceived control (e.g., adjustable lighting) are posited as desirable qualities in the healthcare environment to reduce stress and increase patients' satisfaction. Cross-cultural laboratory (Andrade & Devlin, 2015) and field research (Devlin, Andrade, & Lima, 2014) has demonstrated that social support and positive distraction mediate the relationship between the number of objective elements in the inpatient hospital room and patients' satisfaction. Perceived control, however, did not predict satisfaction across the Portuguese and US samples. The aim of the current research was to further understand the role that perceived control over the inpatient room plays in patients' experience, and the contribution of individual differences in the desirability of control. To that end, a laboratory study was designed to examine the role of control provided to hospital patients and its effect on stress. In this study, we manipulated perception of control by the presence or absence of technology in the room (an integrated remote device). One hundred ninety-seven students (120 each in Portugal and 77 in the US) were randomly assigned to one of two hypothetical conditions presented through a scenario delivered by Qualtrics: 1) no control over the hospital room offered to patients; 2) control over the hospital room (with an integrated remote). To account for the possibility that personality and cultural differences might moderate the relationship between the conditions and the dependent variables (stress and satisfaction), we included a measure to assess the need for control. Outcome measures include the State Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970); measures of perceived control, social support, and positive distraction (Andrade & Devlin, 2015); and measures of satisfaction (quality of care; comfort in the environment; choosing the room again). Preliminary results support our hypothesis that control plays a role in decreasing stress only for those with high desirability of control. Implications of findings will be discussed.

Keywords: hospital environment, perceived control, patient satisfaction

Understanding Emergency Department Design through Supportive Design Theory

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Emergency departments are fast-paced, ever-changing environments that can lead to physical, mental, and emotional stressors among staff. Further, long hours, heavy responsibilities, and prolonged direct attention can produce high levels of mental fatigue (Stewart-Pollack and Menconi, 2005). Numerous researchers have documented a strong correlation between built-environment variables and the reduction of stress and fatigue among healthcare staff. In his theory of supportive design, Ulrich (1991) hypothesizes that there are three basic premises contributing to psychological support in the physical environment: 1) a sense of control with respect to physical-social surroundings, such as privacy and efficiency; 2) access to social support, including communication factors; and 3) integration of positive distractions such as nature or areas of respite. It has been well documented that environmental stress has a major impact on overall job satisfaction among nurses (Nejati et al., 2015; Pati & Barach, 2010). Currently, the design of modern healthcare environments aim to provide for these needs by implementing evidence-based design criteria such as flexible unit designs, integrated respite areas, and team workstations promoting staff efficiency, effective communication, and overall satisfaction. With these concepts in place, the psychological impact of these design attributes must now be examined to enhance the use of supportive design theory and its relationship to staff wellness and satisfaction.

This presentation will discuss key findings from a post-occupancy evaluation (POE) of an academic emergency department (ED) utilizing a racetrack design with an open-plan central core. To determine the effectiveness of the design's impact on overall staff satisfaction, data was captured to examine the three basic premises of Ulrich's supportive design theory. Methods yielded both quantitative and qualitative results using mixed-methods such as observational mapping of communication patterns, travel distances, acoustical measurements, questionnaires (N=87), and focus groups (N=8).

Outcomes from the data demonstrate the impact of the built environment on supportive design contributors such as efficiency, privacy, communication, and respite. Measurements of nurse walking distances revealed a mean distance of 4.06 miles per 12-hour shift. However, outcomes from the observational mapping revealed that the central core supported an efficient workflow and contributed to containment of staff conversations. Focus groups further supported this, revealing that staff satisfaction and private communication were related to proximity to other staff, private patient rooms, access to break areas, and communication technology. Analysis of the questionnaires revealed that overall staff satisfaction was significantly correlated with the ED's unit configuration, efficient design, staff stress, and the ability to have private conversations.

Contributions from this research have several implications for the field of design. First, the findings lend credence to Ulrich's theory of supportive design and add to healthcare-based evidence. Secondly, it was found that staff satisfaction was closely associated with proximity of spaces and an efficient unit layout. The findings to be presented confirm the need to provide a work environment that supports the physical and psychological needs

of staff, particularly within this complex, ever-changing environment. Understanding the environmental attributes that contribute to overall staff satisfaction will aid in expanding the concepts of supportive design theory.

Waiting rooms with high and low environmental quality and their impact on stress in primary caregivers

Patricia Ortega-Andeane¹

¹National Autonomous University of Mexico

The physical design of public children's hospitals, and in particular waiting rooms (Ulrich, Zimring, Zhu, DuBose, Seo, Choi, Quan & Joseph, 2008), is relevant in Mexico (Ortega-Andeane & Estrada-Rodriguez, 2010), due to the high level of density and excessive demand for care, resulting in less-than optimum quality of services, and on the other hand, the type of users, primary caregivers display constant anxiety in response to uncertainty regarding the evolution of their children's disease (Bridges-Webb, Giles, Speechly, Zurynsky & Hiramaneek, 2007). This situation in turn makes them places with high levels of stress, which is further exacerbated by their poor environmental quality, as seen in factors such as lack of positive stimulation, lacking or inadequate and dilapidated furniture, deficient comfort and services, and poor signage and wayfinding, among others (Fornara & Andrade, 2012; Leather, Beale, Santos, Watts & Lee, 2003; Stewart-Pollack & Menconi, 2005).

This study was conducted in intensive care waiting rooms with low environmental quality and in oncological care waiting rooms of more recent design, with an environmentally enriched focus, at the same public children's hospital. The users we worked with were 531 primary caregivers; 267 in low environmental quality waiting rooms, who were required to spend long periods of time in the waiting rooms, which varied from three days to as long as three months, approximately; and 264 who were at oncology pediatric waiting rooms (high environmental quality).

To identify the relevance of individual, family, sociocultural, and environmental factors which favor or inhibit the generation of environmental stress in caregivers during their time in waiting rooms due to their children's hospitalization, we developed a predictive model which accounts for the degree of influence of the aforementioned variables on environmental stress.

Taking environmental stress as dependent variable and as predictors the factors of the measuring instruments of a) Psychological Stress: Stress and Coping; b) Caregiver Burden: Impact on Caregiver, Interpersonal Relationships, and Expectations of Self-Efficacy; c) Environmental Evaluation: Functionality, Privacy/Isolation, Noise, and Lack of Security and signage; and d) Institutional Image, we obtained a linear regression model. The model has a value of $R^2 = 46.7$. The relevant variables for the model with their respective coefficients were: Activation (-0.434), Impact on Caregiver (0.203), Type of room (low environmental quality) (2.574), Type of room (high environmental quality) (3.080), Institutional Image (-0.120), Level of Psychological Stress (0.180), Interpersonal Relationships (0.127), and Lack of Security-Signage (0.069).

The results are discussed in relation to the role of environment, which may favor or obstruct the generation of stress in parents who are required to stay in waiting rooms under conditions of high emotional vulnerability, given that the conditions of the setting may alleviate or ameliorate such stressful life situations.

Evidence-based models to support the design of outdoor environments in healthcare

Nina Oher¹, Anna Bengtsson¹, Lillian Lavesson¹

¹Swedish University of Agricultural Sciences (SLU), Sweden

Introduction

More and more research point at the importance of the outdoor environment in the context of healthcare and that the content and design of the outdoor environment can affect the health of patients. Much of the existing research on the outdoor environment as a resource in health care contexts, concerns the differences between healthcare environments with natural elements and healthcare environments without natural elements (Ulrich et al. 2008). Existing research on more specific environmental qualities focus mostly on gardens and parks for specific target groups. This research covers, amongst other groups, the elderly and people with dementia, people with stress-related diseases and patients at emergency wards (Bengtsson, 2015).

Objectives

Research points to the importance of including the user's perspective and evidence in the development of environments in health care settings. According to Fröst (2014) models and tools are needed to show how evidence can be used as the basis for collaborations between designers and health care staff. The intention of this study is therefore to explore methods and models for collaborations between research and practice groups and to bring in user's perspective in the design process.

Method

Previous research shows the importance of the outdoor environment regarding four specific zones in healthcare environments, namely Zone 1: The contact with the outdoor environment inside the building, (through windows), Zone 2: the contact with the external environment in the transition areas between indoors and outdoors (e.g. wintergardens), Zone 3: in the immediate surroundings, (e.g. garden) and Zone 4: the wider neighbourhood. In this study these four zones are investigated, as a model for use in evidence-based design processes, in the following three steps.

1. A literature review focusing on finding existing information from post occupation evaluations of health care settings
2. Focus group interviews at different wards of a Swedish regional hospital
3. Focus group interviews with individuals involved in design processes at the hospital

Main findings and conclusions

The main findings suggest that different patient groups have different needs and preferences in the outdoor environment at health care facilities and in the relation to the four zones of contact. To support design processes that are the most beneficial to the patient, it is therefore appropriate in each case to clarify which environmental qualities represent the users' major sensitivities and which qualities represent their major strengths and use this knowledge in combination with the four zones of contact as the basis in the design process.

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The study of communication characteristics of juvenile and adolescent patients in a psychiatric hospital as observed from common space

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In Japan, the number of juvenile and adolescent (less than 20 years of age) mental disorder patients is growing. Epidemiological studies on mental disorders conducted within and outside Japan report that the onset of mental disorder is concentrated among young people (41.0%), primarily those in their teens. Improving the therapeutic and care environment for juvenile and adolescent mental disorder patients is an urgent matter.

In terms of medical services in Japan, hospital wards dedicated to juvenile and adolescent patients (hospital wards for juveniles and pubescents) were established in 2002. The number of beds in these wards is expected to increase from here on.

Hospital wards for juvenile and pubescent patients are relatively new among psychiatric wards. Because there is no previous research conducted on these wards in the field of architecture, the actual conditions of these hospital wards are not sufficiently understood. This study adopts as its theoretical research framework discourse concerning "communication with people," drawn from psychiatry, psychology, and sociology. In this study, a survey of all wards in the target hospital was carried out. It seeks to elucidate different characteristics between adult patients and patients of the hospital ward for juveniles and pubescents in interpersonal relationships (between fellow patients and between patients and staff) by clarifying special characteristics in the utilization of space by patients. Therefore, the purpose is to clarify how the utilization of space can promote the acquisition of communication in juvenile and adolescent patients.

This study surveyed a prefectural psychiatric medical center that was awarded the Healthcare Architecture Award by the Japan Institute of Healthcare Architecture. The survey focused on the hospital ward for juveniles and pubescents.

The average age of patients in the hospital ward for juveniles and pubescents was 15 years of age. Besides schizophrenia (12%) and bipolar disorder (8%) patients, there were many patients with psychoneurosis (20%), addictive disorders, intellectual disability, psychopathy, and eating disorders. Diverse characteristics in the different mental disorders could be observed. Also, the hospital ward for juveniles and pubescents were composed entirely of single-bed rooms. In other hospital wards, rooms were multi-bed, such as four-bed rooms.

As the conclusion, Characteristics of communication by juvenile and adolescent mental disorder patients can be summarized as follows:

1. Adolescent mental disorder patients have the quality of "gregariousness," by which

- they wish to be with others. A stay of three people or more is preferred.
2. The characteristics of boys and girls need to be taken into account. Boys need playing space. Girls need conversation space.
 3. Communication with others is active.
 4. Daily rhythms in communication are not formed. Communication is easily affected by programs in the hospital ward.
 5. Establishing spaces of diverse sizes and functionally shared spaces is desirable.

How care workers work meet residents leisure in material space

Catharina Nord¹

¹Linköping University, Sweden

Aim: This presentation communicates results from a study in extra-care housing on the material aspects of care work and residents' leisure in everyday life. Everyday life in extra-care housing implies frequent interactions between care workers and residents. In this study the relationship between carers' work and residents' leisure time were explored with the aim to identify by which materialities meetings between the two are constituted and what relations that emerge from these.

Methods: Data collection was done by qualitative individual interviews with staff and residents, and observations while shadowing care workers. The study involved about 15 care-workers and 20 residents. The analysis was done with support of posthumanist theories in which material space and objects are conceptualized as forming symmetrical relations with people in networks, suggesting that all components in the network have equal weight and influence.

Main Findings: The residents' leisure time comprised similar activities, such as watching TV, having coffee in solitude or in group, and walks outside. Care workers were often involved in these activities so that the residents were able to embark on and carry out these activities. The study revealed that these meetings between carers and residents involved a number of smaller and bigger objects. The quality of residents' leisure time were dependent on the ways that carers' handled these things. Meetings were distributed in space in iterated patterns. However, these patterns went beyond routines that are often associated with residences and care for the aged. They rather formed individual micro-spatialities merging from intra-actions between older individuals and individual care workers.

Conclusions: The study shows how material space and objects form a basis for the intra-actions between residents and care workers in extra-care housing indoor and outdoor. There are often no borders between care work and leisure time, in particular not in the common rooms of the extra-care housing unit. They are rather two sides of a coin. What is work for a care worker is leisure time for a resident, although it involves the same objects and takes place in the same space.

Parallel Session 14: Thinking new on resilience, part 1

Time: Tuesday, June 28 2016: 16:15 - 18:00

Location: Small lecture hall, IKDC

Session chair:

Presentations:

Trans-sectoral participation in urban planning processes

Denise Zeyer¹, **Petra Schweizer-Ries**¹

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Over the past decades, it has been observed that especially in LEDCs (Less Economically Developed Countries) urbanisation processes have rapidly increased. This development implicates a series of challenges and opportunities for fast-growing cities: On the one hand, cities produce a high level of pollution due to their steadily growing number of residents consuming energy and other resources. On the other hand, cities have a pivotal role in promoting environmentally friendly ways of handling resources. Many cities have already taken up this challenge by integrating the vision of a resource-efficient, sustainable and green city in their city development plans.

In this context, a new 'trans-sectoral planning method' is being developed in an international research project 'Rapid Planning' focusing on four fast-growing cities worldwide. Trans-sectoral planning implicates a greater participation of and cooperation between different stakeholders (public sector, private sector, civil society) relevant for infrastructure sectors (e.g. energy, waste, drinking-water, sewerage). It is assumed that this will promote the identification and utilisation of potential synergies between the sectors allowing for resource-friendly and sound urban planning which is less prone to interference.

Based on the Value-Belief-Norm Theory (Schwartz 1996; Stern 1999; Hoffmann 2009), this presentation explores two main questions: 1.) How do culturally and politically shaped values, norms and beliefs impact the stakeholders' willingness to implement the trans-sectoral planning method and which differences are there between the stakeholder groups (public sector, private sector, civil society? 2.) In what way does the method need to be adapted (e.g. level of participation, selection of stakeholder groups) according to the specific context of implementation?

In a first methodological step, stakeholder analyses were conducted aiming at identifying and characterising the stakeholders being relevant for/and or involved in infrastructure planning within the respective city. Furthermore, the analyses provide first evidence of already existing forms of trans-sectoral cooperation and stakeholders' posture towards the trans-sectoral planning method. The stakeholder analyses conducted in two of the project cities, Kigali/Rwanda and Da Nang/Vietnam, show that cultural and political characteristics have a great impact on the organisation of urban planning. Whereas in Vietnam planning procedures follow the top-down principle and the private sector as well as civil society

play a rather insignificant role, Rwanda is in a process of restructuring planning processes towards more decentralised and bottom-up forms of planning promoting the accountability of the public sector, the private sector and civil society equally. The stakeholder analyses helped identifying possible difficulties and challenges (e.g. work culture, work relations, lacking policies) and are thus an essential prerequisite for designing a culture sensitive implementation of the trans-sectoral planning method.

The objective of this presentation is to illustrate first results of implementation of the trans-sectoral method in Kigali and Da Nang. An approach is proposed of how to cope with different cultural and political contexts in order to take those adequately in consideration when shaping trans-sectoral participation processes in urban planning.

Social innovation in sustainable transitions. The role of social learning and empowerment in grassroots social innovations

Adina Dumitru¹, Isabel Lema-Blanco¹, Ricardo García-Mira¹

¹University of A Coruña, Spain

Grassroots social innovations are attracting increasing scientific and policy attention for sustainable transitions processes based on the active participation of citizenship in transitions towards low carbon societies. Social Innovations are defined as “new ideas that meet social needs and create new social relationships or collaborations” (Hubert, 2010). Sustainable Social Innovations -like Transition Towns, the Slow Food movement or the Global Ecovillage network- foster new social relations and alternative -sustainable and fair- modes of satisfying needs within new social contexts tangled in networks of power relations. Existing examples of sharing economy (Schor, 2014) and social economy (Moulaert & Ailenei, 2005) have introduced sustainable practices into production and distribution systems emphasizing the value of sharing and collaboration in transitions to green economies.

Sustainable transitions towards low carbon societies also imply changes in individual and collective behaviours that are enhanced by social learning processes within community-based initiatives. Learning processes enable individual and collective agency for social change (Bandura, 1982). Social learning has been conceptualized as a change in understanding “that goes beyond the individual to become situated within wider social units through social interactions between actors within social networks” (Reed et al, 2010). This work is part of the EU-funded research project named TRANSIT that aims to build a theory which explains Transformative Social Innovation processes. This theory-development is grounded and tested in empirical qualitative analysis of 20 international networks and 40 local initiatives that (aim to) work on transformative social innovation. The research approached the emergence and evolution of social innovation initiatives; the internal and external dynamics of change and agency processes that social initiatives develop to gain social influence. This paper will present the main insights that emerge through the comparative analysis of social learning processes developed within a comparative of 20 grassroots social innovations. The results explain the way that practitioners learn from each other (vicarious learning, communicative action) and identify a number of meaningful outcomes. Social learning produces a change in personal and collective understanding (in terms of social relations); and occurs in a relational framework, through social interactions

and processes between actors within a social network (learning contexts) and lead to the (co)production of new ideas and knowledge, new practices, new framing (and social norms) and new social relations that may transcend the original social (experimental) context. Significant social learning processes may be essential to transformative change, especially regarding to processes of capacity-building, empowerment and self-determination of social actors that constitute the basis of the success (or failure) of sustainable transitions.

The role of grassroots innovations in promoting local sustainable consumption. Motivations, values and learning outcomes within the “Galician network of conscious and responsible consumption”

Isabel Lema Blanco¹, Ricardo García-Mira¹

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Sustainable consumption has become a central focus for national and international policies. The actions that people take and decisions they make to consume certain products and services or to live in certain way have direct impact on the environment as well as on personal and collective well-being (Jackson, 2005). Besides, individual behaviours are deeply embedded in social and organizational contexts that condition or influence their consumption choices. A wider responsible consumption movement -associated with ethical and green consumption- have arisen worldwide as community-based initiatives grounded on the active engagement of citizens in promoting sustainable lifestyles in the local and global context.

Consumers are seen as active agents that assume ethical responsibilities in their consumption decisions, which also requires extent knowledge and education regarding environmental issues. In this context, environmental education is conceived as a real instrument of social empowerment and collective learning (Uzzel, 1999; Losada Otero & Garcia-Mira, 2003; Garcia Mira, 2015) to be developed in different contexts and scenarios, such as processes environmental participation through which people take part in solving the problems, sharing responsibility in making decisions on collective issues and deepening a well-functioning democracy.

This work will present the first phase of qualitative research that aims to determine the motivations, processes and objective and subjective factors that influence in the constitution and operationalization of grassroots sustainable consumption initiatives in Galicia (Spain). The investigation pretends to contribute to the understanding of bottom-up participatory processes and their educating and social empowerment role. The selected case-study is the “Galician network of conscious and responsible consumption”, which gathers twenty (non-profit) associations, cooperatives and responsible consumption groups distributed in the Galician region. Empirical data have been collected through qualitative research methods: a semi-structured questionnaire has been designed to guide the interviews with practitioners and key-actors. Participant observation and document review completed the data and primary results of the research.

The results demonstrate that responsible consumption is linked to personal values and worldviews shared by the practitioners. Besides, the participation within the network promotes pro-environmental behaviours that go beyond “green consumption”: implementing strategies of low-carbon emissions, waste management and enhancing sustainable local development and collective entrepreneurship. The Galician Network

of Conscious and Responsible Consumption is an example of grassroots initiatives that endow social learning, inside an open space of social participation, that enable community empowering dynamics, capacity building and self-efficacy perception. Those experiences show that the studied community-based initiatives are (still) minority networks of consumers and producers that may become “agents of change”, playing a notable role as creators of new cultural frames that turn into social referents for the rest of the society.

Environmental improvement in community development and its impact on residents' happiness, place attachment, and quality of life

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Community development has recently become a preferred approach in urban design. Instead of the traditional top-down approach, it works from the bottom up and encourages strong resident participation, thereby promoting local economic rebirth and cultural preservation. This approach was pursued in Taiwan in the 1960s with the help of UN experts, but public participation was limited due to the political circumstances at that time, and improvement of the physical environment was emphasized over community development. The Integrated Community Building Project of 1994 adopted the concept of social rebuilding as the essential spirit of community development. In 2005, the government put forth six dimensions in community development: industry development, social well-being, community safety, humanistic education, environmental aesthetics, and environmental preservation. Among various measures of community development, environmental improvement is a popular one, with examples such as space greening or reviving unused spaces with cultural and creative industries. Whether or not these measures meet residents' needs is a question worth exploring. The purpose of this study is to figure out how community development and related environmental improvement measures affect residents' happiness, place attachment, and quality of life.

To answer this question, six communities were investigated with 362 valid questionnaires collected and multiple regression applied. Before regression, reliability and validity of the items were first tested and factor analysis was conducted to extract the dimensions of environmental improvement measures in community development.

The results show community development contributes significantly to residents' place attachment and happiness and further enhances their quality of life. According to factor analysis, environmental improvement measures cover six dimensions: community greening, community service facilities, application of local resources, quality of local architecture, street furniture and paving, and attractive community spaces. Each influences residents' happiness, place attachment, and quality of life differently. Community greening, service facilities, street furniture, and application of local resources have the highest impact on residents' happiness. Service facilities, attractive community spaces, quality of architecture, community greening, and application of local resources affect residents' place attachment. Service facilities, street furniture, and community greening contribute to residents' quality of life. Designers and planners can use the findings as a guide to help them zero in on the corresponding measures of environmental improvement in their

pursuit of specific goals in community development.

Incorporation of residents' local knowledge into urban planning: an analysis through PPGIS Orla do Guaíba

Antônio Tarcísio Reis¹, Geisa Bugs²

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The purpose of this paper is to analyze the PPGIS Orla do Guaíba ability in capturing residents' local knowledge and incorporating it into urban planning. Cities are complex organizations and the task of planning and managing its growth necessarily involves a wide range of knowledge. A better understanding of a given territory born from the combination of residents' local knowledge and the technical processed knowledge of professionals. So, how to consistently analyze and use the residents' knowledge in urban planning is a crucial issue. The integration of this knowledge in the planning process is an aspiration for a more meaningful and visible public participation. However, according to the literature, we have not been able to address the perspective of the population in the urban planning in a systematic and consistent manner. In this sense, the Public Participation Geographic Information Systems (PPGIS) method appears as an alternative through which the audience uses GIS capabilities to participate by producing maps and/or spatial data that represent their perception of the urban space in question. Therefore, data from an experiment conducted in Porto Alegre, Brazil, called PPGIS Orla do Guaíba were collected, manipulated, analyzed and spatially represented into GIS. Information related to residents' perception about the quality of Porto Alegre waterfront were collected, given the desire and the need to revitalize this urban area and the lack of an established knowledge about the users' perception. A total of 156 users identified and evaluated 3,366 places on the map. The exploratory analysis, data visualization, and, ultimately, the map creation, allowed to describe the distribution of variables, and to identify the existence, or not, of patterns in the spatial distribution. The results show, for example, that residents' perception about the urban space was properly collected through the PPGIS method. According to residents' knowledge, positive and negative aspects of the Porto Alegre waterfront were quickly and efficiently identified. In addition, this specific knowledge representation in the form of maps enables a variety of complex information to be simultaneously viewed, allowing planners to transmit such information in a more accessible way to colleagues, decision makers, and to the public. Moreover, such maps have the potential to support future public debates on urban planning.

Key words: PPGIS, residents' local knowledge, urban planning.

Transformation of urban space: Right to the city and mega-events

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The right to the city can be understood as the right to access urban resources and to take part in the production and transformation of cities. Since these are a historical and human-environment interactions phenomena, it can be said that transforming their cities people

transform themselves. The city under the direction of capitalism becomes a commodity and a capitalism condition at the same time. At the Neoliberal stage of capitalism the urban land is understood as a great business opportunity, linking major projects to transform the space and the ideal of welfare and urban leisure. In this sense, the mega-events are a clear expression of that. These, in a short timeline, mobilize large numbers of people, causing changes in different sectors of society. In Brazil, the main mega-events are sports-related, such as the 2014 World Cup and the Rio 2016 Olympics. For their size, they generate several transformations, including changes in tourist services, the expansion of local economy, the increase in people moving through the city, the need for infrastructure and the urban restructuring, catalyzing forced internal migration. The set of transformations cause directly impacts on citizens' lives and on their everyday. In this sense, it is essential to consider the participation of these people in decision-making and implementing of these changes, which led us to investigate the perception of residents of Natal, in the state of Rio Grande do Norte, on changes in the city due to the World Cup 2014. The questionnaire developed for the study included evaluation questions about these changes and the strategy of Natural Semantic Networks (NSN), and was answered by 521 people, with an average age of 35 years ($SD = 13$), 51% female, and 41% with high level of education. As main results we found that 54% of participants agreed with the realization of the mega-event in the city, and the negative correlation between level of education and awareness about the changes ($p < 0.05$). We observed a significantly negative perception of changes taking into account the time after the mega-event. Participants positively evaluated changes related to tourism and the city's image and negatively those related to basic services such as transportation and health ($p < 0.04$). The decrease in ratings comparing the moments before and after the event points to the discredit on the legacy for the residents, something sustained by the meanings attributed to the mega-event. Through the NSN was identified neutral terms such as Football and Game, however, the terms Money, Theft and Deception stands out are highlighted. These results suggest that the high investment in the changes perpetrated by the government due to the mega-event did not bring satisfactory answers to the demands of the residents. We argue that these findings are related to the non-participation of the residents in the transformation of urban space, which points to a violation of what we mean by right to the city, something that seems to be common to projects carried out in contexts such as the mega-events.

The Legacy of 2014 World Cup: Users' perceptions of Gentrification Process

Adriana Portella¹, Gabriela Costa¹, Gisele Pereira¹

¹Federal University of Pelotas, Brazil

Preparation of countries to receive mega events as the World Cup can promote gentrification in different areas of the city. In Brazil, a country where 53.9 million of people are classified as poor by the national agency (IBGE), promote gentrification without a social concern is very threatening to population. Regarding this debate, this study aims to: investigate the perception of different user groups about 2014 World Cup in order to identify the legacy for the poor and its relation with human rights on removals. The specific objectives are: to analyse perception of people who (i) experienced the removal process, (ii) who have not experienced this process, and (iii) of planners of the City Council involved in the projects that provoke those removals; and to analyse the perception of children who

experienced the removal process, either on their own family, friends or acquaintances.

The methodology adopted is based in a case study approach, and the city of Porto Alegre in Brazil was selected for this investigation. Porto Alegre hosted four football matches and the projects intended to prepare the city to the event promote the removal of 32000 people from their homes. The majority of people were forced to move to periphery areas of the city, far away from their jobs, children's schools, family and friends. The following methods of data collection were adopted: (i) focus group with people removed from their homes; (ii) interviews with planners who work to local authority; (iii) mental maps with children who were removed from their homes; and (iv) questionnaires applied to people who live in areas not affected by the projects. Qualitative and quantitative (non-parametric statistic tests) methods were applied to this analysis. The total sample was 174 users.

The findings from the interviews with planners who work to the City Council demonstrate that they believe that removal of people from areas near the World Cup stadium was the best alternative, because those residents were moved to new houses with better infrastructure. However, the municipality ignores feelings of sense of place and neighbourhood as important issues to be considered. On the other hand, the focus group and interviewees with removed people indicated clearly that they did not want to leave their original homes, and they felt disrespected because the local authority did not promote a participative project regarding their relocations. The mental maps with children gave the richest results of this study showing that the majority of them felt disconnected with the mega event and traumatized with the forced removal due to projects related to the World Cup. The focus group discussion revealed many healthy problems caused by these removals as depression and stress. Unfortunately, the projects that caused all these situations were not concluded by the beginning of the event, and therefore were left incomplete by the local authority. In conclusion, the research shows that there was none legacy left by the mega event to the city and the poorest were the most affected by the lack of local authority planning and organization.

Parallel Session 15:

Symposium: Restorative environments: Developments in Theory and Application

A symposium with five sessions

Co-chairs: Terry Hartig & Henk Staats

Terry Hartig¹, Henk Staats²

¹Uppsala University, Sweden, ²Leiden University, Netherlands

The restorative environment concept aids understanding of the health and developmental values that people can realize with natural environments, and largely for this reason it has received increasing amounts of research attention over recent decades. Much of the work done on nature experience and restoration has been informed by one or both of two theories in environmental psychology, the attention restoration theory of Stephen and Rachel Kaplan and the stress reduction theory of Roger Ulrich. The two theories differ in a variety of ways; they refer, for example, to different antecedent conditions from which people can be restored, to different kinds of restorative process, and to different outcomes in which restoration can be recognized. The conventional set of theoretical narratives continues to inspire and guide research, but the development of the field over the years has also involved efforts to refine, elaborate and integrate these theories and to identify significant gaps in theoretical coverage. This development has been accompanied by expansion in the scope of potential application, as researchers and practitioners have recognized ways in which environmental supports for psychological restoration can be more effectively recruited in the pursuit of a wide range of societal functions, such as health care, education, and public health. Although much of this work has focused on encounters with nature, other research has also sought to expand the scope of environmental coverage, emphasizing that restorative environments are not necessarily natural and that natural environments are not necessarily restorative.

The present symposium provides a snapshot of the current state of affairs in the development of theory and research on restorative environments. It brings together talented researchers from diverse countries and disciplinary backgrounds to share some of their recent work. The symposium comprises five sessions, each with five contributions. The first two sessions will cover basic issues in theory and research, including critiques of extant theory, possibilities for theoretical integration, problems in conceptualization, environmental simulation techniques, and neglected topics such as the relative contributions of top-down versus bottom-up cognitive processes and the link between restorative experience and transcendent experience. The subsequent sessions will include contributions concerned with the ways in which qualities of the natural environment and attitudes toward the natural environment figure in restorative experience; with the variety of needs for restoration and restoration opportunities that can be found in the some of the settings in which people young and old do their daily work; and with the potential significance of contact with nature in different clinical or therapeutic contexts. Through much of this innovative and exciting new work, a recurrent theme still is the classic one - the concern for restorative effects of encounters with nature.

Key words: nature, restorative environments, psychological restoration

Symposium: Restorative Environments: Qualities of the natural environment, attitudes toward the natural environment, and restorative experience, part 3

Time: Wednesday, June 29 2016: 10:45 - 12:45

Location: Room A:B, The A-building

Symposium chair: Kayleigh Wyles & Terry Hartig

Kayleigh Wyles¹, Terry Hartig²

¹Plymouth Marine Laboratory, UK, ²Uppsala University, Sweden

Presentations:

Understanding the importance of nature: Does it influence how restorative an environment can be?

Kayleigh Wyles¹, Caroline Hattam¹, Mathew White², Sabine Pahl³, Melanie Austen¹

¹Plymouth Marine Laboratory, UK; ²University of Exeter, UK; ³Plymouth University, UK

Background – Spending time in nature has been found to have restorative benefits on people's subjective well-being (both how pleasant and how meaningful they find the experience; Ashbullby et al., 2013). A number of factors have been found to influence the degree of these benefits. For example, people felt more restored the higher their connectedness to nature was, after reporting on a recent visit to a natural environment (Wyles et al., under review). However, little is known about whether people's understanding of the natural environment can influence these well-being benefits. Does the awareness and appreciation of what nature provides to humans enhance these well-being benefits?

Methods – An English sample (n = 2,317) completed an online survey involving three key components. First, participants' perceived importance of the natural environment was examined by rating the extent to which the environment can be seen to provide a number of services to humans. Due to the specificity needed for these measures, the marine environment was chosen as a case study environment for this and the following measures. Second, subjective well-being outcomes of participants' most recent visit to the coast were collected by retrospectively rating their mood after the trip, how meaningful they found it, and how satisfied they were overall. Finally, in order to control for other factors known to influence well-being, connectedness to nature, demographics, and other characteristics of the visit (e.g., the activities undertaken, their companions, how far they travelled) were recorded.

Findings – Extending previous research (e.g., White et al., 2013; Wyles et al., under review), we examined the influence of this perceived importance on well-being independently but also in relation to these other known influential factors (e.g., visit characteristics,

demographics, and connectedness to nature). Participants' perceptions of what the environment provides society were found to be a key predictor of well-being, as subjective well-being was greater for those who perceived a greater awareness and appreciation. Whilst other factors were also associated with the well-being outcomes (e.g., well-being scores were greater for females, people who go with adults compared to alone, and who are more connected to nature), these perceptions remained to be a significant predictor.

Conclusions – These findings indicate that there is a novel relationship between well-being and understanding the importance of nature. Whilst additional work is necessary to explore this relationship further, it could provide a useful mechanism to help heighten these positive well-being outcomes (e.g., providing people with information whilst in the environment).

References –

Ashbullby, K. J., et al. (2013). The beach as a setting for families' health promotion: A qualitative study with parents and children living in coastal regions in Southwest England. *Health & Place*, 23, 138-147.

White, M., P., et al. (2013). Feelings of restoration from recent nature visits. *Journal of Environmental Psychology*, 35, 40-51

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Relaxing fish or floating litter? Exploring the effects of abundance and diversity of fish and marine litter items on restorativeness in sub-aquatic scenes

Deborah Cracknell^{1,2}, James Francis², Mathew White³, Sabine Paul²

¹National Marine Aquarium, UK; ²Plymouth University, UK; ³University of Exeter Medical School, UK

Exposure to benign natural environments, even 'managed' settings such as urban parks, can have positive effects on people's health and well-being. Although previous research has suggested that these benefits may be greater in areas with higher species richness, the role of species abundance in well-being outcomes is less widely investigated. Public aquariums can also provide a setting in which 'managed' nature can positively affect human health, and evidence suggests that these benefits are also influenced by the biological content of the exhibit, with greater benefits (e.g. more positive mood) being experienced at greater animal stocking levels (Cracknell et al., 2015). Previous studies, however, fail to establish whether people are more influenced by species richness, the abundance of animals, or both. Using the commonly employed technique of asking people to rate photographic images, we investigated people's evaluations of, and emotional responses to, a series of nine images of marine environments, in which species richness and abundance were carefully controlled (Species richness: High/Medium/Low; Abundance: High/Medium/Low). Questions included: "How healthy do you think this habitat is?"; and "How calm does this photo make you feel?". Images were rated on a 1-10 scale, i.e. "Not at all" (1) to "Extremely" (10). In order to exclude the possibility that people simply just prefer 'more of anything', as was suggested by a reviewer of our previous work, the nine marine species images were paired with nine images of another common feature of marine environments: litter. Animal and litter items were matched on approximate size, colour and habitat location. As expected, habitat

evaluation found that images containing marine animals ($M = 7.58$, $SE .200$) were rated significantly more representative of a healthy habit, $F(1,44) = 634.50$, $p < .001$, than images containing litter ($M = 1.85$, $SE .111$). With regard to emotional responses, images containing marine animals were consistently rated more positively than those containing litter: marine animals made people feel better, calmer and more restored. In contrast, litter images made people feel worse, angry and depressed. Richness and abundance had mostly additive, independent effects for both animals and items of litter. For instance, a high variety/abundance of marine animals ($M = 8.11$, $SD 1.79$) was rated more calming than a low variety/abundance of marine animals ($M = 5.89$, $SD 1.79$). Overall, these findings suggested that both variety and abundance of things to see are more important, with a positive effect for marine animals and a negative effect for litter items. So, more fish and more varied fish are better for restoration, and equally more litter and more varied litter undermine restoration. In conclusion, healthy biodiverse environmental scenes have psychological benefits whereas scenes that lack biodiversity or contain signs of degradation undermine psychological benefits. With recent suggestions that real and virtual aquaria can be used in healthcare settings, investigating the stocking of aquaria may help to establish the 'optimum' conditions for relaxation and general well-being.

Key words: Aquarium, well-being, biodiversity.

Neural activation in response to natural and built scenes with and without aquatic elements

Mat White¹, Shanker Venkatasubramanian¹, Steven Graham¹

¹University of Exeter Medical School, UK

Many people feel less stress in and around 'natural' (e.g. woodlands, fields) compared to 'built' (e.g. buildings, roads) environments. Extending previous findings of differential brain activation when viewing images depicting natural versus built scenes, we investigated the impact of aquatic content (e.g. canals, coastal settings) in both natural and built scenes, and controlled for the potential confounds of scene preference and image complexity. Twenty-six healthy adult participants viewed images depicting scenes of natural and built environments with and without aquatic elements, while undergoing event-related functional neuroimaging. Although our initial findings replicated the statistically uncorrected results of earlier studies, when appropriate statistical thresholds were applied only a subset of these activated regions remained significant. Among these remaining regions, reduced activity in visual processing and attentional control (default mode) networks was associated with scenes depicting natural and aquatic environments. Although a subset of visual processing regions were affected by scene preference and image complexity, the main results were independent of these confounds. The findings suggest that natural and aquatic environments place lower sensory and attentional demands on the human brain. This may help explain their association with positive effects relative to built or non-water environments. The implications for urban planning are discussed.

Relationships between amount of nature in residential areas and feelings toward nature

Seiji Shibata¹

¹Sagami Women's University

Introduction

It has been shown in several studies that people's "nature connectedness" is positively associated with their contact with nature. This suggests that people who have a greater amount of nature in their residential area would have stronger nature connectedness. To examine this, this study collected data on the extent of nature in people's environment and their feelings toward it with a nationwide online survey of the Japanese population (n = 529).

Methodology

Feelings toward nature were assessed with a newly developed 20-item 7-point Likert-type scale containing five subscales: restorativeness, oneness, mystery, care, and aversion. Data on the amount of nature in their current environment and the environment in their early childhood were collected with 5-item, 7-point Likert-type scales, where they were asked to evaluate the amount of green spaces, roadside trees, gardens/flowerbeds, and forests/farmlands respectively.

The study also used the national land numerical information provided by the Ministry of Land, Infrastructure, Transport and Tourism, Japan to assess the relationship between people's nature connectedness and the amount of green space in their residential area. The amount of green space for each participant was calculated as the occupancy ratio of the total area of forests, farmlands, and natural parks within a two kilometer radius of their residence with a geographic information system (GIS). Also, the occupancy ratio of urban parks in their residential area (two km radius) was calculated using the GIS. The latitude–longitude coordinate of their residence was estimated by the ZIP code geocoding.

Results

The data were then put into a structural equation model (SEM) to examine the relationship among them. The model was revised according to the modification index and the indices of the model fit for the final model were CFI = .924 and RMSEA = .065.

The final model showed that the paths from the amount of nature in participants' current environments to each of the five factors of feelings toward nature were significant. Also, the path from the extent of nature in their childhood environment to oneness, and those from their age to the amount of nature in the current environment, restorativeness, oneness, and aversion were significant. All significant paths, except for the path from the amount of nature in the current environment to aversion, had positive influences.

Although the amount of green space demonstrated a significant positive path to the amount of nature in participants' current environments, it showed no significant influence on any of the five factors of feelings toward nature. The amount of urban park in the residential area did not show any significant paths to any other variables or factors.

Conclusion

The results of the SEM analysis showed that the greater amount of nature people have in their residential environment affects their feelings of oneness with, and care for the natural environment. The results supported the supposition that people who have a greater amount of nature in their residential area have stronger nature connectedness.

Restorative effects of visiting botanical gardens: A different way to stay in touch with 'urban nature'

Giuseppe Carrus¹, Massimiliano Scopelliti², Angelo Panno³, Stefano Mastandrea¹, Giovanni Sanesi³

¹Roma Tre University, Italy; ²The Libera Università Maria Ss. Assunta, Italy; ³University of Bari Aldo Moro, Italy

This paper is submitted as part of the Symposium on "RESTORATIVE ENVIRONMENTS", convened by Terry Hartig and Henk Staats. Over the years, botanical gardens have responded to the interests of forestry, agriculture, botany and horticulture science. Nowadays, many botanical gardens are an important setting for urban dwellers, providing information and promoting awareness on environmental issues such as ecosystems functioning, biodiversity conservation, climate change. Despite the high number of botanical gardens in the world, and the extensive literature on the restorative experience of getting in contact with nature in urban settings, there is still limited psychological investigation on the actual and perceived benefits for visitors of botanical gardens. This study aims at exploring the beneficial effects of visiting botanical gardens, as specific examples of urban green spaces that are characterized by a high level of biodiversity; we also investigate how these beneficial effects may differ across categories of visitors. A field study assessed the self-reported benefits and subjective well-being deriving from visiting four botanical gardens located in different cities of Italy (Bari, Florence, Rome and Padua). A self-report questionnaire including measures of a) perceived restorativeness of the setting, b) perceived physical and psychological benefits during the visit, and c) self-reported well-being after the visit, was administered to 127 citizens, during a visit to the botanical garden of their city of residence. Results of bootstrapping mediation analyses, using the INDIRECT procedure (Preacher & Hayes, 2008), show a positive effect of the perceived restorativeness of botanical gardens on self-reported well-being, mediated by the physical and psychological benefits experienced during the visit. Furthermore, a moderation model tested using the PROCESS macro (Hayes, 2013), revealed that the association between perceived restorativeness and well-being varies as a function of respondents' family status. Perceived restorativeness was significantly and positively related to well-being for single and couples without children, but this effect approached to zero as the household composition included children. The implications of these findings are discussed.

Parallel Session 16

Symposium: Measuring perceived safety in the urban context: Challenges and new developments

Time: Wednesday, June 29 2016: 10:45 - 12:45

Location: Room A:C, The A-building

Symposium chair: Aslak Fyhri

Aslak Fyhri¹, Sunniva Meyer¹, Johan Rahm², Jim Uttley³

¹Institute of Transport Economics, Norway; ²Lund University, Sweden; ³University of Sheffield, UK

There are several ongoing projects in Norway and Sweden where the aim is to develop and apply new methods for assessing the effects of interventions to improve the public's perceptions of safety and security in the urban context. Typical interventions are improved lighting, vegetation plans, and innovative street furniture placements and types. New technological developments and lessons learned from Big Data initiatives allow for measuring perceived safety with larger sample sizes either directly or through proxy measures. The symposium will bring together researchers from these projects but will also open for contributions from other research groups, in order to present both general knowledge and specific empirical results from the projects.

Presentations:

Perceived and real dangers –combining Big Data with Big Data to compare perceptions of security with crime records

Aslak Fyhri¹, Beate Elvebakk¹, Sunniva Meyer¹

¹Institute of Transport Economics, Norway

In order to meet public demand for safe local communities, and also to plan their crime abatement activities, several cities in Northern Europe have in the last years implemented large scale annual security audits. In Oslo the so-called security index is composed of two data sources, the police register of reported crime and a population survey on victimization of crime and experience of safety in the neighborhood. There are several challenges with the approach as a basis for a planning: low response rate; too coarse geographical resolution; no information on the factors underlying the perceptions of insecurity. There is a need for research that can help to develop a better understanding of how insecurity, risk and criminal incidents in city centers are linked to different geographical areas and variations in mobility behavior throughout the day. The current project utilizes a combination of geographically oriented data sources to obtain for the first time a "threat" map for a whole city that not only reports number of threatening incidents, but risks of such incidents. Collection of data is done by a designated smartphone app, a map based community survey and Big Data from a major telecommunication company. This novel data approach will ensure a closer connection to the threat context in time and location and through that improve the quality of the collected data through better accuracy and potentially better response rate and

higher validity. The piloting of all three data collection procedures will take place in one of Oslo's 27 local boroughs (with 30 000 inhabitants) in February 2016, and initial results will be presented at the symposium. Focus of the analysis is on the temporal and geographical distribution of criminal events and how these are related to the public's perceptions about risk.

Key words: Perceived crime risk; Neighbourhood, Crime geography, public spaces

The presentation is intended as part of the suggested symposium "Measuring perceived safety in the urban context: challenges and new developments"

Babies and bathwater - Measuring the effects of physical security against terror on total perceived personal security by the use of implicit and explicit measures

Sunniva Meyer¹, Aslak Fyhri¹

¹Institute of Transport Economics, Norway

Outdoor lighting contributes to visual accessibility and mobility, and increases the amount of walking after dark for all age groups. Furthermore, the presence of outdoor lighting improves the overall neighborhood quality and has been shown to increase pedestrians' perception of safety. Today the market faces a rapid increase in energy efficient light sources such as Light Emitting Diodes (LED). Little is however known about how the introduction of LED applications may influence pedestrians' perception of the urban environment. The influence of outdoor lighting on the perception of safety has previously been studied either as a function of the light source or by treating lighting as an environmental factor, in addition to the prospect, concealment and escape factors. The present study aims to further the understanding of how different LED applications influence critical pedestrian tasks including the ability to identify facial expressions, an ability relevant for the task of judging the potential threat of an approaching pedestrian and the perceived safety of the environment.

In a full-scale laboratory, three lighting applications (CDO-ET, CCT: 2890, CRI: 81, S/P: 1.25, EHM: 18lx; LED₁, CCT: 2912, CRI: 75, S/P: 1.22, EHM: 28lx; LED₂, CCT: 3810, CRI: 75, S/P: 1.48, EHM: 32lx) were evaluated by 89 participants in a within-subject design. The sample included one group of young people (N: 43, aged 19 - 35 years, mean age: 22, 47 % female) and one group of elderly people (N: 46, aged 62 - 77, mean age: 69, 56 % female). The lighting applications were presented in a randomized order and evaluations were made individually by the participants. Repeated measures ANOVA revealed that the third lighting application (LED₂) significantly better supported the three visual tasks administered; Sign reading (p: .000, r: .61), identification of facial expressions (p: .000, r: .38) and obstacle detection (p: .000, r: .66). The LED₂ was however also perceived as brighter (p: .000; r: .03) and less pleasant (p: .000; r: .44).

Currently the two LED lighting applications are further evaluated in field along a pedestrian path in an urban park in the city of Malmö, Sweden with the objective to identify associations between performance of the visual tasks and the perceived safety of the environment. The results will be discussed in relation to present standards for outdoor

lighting as well as guidelines for pedestrian friendly environments.

This paper aims to be part of the suggested symposium “Measuring perceived safety in the urban context: challenges and new developments”.

Outdoor lighting and the perception of safety

Johan Rahm¹, Maria Johansson¹

¹Lund University, Sweden

A key purpose of pedestrian road lighting is to ensure pedestrians feel safe (Fotios, Unwin and Farrall, 2015), encouraging them to walk with a sense of security after-dark. To provide appropriate road lighting it is therefore useful to understand the effect of lighting on the perceived safety of pedestrians. Previous research has traditionally used rating scales to assess how safe a pedestrian feels on a particular street, for example asking ‘How safe do you feel when you walk along this street at night?’ (e.g. Pena-Garcia, Hurtado and Aguilar-Luzon, 2015). This approach may be flawed in a number of ways. Asking for a rating forces a participant to make an assessment of something they perhaps would not normally consider (Fotios, Unwin and Farrall, 2015), and perceptions of fear and safety recorded in a survey may be a methodological artefact rather an empirical reality (Farrall et al, 1997). Data collected from rating scales may also be prone to range bias (Poulton, 1989) and the exact phrasing of the question being rated can influence the data collected due to framing effects (Schwarz, 2009). Perhaps most significantly, it is not clear whether responses given on a rating scale reflect actual behaviour – if a street is rated as feeling very safe, will this result in an increased likelihood of walking down that street after-dark, compared with a street rated less safe?

We are investigating three alternative methods for assessing perceived safety.

- 1) If poor lighting reduces perceived safety, this might result in an increase in calls made to the police for assistance. Previous research has suggested higher illuminance leads to fewer calls for police assistance (Quniet and Nunn, 1998).
- 2) If poor lighting reduces perceived safety, this might result in fewer people walking after dark. We propose to count the frequency of pedestrians on streets and use this as a behavioural measure. In doing so it is important to keep other variables constant and one option is to use the change to and from daylight saving (usually around March and October each year in Europe) to directly compare streets during daylight hours and after dark for the same period of the day, as has been done in work examining the role of ambient light in traffic accidents (e.g. Sullivan and Flannagan, 2002).
- 3) Using physiological rather than rating scale data to provide a more objective measure of perceived feelings of safety and fear. Increases in the Skin Conductance Response (SCR) are associated with feelings of anxiety and fear (Kreibig, 2010). Our proposal is to measure SCR whilst pedestrians walk different streets during the day and after-dark, and correlate this data with characteristics of the lighting on those streets.

Keywords: perceived safety; reassurance; road lighting

Measuring perceived safety after-dark – three alternatives to rating scales

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A multi-method approach to measure the effects on perceived safety of a landscape design intervention in an urban park

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Urban parks are important environments for recreational and transportation walking. However, fear of crime may restrict peoples’ benefits from use of these urban green spaces. Foster and colleagues (2014) showed that lack of perceived safety in parks constrained recreational walking, but that design initiatives could reduce the impact of fear of crime on walking. Landscape design that provides overview of parks is central in this regard, and vegetation type, density, height, and maintenance have been shown to influence perceived safety (Jansson, Fors, Lindgren, & Wistrom, 2013; Maruthaveeran & van den Bosch, 2014). Research on perceived safety has been criticized for relying on rating scales and single measures, which may confine people’s report of their experiences (Fotios, Unwin, & Farrall, 2015). There are also few studies using prospective designs in this research field.

In this study we develop and explore an environmental intervention in an urban park in Oslo. The park is located in an area dominated by block apartments, being an important area for recreation and thoroughfare for the local residents. The study is designed as a one-year study with pre- and post-intervention measurements of perceived safety. Using a multi-method approach and an experimental design, we intend to contribute methodological insights for applied research on perceived safety.

A pathway in the park is chosen as main area of study. First, photos of the existing pathway are manipulated in an experimental study to test the effect of height of vegetation and visual accessibility on perceived safety. The pathway will undergo changes in vegetation management guided by our findings. Second, a “safety-walk” is organized as an experimental field study using non-residents. Three places in the park are assessed including the pathway, with regard to perceived safety, pre- and post-intervention. Third, an on-site survey with users of the park, measuring perceived environmental qualities and its relation to perceived safety before and after the intervention, complements the basis of the study. Finally, walking interviews including use of a cognitive map-task, indicating places of like and dislike, will be conducted. Here the residents’ experiences of the park with regard to perceived safety, use and implications for quality of life will be collected.

Results from the study will be presented at the conference with special regard to methodological issues in applied research on perceived safety.

Foster, S., Giles-Corti, B., & Knuiiman, M. (2014). Does Fear of Crime Discourage Walkers? A Social-Ecological Exploration of Fear As a Deterrent to Walking. *Environment and Behavior*, 46(6), 698-717.

Fotios, S., Unwin, J., & Farrall, S. (2015). Road lighting and pedestrian reassurance after dark: A review. *Lighting Research & Technology*, 47(4), 449-469.

Jansson, M., Fors, H., Lindgren, T., & Wistrom, B. (2013). Perceived personal safety in relation to urban woodland vegetation - A review. *Urban Forestry & Urban Greening*, 12(2), 127-133.

Maruthaveeran, S., & van den Bosch, C. C. K. (2014). A socio-ecological exploration of fear of crime in urban green spaces - A systematic review. *Urban Forestry & Urban Greening*, 13(1), 1-18.

One small step beyond prospect and refuge: Incorporating anxiety-related variables in models of environmental safety perception

Antal Haans¹

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One barrier in studying environmental safety perception is that the concept of sense of safety is ill-understood and defined differently by different authors. Sense of safety is often equated with fear of crime. Fear requires the perception of an identifiable threat in the immediate environment, but in most pedestrian situations threats are largely unseen and dormant. Sense of safety thus, in our opinion, is best defined in terms of anxiety which results from the perception of potential threats. With dormant and potential unseen threats, a person must judge the safety of a situation on the basis of the available, but often ambiguous, information in the environment. Research aimed at identifying the relevant physical cues that make an environment to be judged as safe have mostly been based on Kaplan and Kaplan's preference-matrix model, or Appleton's prospect-refuge theory; the latter of which in general provide most consistent results. This research demonstrates that environmental qualities that increase prospect, and / or reduce concealment and entrapment increase a pedestrian's sense of safety. Models based on Appleton's functionalist theory, however, do not link safety-related information processing to the concept of anxiety, although recent studies have demonstrated that trait anxiety moderates how heavily people weigh prospect-related information. In the present study, we made a first but small step to extend models based on Appleton's theory with two psychological concepts linked to anxiety: predictability and perceived control. We expect environments that are perceived to be unpredictable (e.g., because prospect is low) or that offer little control over current or impending social situations (e.g., because entrapment is high) to be perceived as less safe (and thus more prone to elicit anxiety).

The aims of the present study were (a) to develop and test a brief 6-item self-report instrument to assess the predictability and perceived control of urban environments, and (b) to test whether the effects of prospect, concealment and entrapment on perceived environmental safety are mediated by predictability and perceived control. For this purpose, a convenience sample of 45 participants rated 100 photographs of nocturnal urban environments on predictability and control. These evaluations were subsequently combined with an existing dataset containing evaluations of the same stimuli on prospect, concealment, entrapment, and safety.

Confirmatory factor analysis using structural equation modelling revealed that we did not succeed in clearly differentiating between the two variables, with the control items also loading on the predictability variable. In addition, we found an unexpected high correlation between the two latent variables of $r = .91$ despite these being evaluated by two different groups of participants. In a second series of structural equation models, we tested whether the effect of prospect, concealment and entrapment on safety was mediated by predictability and perceived control. Despite limitations in the measurement of the various environmental appraisals, the results provided preliminary evidence of full mediation.

Parallel Session 17: Supportive outdoor environments for elderly, part 1

Time: Wednesday, June 29 2016: 10:45 - 12:45

Location: Full Scale Lab, The A-building

Session chair: Caroline Hägerhäll

Presentations:

Perceived benefits and environment preferences of walking in urban parks reported by senior users

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As a type of easily accessible and low-cost moderate physical activity, walking can help seniors to minimize the physiological effect of aging, prevent chronic diseases (Chodzko-Zajko et al., 2008), and improve strength and agility, thus eventually improve quality of life (DHHS, 2000). Urban parks have been identified as important built environments that encourage physical activities (McCormack et al., 2010), they are also easily accessible settings for seniors to engage in walking. However, urban park environment characteristics that may relate to senior walking have not been fully addressed. Through a qualitative approach, this study aims at exploring the perceived benefits and environment preferences of seniors when they engage in leisure walk within urban parks. This study was conducted in two neighborhood parks located in Beijing, they are Rendinghu Park and Yuetan Park.

In total, 46 interviews were conducted and method of content analysis was applied in the analysis process. The results indicate that around 70% of the senior participants visit the park once everyday, and around 10% of the seniors visit the parks twice a day. Seniors believed that walking in urban parks can bring them many benefits, which could be categorized into four main aspects: 1) Physical health benefits, 2) Socialization benefits, 3) Psychological health benefits, and 4) Safety and other benefits. Physical health benefits are the most important benefits of walking in urban parks identified by seniors. Twenty-three (92%) participants in Rendinghu Park and 17 (81%) participants in Yuetan Park mentioned that walking in the park is good for their health, such as good for sleep, appetite, digestion, longevity, and help the body remain active. The interviews indicate that senior visitors have their daily routine route for walking, and they tend to walk along similar pathways everyday. Many seniors walk in "circles" to keep track of their walking distance.

Our analysis indicates that several important environment factors may influence seniors walking in the parks. In general, senior users prefer pathways that are with even pavement, with benches, without slope, and have shade. More importantly, senior users prefer natural elements in the parks. They prefer to walk where are with flowers, trees, water and landmarks around. Nineteen (76.0%) respondents in Rendinghu Park mentioned they like water in the park. 12 interviewees (48.0%) in Rendinghu Park and 17 (81.0%) seniors in Yuetan Park said they prefer pathways with flowers along them. In addition, pathway configurational attributes also can impact seniors walking and seniors prefer to

use pathways that are connected to other pathways. Four (19.0 %) seniors in Yuetan Park said they did not use some pathways because the "northern part is not suitable for walking, and pathways are not in a circle." These findings identify urban park environmental characteristics that may encourage seniors walking, which can provide helpful implications for park design practices to build park settings that are supportive of seniors walking.

Designing an ageless and social neighborhood community

Nichole Campbell¹, Daejin Kim²

¹University of Florida, USA

This study's purpose was to identify neighborhood and social space design attributes supporting older adult resident needs, with particular focus on social needs. A New Urbanist community was chosen for this case study research because this neighborhood type is characterized by walkability and an enhanced sense of community, driven by high-density, mixed-use community design strategies. Even though these attributes make New Urbanist communities arguably the most senior-friendly mainstream neighborhood type in the U.S., many seniors living in these communities find their independence challenged.

One key obstacle to independence occurs when driving privileges are lost, due to deteriorating eyesight or other common, age-related changes. Since New Urbanist neighborhood developments have a reputation for supporting walkability, this contrast indicates there is still a pressing need for mainstream neighborhoods to better meet seniors' needs.

Additionally, it is commonly reported 90% of older adults prefer aging in place even if their needs change. Aging in place means successfully living in a family home rather than moving to an age-restricted community or institution. This prevalent desire to age in place indicates there is consumer demand as well as a pragmatic push to improve mainstream housing communities for seniors.

In addition to meeting basic physiological needs, research indicates quality social interaction is associated with positive health and well-being benefits, particularly for older adults. In this, design supporting social relationships plays an essential role. To inform neighborhood design strategies to better support physiological and social needs for seniors, it is critical for research to identify those environmental design factors that are most supportive in meeting physiological and social needs throughout the lifespan. To identify these factors, a North American New Urbanist case study community was examined. This study asked the research question:

What attributes of New Urbanist neighborhood and social space design attract and support older adult residents' social needs for residents aging in place?

To answer this question, 4 focus groups were conducted with 29 case study community residents aged 65+. Each focus group was asked questions developed from previous research about neighborhood and social space design and use. As the focus group interviews were the main data source for this study, these were professionally transcribed

then analyzed using Keyword-in-Context (KWIC). From this analysis, attributes attracting and helping maintain older adult's satisfaction with the neighborhood and the social spaces within it were ascertained. These factors included 20 neighborhood factors and 20 social space factors. For both the neighborhood and the social space level, identified factors were organized according to four factor categories:

- Location
- Social
- Design
- Programmatic.

This study's findings are useful for several groups. Design practitioners may use this information to guide alterations to existing neighborhood and social space designs to better support social needs of older adults. From a research standpoint, these findings open discussion of factors playing a role in health and aging in place.

Older people's experiences as urban pedestrians: A qualitative study

Ian Walker¹, Stephanie Calley¹, Charles Musselwhite²

¹University of Bath, UK; ²Swansea University, UK

Older people represent a growing proportion of the population in many countries. Active mobility can be an important provider of health and wellbeing for this group. But older pedestrians' experiences of, and relationships with, the built urban environment are not well understood. Better understanding these issues would help planners and governments design and operate urban spaces in a way that facilitates walking for older people. We carried out a qualitative study, interviewing 16 people from a small city in the United Kingdom. Analysis of the interview transcripts revealed three overarching themes in older people's discussions about urban walking: environmental issues (the dangers of motor traffic, the provision of safe spaces to walk and pedestrian crossings), interpersonal issues (fear of crime, annoyance at outsider groups such as tourists), and individual issues (problems arising from poor vision, variations in experience linked to different trip purposes). The analysis also revealed three common strategies that the participants used to address these issues: strategic route choices, mixing travel modes, and a strong avoidance of walking during periods of darkness. The analysis provides useful initial insights that should help planners and policy makers facilitate more healthy active travel amongst older pedestrians.

'Seniors Walkability Audit in Neighbourhoods'(SWAN) - Development of an user-led observation tool to evaluate neighbourhood design features that fosters mobility in older adults in urban neighbourhoods

Atiya Mahmood¹, Habib Chaudhury¹, Frank Oswald², Nadine Konopik²

¹Simon Fraser University, Canada; ²Goethe University Frankfurt, Germany

The environment of urban neighbourhoods has a crucial role in fostering, supporting and maintaining mobility and well-being in older adults to age-in-place. Research indicates that

engaging in regular physical activity such as walking has a positive impact on cardiovascular health, well-being, and other health variables for older adults. Older adults tend to walk mostly in and around their neighbourhoods for both recreational and utilitarian purpose. Documentation of barriers and facilitators in their neighbourhood built environment by older adults themselves can enable them to vocalize and advocate their needs for appropriate neighbourhood design to support mobility. In this study, we developed an easy-to-use user-led neighbourhood environmental audit tool, "Seniors Walkability Audit in Neighbourhoods" (SWAN) to collect built environmental data in five domains: functionality, safety, destinations, aesthetics and social aspects. This is a micro-level neighbourhood built environment audit tool appropriate for use by non-academic end-users or knowledge users (e.g., older adults, seniors' service providers, stakeholders in communities) as a method to systematically evaluate the walkability of neighbourhoods to become informed partners in neighbourhood physical planning and decision-making processes.

Germany has one of the most rapidly growing older adult population [27% (2011)] in the European Union. Lessons learnt about neighbourhood design and aging in place in Germany has relevance for use of this tool in North American context. The SWAN tool was pilot tested with 24 older adults in three neighbourhoods in Frankfurt, Germany. Inter-rater reliability among the paired participants showed good agreement across 90% of the items on the tool. Data from pilot data on micro-environmental features (e.g., sidewalk quality, street lighting) showed that each neighbourhood had a combination of supportive or deterrent environmental features for physical activity in older adult. This participatory process engages older adults to improve their communities to support aging in place and improve health outcomes.

Staying mobile in the city in the face of climate change

Susanne Penger¹, Frank Oswald¹, Kerstin Conrad², Dirk Wittowsky²

¹Goethe University Frankfurt, Germany; ²ILS-Research Institute for Regional and Urban Development gGmbH, Germany

Western societies are simultaneously facing major challenges, such as urbanization, climate change and demographic change. On an individual level remaining mobile while ageing in place is a basic concern for most people in their later life. On a societal level communities have to be prepared to maintain social participation and well-being of older citizens in the future of hot summers and dense inner city districts. The interdisciplinary autonomMOBIL research group focuses on the study of multiple interactions between the physical out-of-home environment (climatic, noise and air pollution) and individual needs and expectations of older adults from different scientific disciplines (geriatrics, psychology/gerontology, mobility research, urban planning). This presentation emphasizes on the interplay of psychology and mobility research to disentangle out-of-home mobility from a person-environment interaction perspective. The aim is to analyze interdependence between constraining / promoting factors for mobility in the person (e.g., attitudes) and in the physical environment (e.g., barriers). Another aspect is to understand how they might affect health and well-being of community-dwelling older adults in the city of Stuttgart, Germany. We developed an instrument for the attitude of mobility-related behavioral flexibility as well as adapted existing instrument to comprehensively assess climate experience and related adaptation strategies in different climate conditions. With respect to mobility-related

behavioral flexibility, data was drawn from N = 331 participants of an online pilot study (21 to 87 years old). Factor analyses revealed three main flexibility factors: (1) flexibility with regard to challenges in the environment (e.g., "If there are obstacles in my way, I can handle it") (2) flexibility with regard to challenges within the person (e.g., "If sometimes I don't have the ability to walk long distances, I divide it into several shorter pieces"), (3) preferences for routines and habits (e.g., "Routines are important for my everyday errands"). As climate experience (cognitive 11 items, affective 17 items) and related adaptation strategies (20 items) are concerned older participants (65+) perceived more stress and stated more adaptive behavior due to heat than younger participants. Whereas findings for low temperature show that younger participants perceived more stress than older persons. The optimized instrument will be assessed in the field study. We currently conduct a further survey in the city of Stuttgart. Based on a developed population and climate index two research settings representing geographically and climatically different urban areas have been identified and selected for the survey. Data will be reported from face-to-face interviews with community-dwelling elders aged 65 years and older at their homes. Preliminary data on out-of-home mobility (from a seven days trip diary) in relation to personal (e.g. perceived health, resources) and environmental factors (household composition, accessibility) will be presented. In general, the study will contribute to a better understanding of daily urban out-of-home mobility and its complex interaction with climate factors as well as personal mobility- and climate-related attitudes in late life. Ultimately, the findings will be used to further investigate and ensure sustainable use and acceptance of urban planning measures.

Parallel Session 18

Symposium: Motivations for committed action in biodiversity issues

Time: Wednesday, June 29 2016: 10:45 - 12:45

Location: Black Box, The A-building

Symposium chair: Ferdinando Fornara

Ferdinando Fornara¹, Marina Bonaiuto², Luuk Knippenberg³, Juha Hiedanpää⁴

¹University of Cagliari, Italy; ²Sapienza University of Rome, Italy; ³Radboud University, Netherlands, ⁴Natural Resources Institute Finland (LUKE)

This symposium will report some theoretical reflections and empirical outcomes related to the BIOMOT Project, which was funded under the 7th Framework Programme of the EU. The aim of the Project was to challenge the dominance of the (limited) economic approach to biodiversity-oriented choices. Such a challenge was carried out by investigating, from a multidisciplinary perspective, the in-depth motivations and arguments underlying the committed action for biodiversity and nature preservation at both societal and individual level.

The Project was operational from September 2011 to August 2015, and realized by eight partners in seven EU countries: Radboud University and Leiden University (Netherlands), Greifswald University (Germany), Centro Interuniversitario di Ricerca in Psicologia Ambientale (CIRPA, Italy), ZRC-SAZU (Slovenia), University of Manchester (UK), University of Eastern Finland (Finland), and Université Catholique Louvain (Belgium).

Building on a common framework of theories, model and constructs derived from different disciplinary domains (i.e., economics, philosophy, political sciences, and social psychology), BIOMOT Project developed a set of connected studies in order to reach its goal. Such studies used different approaches and methods, including face-to-face "life story" interviews, on-line questionnaire surveys, Q-sorts and card sorts. The choice of actors to be surveyed was made on the basis of their fit with structured a-priori categories (e.g., action domain, kind of action, etc.).

What predominantly emerged from the analysis and interpretation of findings are the importance of childhood as the locus of reconnection and the establishment of the meaning of nature, the feeling of "homecoming" associated to nature, the high level of self-determination of the actors, the substantial invisibility of economics as a motivator for action, the role of mentors for the early experiences of nature, the primacy of "eudemonic" (contrasted to "hedonic") motivations to act toward nature, the importance of biospheric values and moral norms as direct predictors of such a "committed" action specifically towards biodiversity, and more generally for nature.

In particular, the presentations of this symposium will focus on some of the main outcomes of the "life story" interviews and of the questionnaires survey, as well as on a specific case study and a philosophical analysis about the overall findings of the Project. More specifically, the symposium will include the presentations by Marino Bonaiuto et al. ("The biodiversity protection quest in life histories"), Ferdinando Fornara et al. ("Predicting individual action toward nature and biodiversity: The role of values, beliefs and norms"), Juha Hiedanpää ("Becoming innovator, innovating habits: Analysis of fifteen successful nature entrepreneurs in Finland"), and Luuk Knippenberg ("Committed action for nature:

The quest for meaning”).

Presentations:

The Biodiversity Protection Quest in Life Histories

Marino Bonaiuto^{1,2}, Erica Molinaro^{1,2}, Lavinia Cicero^{1,2}, Flavia Bonaiuto⁴, Ferdinando Fornaro^{3,2}, Massimiliano Scopelliti^{2,5}, Mirilla Bonners²

¹Sapienza University of Rome, Italy; ²CIRPA, Canada; ³University of Cagliari, Italy;

⁴Psychologist, Italy; ⁵Libera Università Maria SS. Assunta, Italy

The aim is to identify which are the motivational forces that can drive people in fully committed actions for nature and biodiversity protection, according to the general aim of BIOMOT EU 7th FP project. To reach this aim, about 215 semi-structured history of life interviews were conducted and different theoretical frameworks were considered: one originating from the tradition of Peak Experiences (Maslow, 1964), i.e. the Environmental Epiphanies (Vining & Merrick, 2012) (E3); another one focusing on the study a general motivational force, i.e. the Quest for personal significance theory (Kruglanski et al., 2009) (QS); and, finally, one focused on significant past experiences, and in particular on the role of the Early Experiences (E2) lived during the childhood (i.e., Tanner, 1980; Chawla, 1998; Chawla, 1999). We coded and analyzed the interviews following a phenomenological approach (Stewart & Mickunas, 1990), combined with a process of open coding (Strauss & Corbin, 1990).

First of all, in order to verify the role of E3 (i.e., environmental experiences recalled as a turning point) in motivating to act for nature and biodiversity protection, we coded and analyzed 143 interviews. The analyzed sample is characterized by two groups of actors: highly motivated actors for nature protection (HM-AN) (N=74) and not highly motivated actors for nature protection (Others) (N=69). We coded five kinds of E3 following the categorization of Vining and Merrick (2012): Aesthetic, Intellectual, Realization, Awakening, Connectedness. The analysis shows that there are differences in the number and the kind of epiphanies lived and recognized by the two groups of interviewees (HM-AN vs. Others). Secondly, we investigate and integrate the above-mentioned three main frameworks - i.e., E2, QS, E3. The analyzed sample had been prepared taking care of representing two groups of actors: HM-AN (N=25) and “Others” (N=20).

First of all, we identified the social source of influence, namely the role of persons who could influence the interest of the HM-AN person (vs. Others) for nature. Then, we examined the level of the environmental source of influence, namely the significant environmental experiences. Moreover, we integrated the role of Negative and Positive Environmental E3 in the process of development of the actions for nature. Finally, we identified all the main psychological processes, the meaning of life included (the basic motivation in the QS), activated in the HM-AN by the two previously mentioned sources of influence (social and environmental experiences). We mapped all the above mentioned constructs (which are relevant in the three adopted models) along three main life periods (0-15yrs; 15-25yrs; 25yrs until now) obtaining a comprehensive model that describe the development of the interest in, and the committed actions for, nature and biodiversity protection.

Predicting individual action toward nature and biodiversity: The role of values, beliefs and norms

Ferdinando Fornaro¹, Marina Bonaiuto², Massimiliano Scopelliti³, Erica Molinaro², Mirilla Bonners²

¹University of Cagliari, Italy; ²Sapienza University of Rome, Italy; ³Libera Università Maria SS. Assunta, Italy

The aim of this piece of research is to detect the main social-psychological drivers of people who are highly motivated to act in favour of biodiversity and natural protection, according to the general aim of the Biomot EU 7th FP project. The theoretical framework is represented by the Value-Belief-Norm theory (VBN, Stern et al., 1999), the Theory of Planned Behaviour (TPB, Ajzen, 1991), and the distinction of different kinds of normative influence, both moral and social (injunctive and descriptive). VBN considers a sequential path that includes general values, concern for the environment, awareness of the consequences of action, ascription to the self of the responsibility for action, and finally moral norm as direct antecedent of behaviour. TPB considers the role of attitudes, subjective norms, and perceived behavioural control in the prediction of intention and behaviour.

The main objective of this study was to test a model developed on the basis of the reference theories.

An online questionnaire was developed in order to collect data measuring the theoretical dimensions under analysis, including values, norms, attitudes, and intention to act for nature and biodiversity.

Participants (N=183) were recruited in the seven European countries of the Biomot Project's partners. Most of them were involved in some biodiversity and nature relevant actions and/or achieved outstanding actions in nature-related or other areas. On the basis of the analysis of the qualitative material (i.e., interviews) collected in other studies of the Biomot Project, participants were distinguished in Highly Motivated to Act for Nature (HM-AN) vs. less motivated toward such action (Others).

Results showed that those highly-motivated to act for nature/biodiversity have significantly higher scores than the others (less motivated individuals) in most pro-environmental patterns, such as biospheric values, concern for nature, connectedness to nature, and environmental identity.

With reference to Motives and Behaviors for the protection of the environment, HM-AN people showed higher scores than Others on the motive Union and spirituality, and, among behaviors, Soft behaviours for the protection of nature, Disposition to connect to nature, Environmental behavior scale, Recycling, and Activism.

The tested SEM (Structural Equation Modeling) model confirmed the paths predicted by the VBN Theory. In particular, moral norm and biospheric value showed a direct impact on action toward nature/biodiversity, as well as perceived behavioural control, which is a TPB construct. On the other hand, the different kinds of social norms (i.e., injunctive and descriptive norm) showed only an indirect influence on action, via other dimensions.

In conclusion, social-psychological dimensions such as values, beliefs, and norms should be taken into account for campaigns aiming at fostering individual and community action toward the preservation of nature and biodiversity.

Becoming innovator, innovating habits: Analysis of fifteen successful nature entrepreneurs in Finland

Juha Hiedanpää¹

¹Natural Resources Institute Finland (LUKE)

Policies, instruments and other societal arrangements that motivate people to act for nature have been of short supply. Luckily, it is possible to find also motivating societal arrangements and not only those arrangements that are passivizing or detrimental to nature. The sources of such successful initiatives vary. Some motivating arrangements have been designed by administrators, some by concerned citizens, and some by venture entrepreneurs. My pragmatist starting point is that the initiators of those successful arrangements have been able to modify their operative environment (constituted by the legal, ecological, technological, social and cultural features) to afford new individual, social and collective action for the improved environmental outcomes. In this article, I focus on fifteen Finnish innovators. My two-part theoretical hypothesis is that the entrepreneurial character of these innovators is constituted by a general but peculiar tendency to take and break habits and capability to create conditions for the emergence of motivating and workable practices. The study draws on fifteen in-depth life history interviews and Q-sorting exercises (with 20 motivation cards) with the initiators. In the full paper, I will elaborate: (i) the patterns of the basic motivations of the initiators, (ii) the characteristics of habit breaking practices and habit taking of the initiators, and (iii) key suggestions in order to facilitate, induce and nudge motivating biodiversity practices and policies. The results of the study will provide practical and concrete policy advice how to meet the Horizon 2020 targets.

Committed action for nature: The quest for meaning

Luuk Knippenberg¹

¹Radboud University, Netherlands

This paper will reflect, from a philosophical perspective, on some of the main outcomes of the EU FP7 BIOMOT Research Project.

The paper will discuss -and reflect upon- some of the core outcomes of the project, in special the role of meaning in the sense of eudemonia. The BIOMOT data and analyses show that it is possible to improve the motivation of people to act for nature. But it also became clear that really motivating people to really act for nature requires effort and time, and other approaches than the ones predominantly undertaken. Emphasizing utility, urgency, or even values as such, will not do the job. It does not motivate the larger population, and has certainly not motivated the interviewed frontrunners in the field of biodiversity or nature protection. This does, by the way, not imply that the commonly used arguments, focusing on urgency, utility or value, are unsound. It only indicates that this kind of arguments only have limited motivational power, far more limited than often assumed or hoped, certainly by those using or promoting these arguments.

Explaining what really motivates people drove us in the direction of formation, i.e. childhood and adolescence experiences, the quest for meaning and belonging, and the role

of sense giving stories. It even stimulated us to positively reassess the possible contribution of the classical virtues. It turns out that people indeed are sense- and sensibility-seeking beings. They look for sense and sensibility in stories and practices that link them to others, connect them to their direct social and physical environment, and concretely relate to their past, i.e. stories and practices that simultaneously embed and connect and confront and challenge them. The expression of Aristotle that the human being is a political animal, who will only find meaning and fulfilment in community, seems to be very appropriate in this context.

Parallel Session 19: Environmental comfort and work performance

Time: Wednesday, June 29 2016: 10:45 - 12:45

Location: Room A:A, The A-building

Session chair: Kiran Maini Gerhardsson

Presentations:

Influencing factors on thermal comfort: perceived control, thermo-specific self-efficacy and climate sensitivity users

Maren Hawighorst¹

¹Karlsruhe Institut of Technology, Germany

According to ASHRAE Standard 55 thermal comfort is the "condition of mind that expresses satisfaction with the thermal environment". In the adaptive comfort model thermal comfort is described as being influenced by physiological, behavioural and psychological adaptive processes. However, the concept of psychological aspects is not sufficiently described yet. Thus, in order to get insights in the relationship between physiological, psychological and behavioural adaptive processes a field study in summer season was conducted in 3 office buildings (N=109) with a focus on personality traits, perceived control over the environment, climate sensitivity and thermal comfort. A new questionnaire concerning perceived self-efficacy regarding the thermal environment at the workplace was developed. In addition, physical data such as room temperature were recorded and physiological data such as moisture of the stratum corneum. Results show relationships between personality traits, thermal perception, physical and physiological measurements, e.g. individuals who are cold-sensitive seem to have a lower moisture of the stratum corneum and finger temperature than not cold-sensitive individuals. Persons having a higher thermo-specific self-efficacy experienced their thermal environment differently to persons with lower self-efficacy. All in all personality traits influencing thermal comfort show an ambiguous pattern and should be investigated to a greater extend.

Meaning of privacy in domestic and public space: a comparative study of privacy practices among Italian and Turkish youth

Ece Akca¹, Melek Göregenli², Maino Bonaiuto²

¹Ege University, Turkey; ²Sapienza University, Italy

Privacy is one of the primary needs for human being. In the literature privacy defined as opportunity of regulation of sharing the information about oneself. Privacy includes both sharing and not sharing the information. According to Altman (1977), the balance between desired and obtained levels of privacy is important for healthy psychological functioning and regulation of borders. However, person's control over public spaces are limited because public spaces are ruled by the society. For this reason, people's experiences on privacy might differentiate between public and home environments. Not only the environment but also culture determine the limits of private behaviors and living of privacy. Although, the need

of privacy is a universal need, every culture use different mechanisms to reach desired level of privacy (Altman, 1977). Considering the effect of culture and place on privacy, meaning of privacy and behaviours related with privacy might be different from one culture to another one. The aim of the current study is specify how much privacy people need and what are the limits of the privacy in the public spaces in different cultures.

This study compares Italian and Turkish people's opinions about privacy in public and residential environments. Specifically, meaning of privacy, privacy practices, places where people see as private and differences on opinions on privacy in home and public environment were investigated. First of all, an online questionnaire were assessed with 30 Italian and 30 Turkish participants. In the light of findings of preliminary questionnaire, semi-structured deeply interviews was conducted with 15 Italian and 15 Turkish couple. Results were analysed by discourse analysis. Results of the studies revealed that Italians evaluate privacy as body centered with focus of personal rights and with an individual perspective. On the other hand, Turkish participants evaluate privacy as a culture specific concept and mention their views considering culture and social values. In both cultures people need specific places to live privacy. Culture specific desires can be seen on preferences on these places and limits of the behaviors shown in specific places and limits of private behaviors in general. Results were discussed considering environmental and cultural psychological perspective.

What the occupants say – Implementation of survey results in the German Assessment System for Sustainable Office Buildings

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Introduction. Offices need to be of high functionality to provide a long-term supportive environment. User satisfaction is politically significant when planning and evaluating office buildings particularly against the background of sustainable construction, energy efficiency and quality workplaces. Thus, as a result of the constantly developing political and societal goals and initiatives the German Federal Building Ministry launched the 'Assessment System for Sustainable Office Buildings'. Results from field studies in office buildings were expected to provide recommendations for the integration of occupants' perspectives into the German Assessment System for Sustainable Building (BNB) and the Guideline for Sustainable Buildings.

Methodological Approach. A questionnaire was developed based on theoretical concepts and empirical findings from environmental psychology. Data were gathered from 45 office buildings (N= 1.098). The questionnaire was validated by a factor analysis and reliability testing. An overall index has been developed for the Assessment System.

Main results. Item reliability and factor analysis of the questionnaire showed good values. Results from field studies regarding the scope workplace aspects as well as regarding an overall index indicated relevant modifications for the German Assessment System for Sustainable Building (BNB): a) adjustment of weighting of indoor climate parameters (e.g. acoustics were understated, b) adjustment of the transformation of survey results into the points system and c) the need to include socially relevant aspects (e.g. office type, privacy) when addressing sustainable workplaces in the Guideline for Sustainable Buildings.

Conclusions. While it is an important step as well as a participative approach to include the occupants' experiences at the workplace in the assessment system some limitations are to be considered regarding numerical values respectively an index as well as practical factors (e.g. standardized surveys, extension of the database). Implications will be illustrated by a practical building example. Architects, planners and facility managers need to understand issues of the psychology of architecture and office environment. The same applies for auditors in their role of potential multipliers in the context of assessment systems.

Keywords: Office buildings, post-occupancy evaluation, building assessment system.

The role of control on knowledge workers' subjective experience of privacy in open office environments

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Knowledge workers' lack of privacy is a frequently reported finding in social science studies on open-plan offices. Nonetheless, definitions of privacy are manifold and a workplace specific conceptualisation of privacy has not been developed yet. In this study, perceived control over the individual workstation and over others' access to oneself is regarded as a central concept for the understanding of individuals' subjective privacy experiences.

In a pre-study, a secondary analysis was conducted on responses to open-ended survey questions on individuals' understanding of privacy in open office environments which were given by 56 experts of workplace design (workplace consultants) from seven different countries. Text responses were qualitatively and quantitatively analysed and results highlight that control is a central concept of the experience of privacy in the workplace.

This research is of relevance for researchers and practitioners alike as the strategy of using open workplaces and reducing physical barriers in order to create easier access between knowledge workers is prevalent throughout the world.

Parallel Session 20: Attitudes and interventions for pro-environmental behaviour

Time: Wednesday, June 29 2016: 10:45 - 12:45

Location: Large lecture hall, IKDC

Session chair: Maria Johansson

Presentations:

Human values and specific (sustainable) behaviours

Marjolein Overtoom¹, ***Arjan Van Timmeren***¹

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Introduction Sometimes it seems as if sustainability is more a hype than an actual change in lifestyle; we buy fair-trade products, wear bio-cotton, and use vintage furniture. The needed lifestyle change to turn our current energy use patterns around needs to be more than only the type of products we own. We also need to think of how we use them and what they mean to us. That however, is the difficult part. People value different things and behave differently, if our environment admits it. Some values have already been linked to sustainable behaviour, but we also need to think of what to do with values that do not directly link to sustainable behaviour. Strictly speaking it is not necessary to have values related to sustainability to actually be sustainable. The way proenvironmental behaviours are phrased in questionnaires selects for values like benevolence and self-transcendence. Formulating behaviours in a more neutral way, also including other types of activities that could potentially be beneficial for the environment, might show that not just self-transcendence is of influence. There are other behaviours that might have a sustainable effect but do not require a proenvironmental motivation, and looking into these other behaviours with a focus on different values than benevolence and universalism might bring to light other behaviours. According to the theory of planned behaviour, environments can inhibit or facilitate behaviours. With this knowledge environments could be adjusted to stimulate these behaviours while focussing on value specific behaviour that potentially could be made sustainable without changing the value goal. There are four aspects to an activity, namely the activity, adjacent activities, how it is carried out, and the meaning of the activity itself. The meaning of the activity would be similar to the value goal. Categorising behaviours by room instead of type of sustainable behaviour should result in a broader understanding of behaviours related to the complete range of human values in the home environment. The first part of this research deals specifically with the question whether human values can be related to specific (sustainable) behaviours in the home. This will complement the current understanding of the values of self-transcendence with related behaviours, with the other values and other types of behaviours. There should be a focus on people that already have 'sustainable values', but even more so on the one that do not because they often use the most energy. Method An online survey with a list of behaviours typical for the home environment that have the potential to be sustainable, and the standard value questionnaire from Schwartz will be set out. Discussion When a relationship is found between specific behaviours in the home environment and values, housing design

could be adjusted to stimulate the sustainable alternative of the behaviour within the value framework. The value goal stays the same, but the way of carrying out the activity and adjacent activities might be adjusted by design of the environment. This adjustment would relate to facilitating and inhibiting different options for a specific behaviour.

Climate Change in Spanish Press: An analysis of visual aids used in newspapers

Angela Castrechini¹, Enric Pol¹

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Climate change is a critically important global environmental problem, and the central topic for international summits. It is also one of the topics which receive most attention from the Media. As an imperceptible and abstract problem, the media is critical for disseminating information regarding climate change which is not perceived by humans. Despite recent increases in media coverage of this issue, it is still perceived as a distant problem. The use of pictures or other visual aids jointly with the text of news seem influence people perceptions about this problem. This research analyse visual images about climate change in three Spanish newspapers.

Three newspapers were chosen for this study: El País (henceforth referred to as EP), La Vanguardia (LV) and El Mundo (EM). The choice of these newspapers was made based on circulation numbers and ideological positions. They are part of the top five list of readership both at national and regional levels and they have markedly different background ideologies (EP: left-wing position; LV: represents a Catalan centre-right-winger; and EM has a right-wing position).

Using newspapers databases, a search was conducted for newspaper articles about climate change. The search included articles within the date range from 2000 to 2010. Due to the high number of items detected, it was decided to restrict the search to dates that were held summits on climate. Most of the summits have an average duration of one week. It was decided to expand the search to one month before and after the dates of celebration. Retrieved articles were manually reviewed to identify those which contain photographs, graphs or any kind of visual images. During this process any articles that were not explicitly about climate change were removed.

Using an open categories system, attributes for each photographs were analyzed and recorded in an Excel database. The analysis focused on four aspects: (1) photographed elements; (2) foreground and background elements (3) predominant colors; (4) whether or not the photographs made an explicit connection with the text of the article; and (5) the emotions transmitted by photos.

Through comparative content and photo analysis of newspaper coverage of climate change it was assessed the salience of this topic on the press, the focus on different images used to communicate the issue, its causes, consequences and measures taken by different social actors.

Cross-cultural public perception of visual pollution using a web-map application

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The one of the key environmental elements, which determine people quality of life and well-being, is landscape. Most of people live in cities, so a cityscape becomes a kind of ecosystem, which determines citizen's behaviour, feelings and the way they are communicating. Contemporary communities seek economic development, as they are putting on consumerism, then the main means of communication becomes commercial advertising. In 2012, Kurt Iveson described "Branded Cities" as outdoor media landscape, and he asked a question about harmful impact of public-private partnership providing advertisement infrastructure on. Gomez (2013), pointed another harmful consequences of "billboardization" - the impose of foreign cultural schemes. Following this way, also a harmful impact of visually polluted landscapes on a citizen's well-being was set up as an objective of presented research. This paper presents a people-environment study, which reveal the human perception of branded cityscape. Using a public surveys methodology, this research explores both positive and negative aspects of outdoor advertisement media. The respondents are being asked about the appearance of the urban interior; how the appearance of the urban interior affect their well-being and if it inspires them for any activity. The research was conducted on urban units located in the Eastern Poland, Brazil and England. A statistical analysis of given responses reveals that outdoor media are undesirable element of the cityscape, especially in heritage and green areas. Their harmful impact on citizen's well-being is explicitly stated in the respondent's answers. As a research tools this study adopted a web mapping application, which enables to present and compare the public perception on case study cityscapes. The web mapping application presents human opinion on visual pollution phenomena in the context of such elements as: vegetation volume, building appearance and land use policy. A multi-disciplinary approach makes us enable to propose the web mapping application as a people participation tool for sustainable cityscape planning. The use of GIS tools in web mapping application can give a perspective for better commercial signage control management, and in consequences to improve citizen well-being. Keywords: perception, visual pollution, GIS.

Addressing marine litter: Results from a Europe-wide survey on the problem and potential solutions

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Marine habitats are contaminated with human-made debris from the poles to the equator and from beaches to the depths of the ocean (Thompson et al., 2009). While the definition of marine litter includes a wide range of materials, around 70% are plastic, with much smaller relative proportions of glass, metal, and paper (OSPAR, 2007). Marine litter has harmful impacts on wildlife, human health and well-being as well as bearing considerable economic costs to sectors such as shipping and tourism. However, little is known about public perceptions of marine litter, its perceived composition and impacts, nor about the desirability of potential ways to reduce marine litter. We ran a large survey (N = 5030; 2737

females, M age = 41 years) in 16 European countries as part of the FP7-funded MARLISCO project to investigate perceptions of marine litter and plastics in particular. All countries reported that they were very concerned about the issue with average scores above 6 on a 7-point scale. However, Bulgaria and Denmark reported significantly lower concern than did other countries. Across all countries, the longevity of plastic litter and the damage it can do to wildlife and people was seen as the most concerning impact. However, countries varied considerably in their concern about the fossil fuel resources used to make plastics and its potential to collect in remote and pristine natural places. On average, our respondents were very good at estimating the percentage of plastic litter items at 70% (SD = 18.50) but estimates varied by country and gender (Range: 55 to 79%). There was broad agreement across all countries that reusing, reducing and recycling as well as educational approaches were better ways of dealing with plastic waste than were landfill and incineration. Given continuing media coverage of suggested technical ocean clean-up solutions, we also asked people to choose which of two options would be more effective and more feasible: 'cleaning up the beaches and oceans' or 'reducing the waste we produce'. Respondents were fairly undecided which option would be more feasible (48 vs. 52% for cleaning vs. reducing) but most respondents thought reducing waste would be more effective (82%). We also included a plastic waste behavior scale consisting of 10 items (Cronbach's alpha = .73). Personal norms, social norms, guilt feelings and perceived responsibility were the best predictors of the behavior variable in a multiple regression (all betas > .10). Age, gender, overall concern and specific concern about microplastics made smaller contributions. All of these variables together explained 50% of variance in the behavior score. Limitations of the study include the different sample sizes between countries and non-representative and possibly self-selected nature of the sample. In sum, this survey provides important insights into current perceptions of marine litter and plastics in particular in a large European sample, and it demonstrates clear preference patterns for how we should deal with plastic waste, and which perception variables are most associated with self-reports of own behavior.

The impact of waste management on waste separation behaviour. Evidences from Sweden and Bulgaria

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The European Union's (EU) Strategy for Circular Economy is based on the idea of turning waste into a resource and achieving sustainable development through resource efficiency. All member states should adopt the common EU goals and fulfill the common EU requirements in the waste sector, in order to make the transition to the circular economy possible. In this process, participation of households in waste separation at home is essential, as achieving high rates of re-use and recycling depends on the rates and the quality of waste separation. Despite the common goals and requirements, performance of the member states in the waste sector, as well as participation of the citizens in separation of household waste varies a lot. The study aimed to reveal if and how waste management in a country influences the rate of household participation in waste separation at home. Based on a literature search, expectations were that there was a positive relationship between these two factors. In order to examine this relationship, a simultaneous research of waste separation behaviour of students from Sweden and Bulgaria was made. These two EU member states perform

quite different in the waste sector—Sweden is among the best performers, while the waste management in Bulgaria is still under development. As a theoretical framework of the study, The Theory of Planned Behaviour was used. This theory is widely used in understanding waste separation and recycling behaviour. A web-based bilingual questionnaire was submitted to university students from Sweden and Bulgaria. The respondents were asked to rate a set of statements where each statement reflected attitude, subjective norm, perceived behavioral control and satisfaction with local facilities. The results were processed, using descriptive statistics and multiple linear regression. Model reliability was checked by Cronbach's alpha coefficient for internal consistency. The most important factors that influenced the respondents to separate their waste at home were estimated. The study results showed that waste separation behaviour of the Swedish respondents was mainly defined by their attitude, while in Bulgaria it was determined by the perception of control that the respondents had over waste separation. The lack of proper conditions for waste separation at home prevented households from participation in this activity, regardless of their positive attitudes. The results indicated that if people were satisfied with the local conditions for waste separation, their behaviour would depend on their attitudes towards waste separation and recycling. These findings suggest that waste management in a country has a significant impact on waste separation behaviour of households. Providing satisfactory conditions in living areas is essential for participation of households in waste separation at source. Local authorities and packaging recovery organizations should first facilitate separate collection of household waste, before trying to get a higher rate of participation of residents in this activity. Conduction of any campaign, aimed to increase household participation in waste separation, would have low or no effect on people, who perceive lack of facilities for recycling or people that are not satisfied with the waste collection schemes in their area.

Keywords: waste separation behaviour, wastemanagement, Theory of Planned behaviour

The effect of communication on environmental behaviors: Comparing Germany, Japan and China

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¹Nara Women's University, Japan; ²Hokkaido University, Japan; ³Martin Luther University of Halle-Wittenberg, Germany

The present study aims to investigate the effect of communication from mass media and personal communication on daily environmental behaviors across countries. In recent years, reports on environmental issues in mass media has been growing, however some studies have pointed out that the influence of mass media on people's environmental behavior has its limits (Costanzo et al., 1986; Stern, 1999). Nonami et al. (1997) found that personal communication affected environmental behaviors directly while mass media did not have direct effect. Personal communication can have an impact because it conveys the expectation from others together with environmental information. The present study tries to compare the effect of mass media and personal communication on the psychological variables related to environmental behaviors. The second aim of the study is to compare the effect of communication across countries. Cultural studies pointed out that individual values have greater importance in Western countries, while interpersonal relationships are valued

in Asian countries (e.g. Markus & Kitayama, 1991). Thus personal communication would have larger effects in Asia where expectation from others are more important. Method The questionnaires were distributed at universities in Germany, Japan and China. The valid responses were 296 in Germany, 611 in Japan and 184 in China. The questionnaire included scales for energy saving behavior, personal communication, information from mass media personal norm, subjective norm, seriousness perception, efficacy, and perceived behavioral control (PBC). Results The result of SEM showed that personal communication affected subjective norm, efficacy and seriousness perception in all three countries, and it also affected PBC in Germany and China. Mass media had effects on efficacy only in Germany and seriousness perception in Japan and Germany, but the impact was weaker. Mass media had reverse effect on subjective norm in Germany, and had no significant effect on PBC. As for the differences between the countries, the effect of personal communication on subjective norm was the strongest in China, and the effect of subjective norm on behavioral intention was significant only in China. Contrary to prediction, the effect of subjective norm was not significant in Japan. Discussion The overall results indicated that the influence from personal communication was stronger than mass media. The present study showed that the effect of personal communication is universal across different countries, although its effects on each cognitive variable varied across countries. Cultural comparison showed that although Japan and China both belong to Asian culture, the relationships of the variables differ between the countries.

The english plastic bag charge and environmental behaviour change: a diary-interview study

Elena Sautkina¹, Wouter Poortinga¹, Gregory O. Thomas¹, Lorraine Whitmarsh¹, Nicholas Nash¹

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Plastic bag charges (PBC) are popular and easy-to-implement policy instruments that can successfully reduce plastic bag use, a common waste-related habit (Poortinga et al., 2013). However, little is known about the lifestyle impacts of a PBC. The observation that even small charges produce great changes, suggests that a PBC acts as a 'habit disruptor' that forces shoppers to rethink their plastic bag use, rather than as an economic instrument. Furthermore, as 'bringing your own bag' is a highly visible and symbolic behaviour, it may change how people perceive themselves in terms of environmental (in particular, waste-related) consciousness. This then may lead to other environmental behaviour changes.

The overall aim of this study is to generate high-quality evidence of lifestyle change and potential behavioural spillover resulting from the English Plastic Bag Charge (EPBC) that was introduced in October 2015. While most evidence for behavioural spillover to date is quantitative and correlational, this diary-interview study aims to gain a deeper subjective insight into the process of breaking and creating habits and changing associated environmental behaviours, practices and policy support.

The study used the diary-interview method (Zimmerman & Wieder 1977, Latham, 2003), and was conducted in two waves: pre- and post-EPBC introduction, in September and November 2015, respectively. For both waves, participants from representative,

geographically diverse samples in England (nw1=19; nw2=15), Scotland (nw1=17; nw2=15) and Wales (nw1=17; nw2=15) kept a diary for ten consecutive days, and were interviewed thereafter. The samples in Wales and Scotland, where PBC has been introduced, in 2011 and 2014 respectively, were the comparison groups.

Electronic diaries included both qualitative and quantitative data, and looked into how bag use, shopping behaviours and environmental behaviours were built into participants' daily practices. The semi-structured telephone interviews explored these questions in-depth, and also looked at attitudes towards the PBC, other environmental policies (taxes) support, environmental identity, values and self-efficacy.

The data analysis is in progress at the time of writing of this abstract, using a combination of several qualitative and quantitative methods. Study findings on changes following the English PBC introduction will be presented and discussed in terms of their implication for research and policy development.

The impact of a plastic bag charge on consumer and pro-environmental behaviour: A longitudinal and representative study of the UK population

Gregory Thomas¹, Wouter Poortinga¹, Elena Sautkina¹

¹Cardiff University, UK

In the UK, over 8 billion single-use plastic bags were distributed in 2012, and plastic bags are linked to a number of environmental problems, from their production and transportation, as well as their disposal. In October 2014, the UK Government enacted a policy where all large stores in England had to charge their customers £0.05 for each single-use plastic bag used at the point of purchase. Plastic bag charges have previously been implemented in the UK regions of Wales and Scotland, and these charges led to a general decrease in use of single-use plastic bags, and an increase in people bringing reusable bags when shopping. Additionally, plastic bag charges have also been suggested to cause behavioural spillover: that is, where the uptake of one pro-environmental behaviour encourages the uptake of another, unrelated, pro-environmental behaviour (Poortinga, Whitmarsh, & Suffolk, 2013). To date, however, there has been no longitudinal work to evaluate how a plastic bag charge may change perceptions from before and after a bag charge was introduced, and whether such a charge may lead to behavioural spillover effects. In this presentation, we evaluate the impact of the English plastic bag charge using a longitudinal sample (n = 2,005), representative of England, Wales, and Scotland, with data collected 1-month prior to the English plastic-bag charge, and 1 month post-English plastic bag charge. Using regression and ANOVA methods, we discuss how reported levels of using single-use plastic bags in England quickly fell to a comparable level of bag use seen in Wales and Scotland, and with a similar increase in the use of bringing own shopping bags. The immediate effect of a plastic bag charge upon behaviour is discussed, as well as the potential for changes in perceptions of personal environmental identity, and behavioural spillover effects, stemming from behaviour changes in response to the plastic bag charge. The potential for similar changes in other countries is highlighted and discussed as a way of quickly enacting a reduction in plastic bag usage.

Parallel Session 21: Thinking new on resilience, part 2

Time: Wednesday, June 29 2016: 10:45 - 12:45

Location: Small lecture hall, IKDC

Session chair: Clare Twigger-Ross

Presentations:

Developing frameworks for understanding and evaluating community resilience to flood risk: Evidence from the UK

Clare Twigger-Ross¹, Paula Orr², Katya Brooks³

¹Collingwood Environmental Planning, UK

There has been a policy shift within flood risk management in the UK with an emphasis on communities taking ownership of flood risk through a number of governance mechanisms implemented since the 2007 floods. (Pitt, 2008). Policy-makers, practitioners and academics are also increasingly focusing on the concept of resilience in the context of flood risk management, and specifically on community resilience which is understood as not just the ability to resist flooding but also the capacity to adapt and transform better to cope with flooding (see Twigger-Ross et al, 2014 for overview). This paper draws on research carried out for the UK Department for Environment Food and Rural Affairs (Defra) to evaluate the Flood Resilience Community Pathfinder (FRCP) scheme in England. This scheme consisted of thirteen partnership projects funded by Defra across England, involving local governments and other organisations such as voluntary sector groups, Environment Agency etc. The pathfinder scheme was designed to enable communities at significant or greater risk of flooding to work in partnership to develop innovative local solutions that:

- Enhanced flood risk management and awareness in ways which quantifiably improved the community's overall resilience to flooding.
- Demonstrably improved the community's financial resilience in relation to flooding.
- Delivered sustained improvements with the potential to be applied in other areas.

A key part of the pathfinder scheme was its evaluation. Whilst each project had to carry out its own evaluation, a whole scheme evaluation was also carried out over the two year period. For the evaluation Cutter et al's (2008; 2010) resilience framework was used to enable the development of indicators and ways of measuring community resilience. Cutter et al's (ibid) framework describes disaster resilience as inextricably linked to capacities that exist on a day-to-day basis within a community. These capacities (institutional, social, economic, infrastructure and community capital) form the basis for resilience to flooding. However, it is also clear that there are specific capacities that are needed in order to be resilient to flood risk: e.g knowledge of flood risk, actions to take in a flood, developing flood plans. Further, floods themselves provide opportunities to create resilience with the emergence of groups, structures and activities. The pathfinder projects focussed on activities to build on the existing and emergent resilience within their communities as research suggests that creating resilience to flooding is an ongoing process of adaptation

and learning from past events and preparing for future risks. This paper presents a critical examination of the Cutter et al (2010) framework using evidence from the pathfinder evaluation. It provides an example of how it has been applied within a flood context and in so doing concludes that the framework is valuable tool for understanding and working with the multi-dimensional nature of resilience and for unpacking underlying strengths and vulnerabilities within communities. The research also suggests ways in which the different capacities interact, and which are most suitable for development at the local level.

Adaptive responses in coastal towns: Humans-environment transaction in tsunami prone environments

Paula Villagra¹, Francisco Aros², Carolina Quintana², Geraldine Herrmann², Roger Sepulveda¹

¹Universidad Austral de Chile; ²Universidad Diego Portales, Chile

This study explores human behavior after a tsunami in three coastal towns in Chile, with the aim to study people's adaptive capacity with respect to the characteristics of the territory they inhabit, to inform planning. This was explored by analyzing how people use the city open space system (i.e. plazas, parks and streets) and the natural surroundings (i.e. wetlands, hills and forests) during the reorganization phase of the resilience adaptive cycle, or the period in which lifelines are blocked. During this time, people need to satisfy survival needs such as the provision of food, shelter and water. Community members with similar socio-economic characteristics, but different urban form, were invited to group meetings. By using the projective mapping technique they were asked about the areas they use after a tsunami. Data was subjected to Content and GIS analyses to identify the type, utility and distribution of the sites. The objective was to evaluate, by means of different spatial indexes (Directional Distribution and Kernel Density), the extent people interact with the built and natural environment, and the most used areas after disaster.

Results are similar in the three coastal areas. The analysis of the concentration of sites show that people mostly use the natural environment for adaptation including native forests, prairies, shrub lands and wetlands where they can find refuge, security and provisions. This was more evident in the responses of the aboriginal groups of the study areas. This is an important finding in urban planning, which is usually limited to the urban border; people's adaptive capacity includes resources outside the city limit, which people are familiar with. Besides, significant differences were found between people with different knowledge about emergency response. The analysis of dispersion of sites show that interviewees with knowledge in emergency procedures, identified less amount of areas, with a focus on those indicated in emergency maps. On the contrary, non-experts in emergency response, identified more alternative sites with a more dispersed distribution in the territory. Differences in the adaptive response between experts and non-experts is also a relevant finding for planning; education plays a relevant role in people's adaptation after disaster.

This study provides a spatial methodological approach to study human behavior after disaster with application in other coastal areas. Also, it highlights the fact that the understanding of humans-environment transactions is of primary concern in planning, particularly in cases where human communities are subjected to unexpected change caused

by natural disturbances.

Keywords: Human adaptation, environmental planning, tsunami

We would like to thank CONICYT - Fondecyt N. 1150137, for funding this study.

Risk perception on marginalized communities in Mexico

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The location and characteristics of human settlements in Mexico, as well as the diversity of geographic and climatic conditions contribute to the generation of hazardous conditions resulting from natural phenomena. Its impact has left significant human losses and material damage, affecting mainly the groups living in conditions of greater physical or social vulnerability. On the other hand, the marginalized conditions in which large sections of the population live hinder the learning and development of preventive practices and disaster risk reduction. The satisfaction of basic needs is their first priority leaving behind the assessment of risk conditions they are exposed to, often for lack of information and ignorance. For a comprehensive risk management it is imperative to characterize the social perception of risk in the population, mainly in those living in situations of high poverty and social vulnerability. Because of the cultural diversity that characterizes the Mexican population, and the geospatial distribution of hazards and risks to which it is exposed, eight municipalities were selected distributed in four states that have historically had a social or economic impact caused by geological disasters (earthquakes and landslides) and hydro meteorological disasters (floods and tropical cyclones), and which also have the highest national levels of marginalization. The aim was to determine the perception of risk per hurricane; landslides, overflowing rivers, snow hail, flood, rain, drought, earthquake and wind; believes of frequency and seasonality of risks; main personal and material effects; ascription of responsibility; preparation and actions to take against natural events. In general, the concern that a hydro meteorological or geological phenomenon occurs varies depending on the region in which they live and its characteristics. Occupying the first places heavy rains, cyclones and earthquakes; these are also the phenomena that they are more afraid of. As for those who will be most affected a tendency where personal groups and close environments are less vulnerable than distant environments it is observed. Most people attribute the damage to natural causes and prefer to stay at home until the last minute. There is a common believe that there is nothing to do in the event of a natural disaster, although there is some knowledge on how to protect documents and personal assets. In conclusion, it appears that people are aware that they live in areas at risk and the impact these can have on them. They have also learned how to observe warning signs that indicate when they need to evacuate their homes or there is an imminent risk. However, there is no culture of prevention or protection, which raises the risk to which these people are exposed. The ultimate goal of this research is to use this information in the design of tailored risk communication campaigns targeting specific groups.

An analysis of town resilience focused on pre-disaster recovery preparedness of business stakeholders -research on Wakayama Prefecture in Kii Peninsula, Japan-

Ayako Kita¹, Ayami Fukui²

¹Setsunan University, Japan; ²Oki Co. Ltd.

Purpose

In this research we analyzed the current state of pre-disaster recovery preparedness of business stakeholders to improve emergency response, conduct hazard mitigation and enable rapid recovery from disaster, as well as to point out issues that the area should address, which are essential to enhance the town resilience. Our research areas are Susami Town and Yura Town in Wakayama Prefecture, located in the Kii Peninsula, Japan. The Kii Peninsula, where a destructive typhoon often hits every year, is predicted to experience major tsunami damage in case a Nankai Trough Earthquake occurs. According to 2012 forecasts announced by the Cabinet Office, if a magnitude 9 earthquake were to occur, it is expected that Susami would be hit with the largest tsunami in Wakayama with a height of 20 m.

Methodological approach

In 2014 and 2015, we distributed a questionnaire survey entitled "Survey on Business Continuity," to 24 businesses in Susami and 80 businesses in Yura, both located on the coast, and collected the surveys individually. We received 20 valid responses in Susami and 60 in Yura. After that, we conducted interviews with the 10 business operators who responded to the questionnaire and provided consent in Susami, and the 15 operators in Yura. The population of Susami is 4,526, of whom 43.5% (as of 2014) are individuals aged above 65 years. There are 336 places of business in the town, of which 208 (61.9%) are tertiary industries. The population of the Yura is 6,433, of whom 32.8% (as of 2014) are aged above 65 years. There are 406 places of business in the town, of which 223 (54.9%) are tertiary industries. The population of both towns has been declining in recent years and respondents had no idea of how to solve the problems given a declining birth rate and aging population.

Main findings

We were able to confirm that, although there were some differences depending on the size of the business, emergency preparedness that was related to human life was proceeding well. Furthermore, we found that business operators in their 40s were actively implementing specific preparedness measures, those in their 50s were highly concerned with them, and businesses headquartered outside of Susami or Yura had made good progress with preparedness measures. On the other hand, it was clear that respondents had made almost no efforts to complement the weaknesses of nearby businesses in different industries or to increase the region's adaptive capacity to respond to a disaster.

Conclusions

In terms of rapid post-disruption recovery, resuming employment, and prevent an outflow of the population, there is a need to enable greater stakeholder participation in discussions about setting up a system to form cooperative relationships among the businesses in the town. We hope that younger business operators and businesses headquartered outside of the towns would be actively involved in developing such a system.

Attributes, uses and restorative qualities of open spaces during daily life and after disaster: The case of Concepción, Chile

Paula Villagra¹, Susana Alves²

¹Universidad Austral de Chile; ²Okan Üniversitesi, Turkey

Open spaces assume the role of a 'second city' in the case of an earthquake. A second city refers to the dormant network of open spaces that activate after disaster and provides spaces for refuge, community gathering, temporary shelter and restoration. In the second city, landscape attributes (e.g. presence of vegetation, water, openness), which may have been used in a positive and health-promoting manner in a non-emergency scenario (e.g. walking, observing nature), may assume a different meaning in emergency situations (e.g. evacuation, refuge). The perception, meaning and use of the landscape may vary according to the emergent needs of the community as open spaces and their components may be re-assessed to fit the needs and recovery efforts of the target community.

Understanding landscape attributes, uses and their restorative potential is crucial in recovery and management interventions in disaster-prone environments. However, little is known about the role of key landscape features and how they work as an agent of recovery in the event of an earthquake. This study examined the role of landscape attributes on people's uses of open spaces in Concepción, Chile, an earthquake prone city. Concepción has a population of 212,003 inhabitants and occupies 221 km² with a population density of 956.69 per km². The 8.8 Mw earthquake that hit Concepción in 2010 was the second highest recorded since the 16th century. The earthquake destroyed large areas of land with calamitous effects expressed in the open space. However, planning efforts have been focused on mitigation strategies only. Consideration of the qualities of the open space to better respond to future catastrophic events have not been undertaken, threatening contact with nature and the possibility of restorative experiences.

Through a Multiple Sorting Technique one hundred and thirteen respondents were asked to evaluate and sort 60 landscape photographs representing sites used by the community for earthquake recovery. Participants explored the different uses of the urban landscape in two scenarios: emergency (in case of an earthquake) and non-emergency (use in daily life). Multivariate analyses revealed that in a non-emergency scenario, landscapes with nature-related features and with urban facilities were the best-loaded attributes. In contrast, in an emergency scenario, the presence/absence of water and the level of urbanization were the most important attributes determining landscape use. The results also showed that in the emergency scenario, restorative qualities do not seem to play a significant role and were not associated with any kind of environmental use. The study highlights the relevance of greenery, water, and built features in post-disaster planning and community recovery.

Keywords:

Open spaces, perception, disaster-prone environments

Urban vulnerability and risk perception in the gully of Mixcoac

Patricia Ortega-Andeane¹, Cesáreo Estrada-Rodríguez², Octavio Salvador-Gínez¹, Alejandro Cabeza-Pérez¹, Gemma Verduzco-Chirino², Alejandro Marambio¹

¹Universidad Nacional Autónoma de México

The risk of disasters is becoming more evident in expanding cities such as Mexico City. The capital has suffered several impacts of extreme climate events leading to damages to natural ecosystems and exposed built assets. This paper offers a first diagnostic of risk and vulnerability of communities facing increasing flash floods and land erosion in the gully of Mixcoac. This particular ecosystem represents 39.9% of a larger system of six gullies in the basin of Mexico and is considered as one of the most important natural watershed in the capital. Preliminary insights stem from a research project known as PACMEX within which risk perception and actions taken by community members are investigated. Such communities have settled over several years in high-risk areas and present patterns of self-build housing, sub-standard services and low-income conditions that are often seen as problematic. Our investigative approach on development risk in gullies is multi-scale: Firstly, we present maps showing an overlap between the natural and the built up area. These maps clearly indicate gully erosion from runoffs and flash floods putting at risk consolidated and newly developed dwellings as well as human lives. Secondly, we study the perception of such risk at a community scale. We found that concerns by locals mainly revolved around access to services and aspects of human safety disconnected to the erosion itself. We found that less attention was given to the tremendous urban pressure on the remaining natural area, in fact community members evaluate their risk and act in relation to authorities influences and complex interrelations with one another.

Influential factors on residents' evacuation decision-making at the time of tsunami

Teruyuki Isagawa¹, Ryuzo Ohno², Yurika Yokoyama¹

¹The University of Tokyo, Japan; ²Tokyo Institute of Technology, Japan

This study aims at clarifying the influential factors on evacuation decision-making at the time of tsunami by investigating the behavior of the residents of Onjuku, Chiba prefecture, where a large-scale tsunami warning was issued at the time of the 2011 Great East Japan Earthquake. Onjuku is a local town characterized by its fishing industry, and tourism with beautiful beach. It is located about 75km from Tokyo.

We conducted two questionnaire surveys before and after the earthquake and additional interviews. In the first questionnaire survey in 2008, we asked the residents about the intention of behavior and risk perception of tsunami in the coastal area of Onjuku. On March 11, 2011, eastern Japan was hit by the earthquake that caused massive tsunami and serious damage. Although actual height of tsunami was 2.5m, over 10-meter-high tsunami warning was issued by the meteorological agency and the residents were urgently required to evacuate to higher place. The second questionnaire survey was conducted four months after the earthquake in order to investigate how coastal residents actually behaved at the time of tsunami, and 447 valid responses were received. In the questionnaire, we asked them to fill flowchart and map with which we can identify where they were at the time of the earthquake and trace exact locations they moved after the event. We also asked their knowledge of the risk, awareness of tsunami warning, and other reasons of their behavioral

choice. Additional interview survey was conducted at 20 months after the earthquake for 29 persons.

In 2008, 95% of the respondents answered they would intend to evacuate. However, the 2011 survey revealed that only 40% evacuated during the actual event even though 90% of the residents were aware of the tsunami warning. Why did they not evacuate?

Previous study treated evacuation decision-making as a cognitive process starting from obtaining disaster information (e.g., Perry, 1979). However, the result of our interviews reveals that there were various types of decision-making; some people decided evacuation being pushed by the warning. Some people evacuated without receiving formal warning. Others did not move in spite of receiving all the revised warning.

Thus, we examined the factors that have influenced evacuation using logistic regression analysis. At first, 13 variables about personal attribute, personal knowledge, awareness of tsunami warning, and situation or location at the time of the earthquake were narrowed by chi-square tests. As the result, three variables were excluded. According to the logistic regression model, it is demonstrated that 'being near from the sea', 'being in a lowland' and 'having infant' promoted evacuation. On the other hand, 'living in multistory apartment' or 'being outdoors' hindered evacuation.

This research revealed that evacuation decision-making was mainly based on the type of place or physical environmental features that are acquired from local daily activities rather than written knowledge of the risk and awareness of tsunami warning at that moment.

Keywords: tsunami, evacuation decision-making, disaster mitigation

Integrating elements of environmental justice into urban blue space planning using public participation geographic information systems

Sarah Gottwald¹, Christopher M. Raymond², Jenni Kuoppa¹, Marketta Kytta¹

¹Aalto University, Finland; ²University of Copenhagen, Denmark

In this presentation, we demonstrate a Public Participation Geographic Information System (PPGIS) method for assessing multiple elements of environmental justice, which was applied to the Helsinki Metropolitan Area (HMA), Finland. We used Nearest Neighbour Analysis to identify clusters of activities followed by Shannon Diversity Index to examine: 1) how diverse each of the clusters were in terms of activities undertaken there, 2) whether the most diverse clusters were evenly distributed across the HMA region, and; 3) the diversity of users in each cluster, representing a composite measure of income, age and family situation. Proportionately more high activity and high user diversity areas were found in Helsinki Municipality than Espoo and Vantaa areas. We then created a framework representing clusters with different mixes of activity and user diversity. The framework highlights that contrasting combinations of activity and user diversity (high-low, low-high) show very different spatial distributions, dominating activities and problems, and socioeconomic characteristics. Looking at just one of these two dimension could lead to the omission of potential management areas. The method holds promise for spatially targeting urban blue planning strategies to areas with different elements of environmental justice.

Parallel Session 22

Symposium: Restorative environments: Developments in Theory and Application

A symposium with five sessions

Co-chairs: Terry Hartig & Henk Staats

Terry Hartig¹, Henk Staats²

¹Uppsala University, Sweden, ²Leiden University, Netherlands

The restorative environment concept aids understanding of the health and developmental values that people can realize with natural environments, and largely for this reason it has received increasing amounts of research attention over recent decades. Much of the work done on nature experience and restoration has been informed by one or both of two theories in environmental psychology, the attention restoration theory of Stephen and Rachel Kaplan and the stress reduction theory of Roger Ulrich. The two theories differ in a variety of ways; they refer, for example, to different antecedent conditions from which people can be restored, to different kinds of restorative process, and to different outcomes in which restoration can be recognized. The conventional set of theoretical narratives continues to inspire and guide research, but the development of the field over the years has also involved efforts to refine, elaborate and integrate these theories and to identify significant gaps in theoretical coverage. This development has been accompanied by expansion in the scope of potential application, as researchers and practitioners have recognized ways in which environmental supports for psychological restoration can be more effectively recruited in the pursuit of a wide range of societal functions, such as health care, education, and public health. Although much of this work has focused on encounters with nature, other research has also sought to expand the scope of environmental coverage, emphasizing that restorative environments are not necessarily natural and that natural environments are not necessarily restorative.

The present symposium provides a snapshot of the current state of affairs in the development of theory and research on restorative environments. It brings together talented researchers from diverse countries and disciplinary backgrounds to share some of their recent work. The symposium comprises five sessions, each with five contributions. The first two sessions will cover basic issues in theory and research, including critiques of extant theory, possibilities for theoretical integration, problems in conceptualization, environmental simulation techniques, and neglected topics such as the relative contributions of top-down versus bottom-up cognitive processes and the link between restorative experience and transcendent experience. The subsequent sessions will include contributions concerned with the ways in which qualities of the natural environment and attitudes toward the natural environment figure in restorative experience; with the variety of needs for restoration and restoration opportunities that can be found in the some of the settings in which people young and old do their daily work; and with the potential significance of contact with nature in different clinical or therapeutic contexts. Through much of this innovative and exciting new work, a recurrent theme still is the classic one - the concern for restorative effects of encounters with nature.

Key words: nature, restorative environments, psychological restoration

Symposium: Restorative Environments: Opportunities for restoration at work, part 4

Time: Wednesday, June 29 2016: 13:45 - 15:15

Location: Room A:B, The A-building

Symposium chair: Kate Lee & Terry Hartig

Kate Lee¹, Terry Hartig²

¹University of Melbourne, Australia; ²Uppsala University, Sweden

Presentations:

Micro-breaks with green roof views boost performance and helping behaviour: The additional role of individual differences

Kate Lee¹, Leisa Sargent¹, Kathryn Williams¹, Nicholas Williams¹

¹University of Melbourne, Australia

Workers experiencing high job demands may skip formal breaks, making brief informal 'micro-breaks' important for recovery across the workday. Views of nature through the window could boost the quality of micro-breaks and improve performance by providing additional resources to deal with work demands. Green roofs are becoming more common in cities where they provide an important source of contact with nature. Viewing green roofs for short periods of time may provide similar benefits as viewing lush nature.

We tested this using a quasi-experiment design (N=224) to compare the effects of different city views on task performance and helping behaviour. Participants were asked to complete a work task before and after a micro-break spent looking out the window. During the micro-break participants saw either a flowering meadow green roof city view or a bare concrete roof city view. The green roof was designed and constructed based on our previous image-based research that showed it was preferred by workers and capable of restoring attention. Participants were tested in the first half of the university semester in the same testing room with access to the same city view. Participants reported their tension and enthusiasm before the break and their likelihood of helping others at the end of the session. Task proficiency was also assessed. We expected that a micro-break spent viewing a green roof should help participants gain resources to deal with task demands, and thus moderate the effects of tension and proficiency on task performance, and enthusiasm on helping behaviours.

Our hypotheses were partially supported, and highlight the role of individual differences in moderating the effects of green micro-breaks. Participants with high tension before the break, indicating resource loss, and who were task proficient had better performance only

after viewing the green roof. Participants with the bare concrete view, or with low task proficiency, showed no corresponding performance improvements. Additionally, women with high enthusiasm before the break reported they were more likely to help others only after viewing the green roof. Participants with the bare concrete view, or who were male, did not report corresponding increases in helping behaviour.

These results suggest that micro-breaks with green roof views could provide resource 'top-ups' to boost task performance and helping behaviour for some participants. These results make several contributions by integrating research on conservation of resources, work breaks, and attention restoration, and by identifying who is likely to acquire resources from green micro-breaks. For city employees, regular green micro-breaks could help sustain performance across the day and foster a more supportive workplace.

Links between window views, indoor plants, outdoor activities and employee well-being ***Kalevi Korpela¹, Jessica de Bloom¹, Marjaana Sianoja¹, Tytti Pasanen¹, Ulla Kinnunen¹***

¹University of Tampere, Finland

Intro

A large number of empirical studies have investigated different types of nature exposure and both attention restoration and physiological stress recovery (for reviews, see Hartig, Mitchell, deVries, & Frumkin, 2014; McSweeney, Rainham, Johnson, Sherry, & Singleton, 2014). However, there are still several gaps in the evidence concerning relationships between exposure to natural elements and employee well-being. In particular, the simultaneous effects of different forms of exposure to the natural world have not been compared sufficiently.

The aim of the present study was to explore the relationship of exposure to the natural world at work, at home, and during leisure time with employees' psychological well-being. The positive aspects of well-being, "context-free" outcomes of happiness and vitality as well as "job-related" outcomes of vigor and sense of creativity at work were investigated. The relationship was examined from a longitudinal perspective, which has so far been lacking in studies comparing different types of nature exposure.

Method

In total, 841 employees working mainly in education, information technology and media answered an electronic questionnaire twice with a one-year interval. At both times, we had similar self-report measures of the number of indoor plants, the type of the window view, the frequency of looking out of the window at work, the frequency of looking out at a nature view at home, the use of one's own back yard (at home) with natural elements, the frequency of physical activities in natural surroundings during free time, Happiness, Vitality, Vigor at work, Creativity at work, Job autonomy, Social support, Workload, and Number of breaks.

Results

In the path analyses (two-wave autoregressive cross-lagged panel models), we controlled for job characteristics (autonomy, support, workload, number of breaks during the workday), age and gender (and variables at T1).

The results indicated that frequent physical activity in natural surroundings during free time predicted stronger vitality over a one-year period after including control variables. The use of one's own back yard with natural elements and happiness were marginally positively associated over time. None of the variables involving exposure to the natural world at work were effective.

The study highlights the importance of urban planning providing natural settings for physical activity and interaction with the natural world in the urban structure. The results further suggest that physical activity in natural surroundings during free time is a potential strategy for enhancing vitality across time at workplaces independently of job characteristics, age or gender.

References

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- McSweeney, J., Rainham, D., Johnson, S. A., Sherry, S. B., & Singleton, J. (2015). Indoor nature exposure (INE): A health-promotion framework. *Health Promotion International*, 30, 126-39.

Three field experiments track students' fatigue and stress through a lecture followed by brief rest indoors or in a greenhouse

Freddie Lymeus¹, Ola Hildonen², Patrik Samuelsson², Björn Svanberg¹, Per Lindberg¹, Terry Hartig¹

¹Uppsala University, Sweden

Work as a student can impose heavy psychological demands. For example, a recurring work environment survey conducted by the student union at Uppsala University indicates that about 25% of the students who take courses at the campus building Blåsenhus feel that stress and poor psychological health are major obstacles in their studies. At the same time about 80% of them report that they are less than satisfied with the provision of calm spaces for relaxation in their work environment. In three naturalistic field experiments, students (total N ≈ 100) provided assessments of attentional performance and affective state three times during a regular work day on campus: shortly before an afternoon lecture, and after the lecture, and again after a 20-minute resting period. They were randomly assigned to spend their resting period in the popular common areas of the campus building or to step out into the adjacent Botanical Gardens and spend their rest period in the Tropical Greenhouse. After the rest, they also provided ratings of the perceived restorativeness of the given rest environment, state mindfulness and other theoretically relevant constructs. Preliminary analyses indicate that resting in the common areas of Blåsenhus was attended by experiences of relatively low perceived restorativeness and mindfulness compared to high ratings of these experiential qualities in the Tropical Greenhouse. Attentional performance and affective state were apparently positively affected by the resting periods regardless of resting environment. Participants' affective ratings seem to have improved more after resting in the Tropical Greenhouse, suggesting that occasional visits to the greenhouse potentially could benefit students' work-related stress and psychological health. The results could inform occupational health interventions in the campus setting. They could also contribute to ongoing theoretical development in the restorative environments

field. The presentation will cover the complete data analyses for the effects of the different environments on the cognitive and affective outcomes and how the perceived experiential qualities mediate those effects.

Greening playgrounds: The short-term effects of greening a playground

Janke Wesseliuss¹, Jolanda Maas², Dieuwke Hovinga², Mark van Vugt¹, Agnes van den Berg³

¹Vrije Universiteit Amsterdam, Netherlands; ²University of Applied Sciences Leiden, Netherlands; ³University of Groningen, Netherlands

In a prospective intervention study with a two years follow-up we investigate how children can benefit in their health and development from playing and learning on a green playground.

Ten schools with approximately 800 children (age 7-9) take part in the project. At pre-measurement in spring 2014 nine playgrounds were paved, one playground was green. Three more playgrounds have greened their playground between pre-measurement and first follow-up in spring 2015. Data collection covers a broad set of objective and self-reported

measurements. At the playground, play behavior and physical activity is measured with video

observations and accelerometers. In the classroom, cognitive tasks and questionnaires are used to assess children's perceptions and restorative quality of the playground, (pro)social behavior, creativity, well-being, school functioning and connectedness to nature.

First results showed that the greened playgrounds receive a higher grade, are more positively evaluated and perceived to be more restorative than the old paved playgrounds. In the presentation the short-term effects of greening the playground on the health and development of children will be discussed and differences between boys, girls and age will be highlighted. More specifically, the focus will be on changes in physical activity, attention restoration, (pro)social behavior, well-being and connectedness to nature from baseline to the first post-measurements.

Keywords: children, green space, restorative quality

Can walls with living greenery reduce work stress and hence forth; medication error, sick leave and psychological distress among employees of the aged care sector? A controlled evaluation study

Daphne Meuwese¹, Jolanda Maas²

¹University of Amsterdam, Netherlands; ²Vrije Universiteit Amsterdam, Netherlands

Working in the care sector is a popular and rewarding career choice, but it is also a stressful type of job. Care workers run an above-average risk of burnout, which underlines the importance of job stress reduction in this segment of the labor market. In this study we will examine whether integration of nature in the workplace by means of walls with living plants can provide a supportive environment for care workers that reduces work stress, using a pre/post/follow-up design with an experimental and a control group.

The study will be conducted at two different residential healthcare centres for the elderly in the city of Zaandam in the Netherlands. In one of these centers (Pennemes) walls with living plants will be placed in four closed geriatric departments (ca. 30 employees). The walls with living greenery will be placed at three different locations within these departments, for example in a sitting room and a hallway. This way exposure to plants by employees will be maximized. The other centre (Mennistenerf) will serve as a control location with their geriatric departments (ca. 30 employees), with no plants or other changes in indoor greenery. Outcome variables of the study include data on medication error and sick leave as registered by the institutions, in combination with self-reports of work stress, physiological distress (BSI-18), general health (GHQ-12), mood states (PANAS) and directed attention capacity (D2-task).

The self-report measures will be assessed through a survey, which will be administered at three times of measurement. The first measurement took place in the first two weeks of December 2015, before placement of the living walls. The second measurement is scheduled for the second week of January 2016 and the final measurement for the last week of January 2016. Results of the study will be presented at the conference, along with suggestions for future research and recommendations for practical implementation.

Parallel Session 23

Symposium: The sustainability path: Transformative research with universities supporting sustainable development

Time: Wednesday, June 29 2016: 13:45 - 15:15

Location: Room A:C, The A-building

Symposium chair: Petra Schweizer-Ries

Petra Schweizer-Ries¹, Lisa Kränke¹, Renate Cervinka², Aaron Kadoch³

¹University of Applied Sciences Bochum, Germany; ²University of Vienna, Austria; ³The University of Wisconsin Stevens Point, USA

This symposium builds up on contributions and earlier symposia inside the context of IAPS conferences in the past (Cervinka et al. 2013, Schweizer-Ries, 2013). It follows an open format, where contributions from Aaron Kadoch, Renate Cervinka and Petra Schweizer-Ries are foreseen, but also open space for contributions of other initiatives to create real and virtual sustainability paths at universities worldwide connecting the universities among each other and with their respective cities and the world's sustainability community will be given. This symposium is aiming at a better understanding of what the different disciplines, like architects, psychologists and communication scientists mean, when thinking and acting sustainable in the sense of integrated sustainability, like it was developed jointly on the IAPS symposium on "Sustainable Environments in a Changing Global Context: Identifying Opportunities for Innovative Spaces and Practices in Contexts of Crisis" in A Coruna at the roundtable "Sustainability – Still a Sparkling and Fuzzy Challenge in Transdisciplinary Projects" (Schweizer-Ries, Cervinka & Senik, 2013).

Our symposium is also aiming at publishing a manual defining terms, components, structures and opportunities as well as case studies regarding the "paths model" as both: metaphor and real spaces, i.e. the virtual and the physical linking. We would like to invite all collaborators of the sustainability network as well as all interested to continue this work with us.

In detail we will present the following briefly:

1. The already submitted abstract on a case study park project that Aaron Kadoch has been designed and worked on with his local community.
2. The already submitted abstract on the restorative potential of private gardens in urban compared to rural areas submitted by Renate Cervinka and Markus Schwab
3. The following abstract of Petra Schweizer-Ries and Lisa Kränke on further outcomes of a transformative study about the University of Applied Science Bochum presented by the Teaching and Research Laboratory Sustainable Development (Lehr- und Forschungslabor Nachhaltige Entwicklung, LaNE) at the BO (Cervinka et al. 2013).
4. Open for additional contributors of the sustainability science network

"Our University as our Lab": lessons learnt from a transformative research study on our own organisation

Transformative research in the own institution and in our case our own university will be presented like an ongoing research process where practitioners and scientists as

well as students from inside and outside the university are involved. In 2014 altogether 15 semi-structured interviews were conducted in an open, narrative way on subjective perspectives of the own university and the sustainable development of the institution. Especially the conditions, processes and decisions that promote or inhibit the sustainable development have been analysed as well as the aims and visions concerning the University of Applied Science Bochum. Moreover a standardised questionnaire was designed on the understanding of sustainability and collaboration work through all the different status groups inside the university. Also some actions have been proceed with different members of our university, documented, reflected and analysed. The results as well as the lessons learnt until now will be presented at the conference.

Presentations:

The private garden as place to relax: Differences between urban and rural gardens

Renate Cervinka¹, Markus Schwab¹

¹University College for Agrarian and Environmental Pedagogy, Austria

The study was aimed at investigating perceived restorativeness of urban and rural private gardens. A sample of 511 German-speaking gardeners (64% female, mean age 50,5 SD=12,9) participated in an on-line questionnaire. We used independent t-tests and multiple regression analysis for data-analysis.

Results revealed significant higher scores of perceived restorativeness of rural gardens. But, the urban gardens also scored high (M=7.8; SD=1.3) on the 11-point PRS. Regression analysis of predictors of restorativeness showed quite similar results for both areas. However, size predicted PRS in urban areas, whereas gender predicted PRS in rural areas.

Gardens in rural areas are significantly larger and contain more natural elements; the size of the garden might therefore be not a predictor in rural areas but a predictor in urban areas where gardens are smaller in general. We hypothesize that the green surrounding might also contribute to the restorativeness of rural gardens, but this effect could not be investigated with our data. The impact of gender in rural areas might be explained by a higher connectedness with the garden there. Further, different cultural aspects and social roles might be of importance. We suggest to consider perceived restorativeness in space planning and designing, especially with respect to gardens in urban areas and in urban green space.

Key Words: Design, Green Space, Perceived Restorativeness Scale (PRS)

"The cultural commons;" A public park representing local-to-global connections through past, place, and future.

Aaron Kadoch¹

¹The University of Wisconsin - Stevens Point, USA

Introduction

People often explore their cultural roots to reflect on their past as a means to planning their future (Holland, 1998). Cities behave in similar ways (Serageldin, 2001). By illuminating its environmental, and cultural connections, a city can enrich the sense of place for its citizens, forming bridges between its past and future (Orr, 2011; Featherstone, 1999). Yet each individual and group defines cultural relationships with varying perspectives and goals however the "Commons," is the place where diverse networks converge (Bertacchini, 2012; Parrillo,1996). As community members engage with cultural content and each other, they form the links necessary to build valued public places.

Objective

This study documents one community's development processes for creating a "Cultural Commons;" a real park symbolizing an American town's history, its diverse people, interests, natural landscapes, and its three official international sister city relationships in Russia, Poland and Nicaragua. (Fig 1)

Methodology

The project documented a community-based design process during a three year planning phase. It tracked how one individual planted a seed idea that grew to become a local-to-global tree linking hundreds of individuals and groups. Eighty six university students performed cultural and historical research, interviews, and generated videos connecting their learning process with the project. Interviews with fifty local businesses and interest groups provided culturally-based design feedback. The governmental approval process was documented through open public hearings.

Results

From the city of thirty thousand people only two citizens voiced critical feedback during the public approval process yet highlighted polarizing dynamics of creating a "Cultural Commons." At one end of the spectrum, "cultural diversity," when perceived as coming from "outside," weakens "historical" notions of identity, while at the other end, if "total inclusivity" can not be achieved, a "Cultural Commons" fails as perceived exclusivity. Data, informed by ninety five percent of the focus groups, expressed a desire to modify the original project scope and name, "The International Friendship Gardens," to reflect a focus on local "heritage." They assigned a monetary value potential at half a million dollars in support of realignment with local cultural and social dynamics. Students performing research expressed a better understanding of the inherently diverse connections existing in town, illuminating a "Cultural Value" where none had existed prior.

Conclusion

"The Cultural Commons," therefore grew out of the citizen and student valuation process itself. The desired shift from an international relations perspective to one of cultural heritage represents the same desire to commemorate cultural connections, yet from two different perspectives; one being local, inward and looking back in time, and the other being global, outward and looking towards the future. The result was not a desired change in the original park's design linking with global connections, but rather a growth in scope to achieve more local inclusivity, educational and reflection spaces, while similarly allowing for historical ties

to the community to have a renewed link within public place. The "Commons," therefore, became one community's spatial bridge between past, future, local and global relationships.

"Our University as our Lab": Lessons learnt from a transformative research study on our own organisation

Lisa Kränke¹

¹Bochum University of Applied Sciences, Germany

Transformative research in the own institution and in our case our own university will be presented like an ongoing research process where practitioners and scientists as well as students from inside and outside the university are involved. In 2014 altogether 15 semi-structured interviews were conducted in an open, narrative way on subjective perspectives of the own university and the sustainable development of the institution. Especially the conditions, processes and decisions that promote or inhibit the sustainable development have been analysed as well as the aims and visions concerning the University of Applied Science Bochum. Moreover a standardised questionnaire was designed on the understanding of sustainability and collaboration work through all the different status groups inside the university. Also some actions have been proceed with different members of our university, documented, reflected and analysed. The results as well as the lessons learnt until now will be presented at the conference.

Parallel Session 24
Symposium: Nature, restorativeness, places

Time: Wednesday, June 29 2016: 13:45 - 15:15

Location: Full scale lab, The A-building

Symposium chair: Marino Bonaiuto

Marino Bonaiuto¹

¹Sapienza Università di Roma

This symposium reports some ongoing research on nature, restorativeness, and places. Different contributions are selected in order to highlight various aspects of such an interface, according to a general model of reciprocal positive impacts among people and places: on the one side (first contribution), the focus pertains the human being's positive impact on the natural environment (across a life-time process perspective); on the other side (second and third contributions), the focus regards the natural environment's positive impact on people within several contexts (in a specific time and place setting, such as residential neighbourhood, school, etc.); finally (fourth contribution), the focus regards restorativeness in general (independently from the natural features of the environment) and its positive impact on many different spheres of the human experience (e.g., referring to a range of parameters and processes within the working environment).

The four presentations report on PhD projects, just finished or in progress, by young researchers collaborating with CIRPA (Interuniversity Research Centre in Environmental Psychology, Italy). The first one reports four different studies (via qualitative, survey, or experimental methodology) each one devoted to explore or test a social-psychological model understanding a person's committed action towards nature by her/his motivation as rooted in the person's past experiences and her/his relationship with the context. The model is the Quest for Significance and the authors are Erica Molinaro, Marino Bonaiuto, Arie Kruglanski ("The quest for personal significance model as a framework for driving nature and biodiversity protection actions"). The second contribution reports a project assessing, via laboratory experiments, the role of several urban features in the residential environments which can be relevant to promote the inhabitants' experience of safety and insecurity: here it specifically focuses on the role of the natural features within such a process. The model uses both psychological and neurophysiological measures and the authors are Gloria Piccinin, Fabio Babiloni, Marino Bonaiuto ("Neurophysiological measures for perception of insecurity in urban landscape: do green areas and features play a significant role?"). The third contribution reports about field experiments studies carried out in order to demonstrate if the daily school break can impact on pupils' school behaviours, according to the fact that the break happens within a primary school's green vs. built area. The model builds on the process of attention restoration to test it within the daily school routine changing settings and parameters, and the authors are Giulia Amicone, Stefano De Dominicis, Paola Perucchini, Irene Petruccelli, Alessandra Gherardini, Valentina Costantino, Marino Bonaiuto. Finally the fourth and last contribution reports about a series of survey studies carried out within working organizations via samples of their either white- or blue-collar employees: the aim is to understand how restorativeness in general can be involved in promoting a wide range of virtuous processes within an organization which exert positive

impacts on their workforce. This research programme builds upon Attention Restoration Theory and Job Demands-Resources models and the authors are Diego Bellini, Marino Bonaiuto, Tiziana Ramaci, Ferdinando Fornara, Terry Hartig ("The restorative quality of work environments and its work-related outcomes").

Presentations:

The quest for personal significance model as a framework for driving nature and biodiversity protection actions

Erica Molinaro¹, Marino Bonaiuto¹, Arie Kruglanski²

¹Sapienza University of Rome, Italy; ²University of Maryland, USA

This study aims to investigate the role of the Quest for Personal Significance (QPS, Kruglanski et al. 2009) in extreme normative behaviours (i.e., difficult pro-environmental behaviours).

QPS is a motivational force that could lead people in being fully committed to any kind of behavior in accordance to the ideology subscribed (Klein & Kruglanski, 2013). Although arguments have been made in favour of the idea that the loss of significance could prompt behaviours in accordance to the ideology at which one is exposed (violent/benevolent), and in turn to sacrifice themselves for the cause that the ideology promotes, that has not thus far been explored in the framework of the pro-social ideologies (including the pro-environmental one).

To investigate whether pro-environmental ideology, if subscribed, determines the engagement in difficult pro-environmental behaviours when the QPS is activated, a first qualitative study and two subsequent quantitative studies have been done. The first two studies have been done in the context of the BIOMOT EU 7th FP project. In the first study, 40 history of life interviews have been carried out, coded and analyzed. Subjects have been recruited on the basis of their job activity and commitment in protecting nature or not, obtaining two sample groups: Committed Actors for Nature and biodiversity (CAN, N=25) vs. Committed Actors for Society (CAS, N=15).

The analysis of the interviews demonstrated that QPS motivational force motivates each sample groups' participants in being strongly committed in their actions respectively for nature vs. for society. The main difference between the two groups subjects is their ideology, and in particular the values that they embraced: CAN embrace biopheric values, while CAS embrace altruistic values. Moreover, results suggest that the values that address behaviours have been usually internalized during their early age.

In the second study (N=183), we assessed quantitatively the role of QPS in predicting difficult pro-environmental behaviours. High search of meaning people have the tendency to act difficulty pro-environmental behaviours rather than average and easy ones. Moreover, results suggest that the relation between search of meaning and difficult pro-environmental behaviours is controlled by pro-environmental ideology. Finally, the greater is the level of pro-environmental ideology, the greater is the tendency to act difficult pro-environmental behaviours controlled by the willingness to sacrifice for the environmental cause.

In the third study (N=131) a sequential mediation model has been tested. Results confirmed the relation between search of meaning and the intention to act difficult pro-environmental behaviours controlled first by the pro-environmental ideology, and then by the willingness

to sacrifice for an environmental cause.

Possible developments and further studies are discussed in the light of general QPS theory.

Neurophysiological measures for perception of insecurity in urban landscape: do green areas and features

Gloria Piccinin¹, Fabio Babiloni¹, Marino Bonaiuto¹

¹Sapienza University of Rome, Italy

Safety is a multidimensional construct, and theoretical approaches focus on physical and social levels of its determinant and consequences underline determinant and consequences can be seen both at a physical and social (personal and community) level. Human territoriality involves physical space, possession and identity but also dominance, control, conflict, safety arousal and vigilance. traditionally, personal safety has been studied in terms of psychological reactions to crime. Fear of crime appears as an apprehension of attacks and of their consequences: damage and injuries caused to psychological and (or) physiological integrity of an individual. Residents perceiving more clues (incivilities) to the underlying level of disorder in their immediate environment feel more vulnerable, more at risk, more fearful.

The first aim of the present research is to understand how the presence of risk factors can influence perception of urban insecurity, using neurophysiological methodologies, such as EEG and eye-tracking. Physical order and disorder factors are inserted into some rendering representing urban environments (realistic but not real, in order to control the level of attachment to place), that contains both green and built areas. In order to create the most immersive experience as possible these images have been projected on large screens. Participants can observe 15 images randomly presented of urban escape. In order to maintain always the same number of factors displayed on the neutral image, the visual representation of physical disorder factors decrease (from 15 to 0) while those of order increase (from 0 to 15). Factors were chosen according to literature. A pilot study confirmed and increased the original number of factors. Perception of insecurity assessed by implicit and physiological (EEG and eye-tracking glasses) and explicit verbal (Likert scales) measures. A sample of 30 healthy people involved in the experiment. During the experimental session were assessed: neurophysiological activities by activation state-level of brain (EEG), where visual attention is focused (eye-tracker) and degree of perceived urban insecurity (self-report Likert scale). Results of previous researches (self-report) about perception of urban insecurity show that the increase of risk factors number increase perception of urban insecurity. The present findings show how EEG and eye-tracker methodologies, along with the measurements of explicit variables could be used to obtain hidden information, not obtainable otherwise, and, most importantly, how these tools could help to analyze the perception of insecurity urban escape. One of the analyses concerns the role of maintenance of green areas that can have a deep influence on the global evaluation of an "ecologic" observation of an urban escape. Results and discussion are focused on the role green areas and features can play within urban places regarding insecurity and safety perceptions.

Green breaks: The effect of green areas within school environments upon child's attention and performance

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The concept of restorative environments underlines the recovering aspects of places, which allow people to distract, to relax, to free their minds and to distance themselves from ordinary and stressful aspects of everyday life. Within this framework, specific attention has been given on attention restoration effects elicited by natural environments. However, a substantial lack of research is still present in the literature about the potential benefits of nature in school environments, and further research is needed to address whether or not the presence of nature in schools exerts restorative effects on pupils' attention boosting their scholastic performance. Accordingly, the main aim of the present research is to understand the positive effects of natural environment at school on pupils' attention restoration and their academic performance.

In a first experiment, the tested hypothesis is that a natural (vs. built) environment would exert a restoration effect on pupils' attention. A within-subject design was used to test our main hypothesis. Pupils' attention was measured before and after recess-time, in two different conditions (play in a natural environment vs play in a built environment); moreover, the perceived restoration effect in which children had just played (natural vs built area), was measured after each play in each of the two experimental conditions. In this first experiment, 82 Italian primary school children participated in the experiment and were tested on three standardized attention test (Digit Span Test, Bells Test and Go-No-Go test). A series of repeated measures ANOVAs showed a positive effect of the environment on some components of attention (concentration, sustained and selective attention); moreover results showed a main effect of context (natural vs built environment) on perceived restorativeness (measured by PRS-C). Playing in natural (vs. built) space during school-time helps the restoration of some attention components and its perceived effect.

In a second experiment the tested hypothesis is whether this attention restoration effect can boost pupils' academic performance. Thus, in line with the first study procedure, a between-subject design was used to test the hypothesis that attention restoration provided by natural (vs. built) environments positively (vs. negatively) affect scholastic performance. Standardized tests for measuring various aspects of attention, restoration and scholastic performance has been used. Results showed a main effect of context (natural vs built environment) on perceived restorativeness; playing in natural (vs. built) space during school-time can help the perceived restoration effect. Finally, in order to understand which are the main social-psychological variables that explain the attention restoration process elicited by natural (vs. built) environments, in a final third field experiment the mediation effect of perceived restoration on actual attention restoration and scholastic performance is tested. Theoretical and practical implications are discussed according to the attention restoration theory and with a specific focus on possible applications in the field of education.

The restorative quality of work environments and its work-related outcomes

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¹University of Cagliari, Italy; ²University of Verona, Italy; ³Sapienza University of Rome, Italy; ⁴University of Enna "Kore", Italy; ⁵University of Uppsala, Sweden

The concept of "restorative environments" (Kaplan & Talbot, 1983) underlines the recovering power of places: to allow people to distract, to relax, to free their minds, and to distance themselves from ordinary aspects of life and work. The physical environment, as a job resource, provides psychological benefits in terms of attention restoration, stress reduction, and well-being. The theoretical basis of the Attention Restoration Theory (ART; Kaplan & Kaplan 1989) considers four different components (i.e., Being Away, Extent, Fascination, and Compatibility) of the restorative environment. Such components should help to restore the "Directed Attention": a kind of attention requiring mental effort and inhibition from distractions to maintain the focus. Directed attention is prone to attention fatigue. The restorative quality of work environments can help the recovery from such mental fatigue and more generally can exert a positive effect on peoples' working life. Job resources' positive effect on work-related outcomes in organizations is described by the Job Demands-Resources model (JD-R; Demerouti, Bakker, Nachreiner, Schaufeli, 2001). Within such a theoretical framework (amid organizational psychology and environmental psychology), three different studies were carried out in the workplace.

1) The first study investigates the relationship between restorativeness and job-related psychosocial dimensions such as social support, work satisfaction, and work engagement. 123 offices workers filled in a self-report questionnaire including the Utrecht Work Engagement the Social Support Scale, and the Minnesota Satisfaction Questionnaire. Structural Equation Modelling (SEM) analyses showed a multivariate positive relationship between restorativeness, social support, work engagement and job satisfaction. Moreover, both a full mediation effect of work engagement between restorativeness and intrinsic job satisfaction, and a partial mediating effect of work engagement between restorativeness and extrinsic job satisfaction, were found.

2) The second study explores the relationship between restorativeness, work engagement and organizational cynicism. A self-report questionnaire was filled out by 247 employees. Results of hierarchical linear regression supported a positive effect of restorativeness in reducing both organizational cynicism and in fostering work engagement.

3) In the third study, the focus goes on the company's canteen buffering the relationship between work demands and fatigue, to the extent that workers perceive it to hold restorative quality. Furthermore, it is considered whether the restorative quality of the canteen signals the provision of organizational support, another job resource thought to buffer the demands-fatigue relationship. An anonymous self-report questionnaire was completed by 141 blue collars workers during their lunch break in the factory's canteen. Multivariate regression analyses indicated the relationship between work demands and fatigue is weaker when the canteen was perceived as a fascinating and compatible setting. Restorative quality is positively associated with organizational support in a bi-variate analysis, and multivariate analyses indicate that the buffering effect of organizational support on the demands-fatigue relationship could be taken to account for the buffering effect of the restorative quality of the canteen. Studies' results stress the importance of considering the organization's environmental features role for satisfaction, work engagement, positive relationships and performance at work: together they stress the

Parallel Session 25: Children's play and green spaces

Time: Wednesday, June 29 2016: 13:45 - 15:15

Location: Black Box, The A-building

Session chair: Sigrun Kabisch

Presentations:

Interactive play landscapes

Susan Paget¹, Jasper Heeffer², Andreas Rau², Eva-Lotta Sallnäs Pysander², Annika Waern³

¹Swedish University of Agricultural Sciences (SLU), Sweden; ²Royal Institute of Technology, Sweden; ³Uppsala University, Sweden

Abstract: This submission presents part of an investigative process including design, modelling and trials on site used in a project called Digital and Physical Play Environments. The project aims to strengthen/enhance children's every-day play experiences outdoors in their home environments by integrating interactive technology with landscape design. The project is financed by Vinnova and comprises eight different partners: KTH, Uppsala University, SLU, HAGS playground-equipment, HiQ-software, Urbio landscape-architects, Huddinge municipality and Nationellt Renoveringscentrum/NCC.

It is well known that children are spending more sedentary time indoors which is recognized to be a problem. The reason has been argued to be the introduction of computer gaming and social media. Research has shown benefits for children to spend time outdoors while on the other hand benefits with computer gaming has been found as well. One of the key questions emerging from the project is how the positive mechanisms that digital elements offer can be embedded in a landscape in a seamless way to motivate children to play outdoors. Seamless means that the digital is not perceived as an installation but as a quality of the landscape. Nature is diverse, and provides an abundance of materials for play as well as changing circumstances such as weather and seasons with different phases of plant and bug life. When viewed as a design material, computation offers both predictability and randomness, and shares with nature the quality of being a highly interactive element. The case-study/test-bed of the project is based in Huddinge, a suburb of Stockholm. A play concept called TUBE was developed and evaluated. The idea of TUBE is that children use natural material like stones, water, snow, branches or whatever can be found and put it in a digital sensor-device that presents feedback in the form of different lights and sounds. The sensors react on the qualities of such material, if it is wet, large, small or heavy. The prototype was installed for four days in a schoolyard, chosen because half of the space consisted of forest with available natural material. The evaluation procedure included observations of play with and without the installations, and a walking interview with children to understand their current play landscapes. Researchers observed the play with three different installations of the TUBEs, directed towards different qualities in the surrounding landscape. The study showed that play with stationary TUBEs became very physical, involving the whole body, and highly collaborative. Children went foraging in the landscape for materials leaving distinct traces of play around the TUBEs. We also tested a

mobile version of the TUBE, which showed a very different kind of play pattern that included more individual play and induced a sense of “ownership”.

All of the installations showed that adding interactive play to a landscape can induce new play patterns. In particular, we saw that the addition of interactive light and sound in the landscape functioned as an attractor, inviting the children to new modes of play engagement that were not always related to the digital functions.

Child-friendly environments – What is the role of green spaces and their management?

Märit Jansson¹

¹Swedish University of Agricultural Sciences (SLU), Sweden

Child-friendly environments – what is the role of green spaces and their management?

Märit Jansson

Swedish University of Agricultural Sciences (SLU)

Child-friendly environments have been described as where children have much independent mobility and there is richness in the possibilities for activity, so called affordances (Kyttä, 2004). The child-friendliness of environments can thus be affected by many different socio-environmental factors. It needs clearer definitions, but can also vary pending on the setting (Broberg, Kyttä & Fagerholm, 2013). Children’s participation and adults’ understanding of their perspectives have been emphasized as important for child-friendly environments, and also the properties of the environment itself, including green and other open spaces (Riggio, 2002). Green space is affected by processes of planning and design and by continuous management, the latter including both development and maintenance of existing green spaces. There is a particular lack of studies of the role of green space management for child-friendly environments.

The aim of this study is to explore children’s own perspectives on their local green spaces and their management in order to understand the possible contribution to child-friendly environments. This is approached through a case study of the local environments around two schools, one in an urbanizing village with around 4 000 inhabitants and one in a city district of a larger town (close to 700 000 inhabitants in the town with its suburbs). The two studied case environments both had rather much green spaces, high socioeconomic status and mainly detached houses.

Children aged 10-11 were involved through qualitative walking interviews in groups, so called child-led walks. Five groups with totally 16 children participated in the village and five groups with totally 15 children in the town. The children were prepared for the study through an indoor task about their local outdoor environment, and instructed to show the researcher the places that they wanted. The children then led the walks and the researcher posed follow up questions to further explore management aspects of the local environment. The child-led walks were documented through recordings, photos and by taking notes directly after. The analysis was qualitative and thematic.

The children highly valued the green spaces in their local environment and were particularly fascinated by variation in content and character with the presence of elements such as water, trees, hills, animals, grass and flowers. Also variation in management level was positive, as unmanaged green spaces often became children’s own places, although also some playgrounds and similar managed spaces were favorites. The children showed an

interest in the management work and expressed own ideas, but few children actually had a dialogue with park workers. The children were most familiar with the environments closest to their homes, and living far from the school or being much involved in organized activities after school appeared to be negative for their independent mobility and knowledge of the local environment.

The results showed that there are several ways in which green space management can contribute to child-friendly environments, such as by children’s participation or by providing a variation in content and management level of green spaces.

Nature routines and affinity with the biosphere: A case study of preschool children in Stockholm

Matteo Giusti¹, **Stephan Barthel**¹, **Lars Marcus**²

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This talk discuss the paper “Nature routines and affinity with the biosphere” published in *Children, Youth and Environment* (Giusti et al. 2014). The paper answers the research question: “does the absence of nature experiences in cities correlate with reduced connection with nature in preschool children?”

We correlate spatial accessibility to nature routines with the results of ad-hoc games that measure emotional and cognitive affinity with the biosphere in 5 years old children.

Accessibility to nature experiences is measured with a GIS analysis of the walkable distance from the locations of all the municipal preschools in Stockholm to a variety of different natural environments.

Connection with nature is measured quantitatively with empathy towards animals, environmental concern for environmental degradation, environmental awareness.

Preschools with nature-rich routines have children who are 15% to 17% more empathetic for non-human life forms, more concerned for environmental degradation, and more cognitively aware of human-nature interdependence. Considering that cities are the most common human habitat, the intentional design of their very forms have great potential to remind, cherish or neglect the interdependence of human and biotic well-being.

Adding natural spaces to social indicators of intra-urban health inequalities among children: A case study from Berlin, Germany

Nadja Kabisch¹, **Dagmar Haase**¹, **Matilda Annerstedt van den Bosch**²

¹Humboldt University of Berlin, Germany; ²Swedish University of Agricultural Sciences (SLU), Sweden

A number of studies suggest a relationship between the health of urban population and the quantity and availability of green and water spaces in their daily environment. In this presentation, we explore the potential spatial relationships between children’s health determinants and outcomes and natural spaces in the city of Berlin, Germany. In particular, health indicators such as overweight and viso-motoric development are related to environmental indicators such as the natural space cover (defined as green and blue spaces), natural space per capita and distance to natural spaces; however, these indicators are also correlated with social determinants of health. The methodological approach used in

this study included bivariate correlation, a factor analysis and a hierarchical cluster analysis to explore the relations between health inequalities and social, socio-economic, and land use parameters. The results on a sub-district level indicated that there was a correlation between natural spaces and social health determinants, both of which displayed a certain intra-urban spatial pattern. We found that a lower percentage of natural space cover was correlated with deficits in viso-motoric development, and areas with lower natural space per capita had significantly higher values of overweight in children. This was found particularly in the districts that had lower social conditions. On the other hand, the districts with the highest social conditions had the comparatively lowest levels of complete measles immunization. This study may facilitate public health work by identifying the urban areas in which the strengthening of health resources and actions should be prioritized and also calls for the inclusion of natural spaces among the social health indicators included in intra-urban health inequality tools.

Parallel Session 26: Cultural heritage in global transformation

Time: Wednesday, June 29 2016: 13:45 - 15:15

Location: Room A:A, The A-building

Session chair: Tony Craig

Presentations:

Architecture of the vine in the region of Entre-Douro-e-Minho phenomenology and landscape

Ana Gallego Palacios¹

¹University of A Coruña, Spain

Introduction

On the basis of an aesthetic emotion, as a response to the landscape of Entre-Douro-e-Minho, north Portugal, this thesis tries to investigate how it has been built, about the social, cultural and political issues that have generated it, focusing on aspects of the constructed. Connections, enabling to articulate and link the landscape with the decisions taken on it, making us more aware of how is expected to be affected in order to preserve and promote biodiversity and multi-functionality of the traditional rural landscape and multifunctional and multiple cropping.

Analyze for learning subtle and sensitive ways of doing, without erasing the natural scenery and cultural legacy. To describe, to define and to set out the nature of the traditional landscape, against the tendencies of change such as single-crop farming, fillings, large infrastructures, over-exploitation of natural resources, new irrigation systems or the extraction of inert. These predictable conflicts are ending with the traditional agricultural landscapes, built over time, and based on other systems of production and coexistence. To end up reflecting among other things, about an enhancement, adapted to the needs and recognition of current forms of life and a holistic and integrated vision is needed for a successful relationship with the environment and landscape

Methodological approach

The approach to the issue is realized through out three diferent scales: global, intermediate and detail scale

Two diferent attitudes are combined to built the method:

On one hand, the body as place of perception, a sensorial approach, on the other hand a geographic analysis, formal approach

Main findings

Attention to the previous in terms of topography, fertility, ancient wisdom etc...

Diversity in solutions

Private vines covering public space

Entreajuda – Comunity and collaboration

Scale – rythm - shapes

Conclusions

1. Political, ethical and aesthetics issues are concepts in relation
2. Landscape, when is organized attending to rationalization of natural resources and to ancient wisdom:
 - a) facilitates linking landscape and environment
 - b) It promotes balance between landscape and environment relationships
 - c) It encourages the emergence of creative constructive solutions and learning ways to balanced, sensitive and subtle relationship with the environment and life
 - d) It produces a diverse landscape and a greater biodiversity
3. Architecture and landscape built collectively, with the participation of the people, generates a landscape which enables a greater quality of life and a cultural identity where people are represented in all its dimensions and characteristics
4. A holistic and integrative vision is required for a satisfactory relationship between environment and landscape, for which derive in a sensitive and respectful intervention
5. Traditional agricultural landscapes should be valued adapting to the needs and recognition of current forms of life

Key words: landscape/ phenomenology/ architecture

This work is part of my doctoral thesis presented in 2015
Architecture University in A Coruña, Spain
calification: summa cum laude

Mental maps revealing inhabitants' attitudes toward their cultural heritage?

Methodological considerations in a fieldwork

Péter Brózik^{1,3}, Barbara Keszei², Andrea Dúll³

¹Eötvös Loránd University, Hungary; ²Budapest Business School, Hungary; ³Budapest University of Technology and Economics, Hungary

Current conceptual and policy tendencies in cultural heritage emphasize the importance of cultural heritage as a strategic resource. A heritage protection paradigm towards the multi-dimensional space of integrated valuation has emerged, where the cultural, social, environmental and even economic impacts may be discovered. The Nivegy-valley Parish House Pilot Project is a part of a larger project entitled REVEAL: Revealing the Socio-Economic Impacts of Cultural Heritage (Fogarasi et al., 2015). It aims at developing an effective intervention methodology by answering the question how to maximize the economic and social ecological impacts of a historic building restoration.

The project is funded by the Norwegian Financial Mechanism and led by the Gyula Forster National Centre for Cultural Heritage Management, based in Budapest. In light of this, the aim of the present study was to explore the Nivegy-valley communities' relationship with the Parish and its environment. Participants (N=104) were from the five settlements in the Nivegy-valley.

Data was collected in two steps. First, participants filled in several surveys (sociodemographic information, place attachment, etc.), which yielded quantitative data.

Next, participants were asked to draw a picture of the valley following the instruction: "Please draw the Nivegy-valley". These drawing provided qualitative data in the form of mental maps. In the presentation, we will present the results of the content analysis of the mental maps. The analysis took place on three levels: looking at the drawings holistically, looking at the particular elements, and exploring the symbolic elements in the drawings. Concerning the first level, we set up 13 broad categories, which were further broken down to two to five subcategories (e.g., emotions apparent in the drawings). In the next level, we identified all the elements present in all of the drawings, 127 in total. Finally, with the help of experts, we set up eight thematic categories where we grouped those elements that appeared to be important for the community (e.g., wine). Four independent coders used the above system to code the drawings. The co-coders were found to be in more than 70% agreement, which ensured trustworthiness.

Finally, we will summarize the results of the comparison of the quantitative (survey) and qualitative (mental maps) data. Generally, we did not find support for certain hypothesized relationships (e.g., there seems to be no link between emotionality and attachment to or satisfaction with the settlement). There may be three reasons for this: a) the questionnaire and the drawings tap into different aspects of the participants' attitudes towards the settlements; b) the items of the questionnaire are abstract and general, while the drawing is more personal and tangible; c) there is a greater chance of miscommunication when doing such field work as people from two different backgrounds meet (academics vs. local inhabitants). In the presentation, all of the alternatives will be analysed.

The lost memories of a city: Users' perceptions of the impact of urban transformation

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Historic cities have been through a process of physical transformations. This is a common process; however, problems begin when historic buildings and places are harmed by those changes. In Brazil, many urban sites have been losing their historic identity due to the integration of new architectural projects. In this context, the aims of this research are: to investigate the impact of harmed historic buildings on perception of residents regarding visual quality and historic identity; and to analyse how much architectural mischaracterization are affecting the image that people have of the city and how much the historic identity of urban space has being lost to future generations (children).

This research adopts the case study approach having selected the city of Bage, in the south of Brazil. The first mention about the city is from 1683, and it is an important site of the history of Brazil. The central area is characterized by historic buildings, which are in their majority damaged by commercial signs and buildings adaptations. The following methods of data collection were adopted: (i) physical survey of land uses and level of damage of buildings; (ii) interviews with key actors (local writers, historians, professors and researchers) about the importance of city's heritage; (iii) mental maps with children in six schools (three located in the city centre, and three in periphery areas) to evaluate perception of future generation about the importance of historic heritage; (iv) questionnaires applied in loco to residents to investigate user satisfaction with visual quality of actual streetscapes.

Qualitative and quantitative methods (non-parametric statistics) were applied to analyse data. The total sample of respondents were 120; the interviewer were six; and the children who did the mental maps were 90.

The results indicated that the majority of children do not recognize the city as a historic site, due to the damaged of urban heritage. Isolate historic buildings are still preserved due to governmental programs and few house owners; however, the urban space as a whole has been losing identity. The results from mental maps with children were the richest as they show clear that children from peripheral areas, for example, do not related themselves with the city and the historic buildings. Moreover, children that study in the central areas related the city mainly with individual buildings, cars and roads; the historic identity is not the most important issue. The interview with the key actors were the only data that show user perception about the importance of urban preservation of the city. The conclusion points out that urban history has been erased for future generations and the cause of this is the direct damaged cause to historic buildings and places in the central area; residents are losing the connection with history of the city. Unfortunately, this is caused by urban and buildings interventions approved by local authorities, and the only way to change this scenario is to promoted heritage education for children since the first school years and for people who work directly with the municipality.

Transnational identities and community attachment among immigrants of global cities
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Globalization, with its diverse challenges, is expanding rapidly in 21st Century (Scott et al., 2001). Part of globalization, international migration has become an overwhelmingly urban phenomenon, largely concentrated in large, global cities such as Vancouver and Sydney (Ley & Murphy, 2001). Migrants appear to be increasingly diverse in terms of their social and cultural characteristics. To meet this challenging condition, planners seek strategies to incorporate minorities, manage diversity and facilitate the emergence of transnational communities with multiple identities and multi-layered citizenship in global cities. Indeed, the responsiveness of local government and planners to cultural diversity contributes to immigrant participation and development of citizenship in a multicultural community. The importance of this is illustrated in studies such as Banks and Mangan's (1999) research which examined immigrants' engagements in Toronto and the quality of life of the community in the face of urban change, revealed that the social networks that sustained the neighborhood over the years are not likely to be maintained if newcomers do not wish to engage (Corcoran, 2002).

Studies show that multicultural communities with the opportunity for public participation and civic activities are usually perceived by residents of that community or neighborhood as places that foster community attachment and cultural/social capital (Lewicka, 2011). Community attachment, cultural and social capitals are proposed as important factors in fostering transnational, inclusive global cities.

This research outlines a review of studies of community attachment among immigrants in global cities and highlights how to enhance community attachment and social capital through accessibility to urban public spaces. Research questions arising from this review

of literature include: How can public participation and collective action can be encouraged among immigrants in global cities? How can immigrants find their collective identities and community attachment in the global cities like Vancouver and Edmonton?

The literature suggests that in each city or neighborhood, urban spaces such as plaza and parks are the spaces where people interact with people within their own community, but also with members of other communities. These spaces have great influence on community attachment associated with specific neighborhoods. Findings reveal that the place-based psychological ties to the community can make a critical contribution to community development and planning efforts, as they are a source of community power and collective action.

Key Words: Global Cities, Community Attachment, Urban Green Spaces

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Micro-ecology of intergroup relations in a Lisbon neighbourhood

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The present study focuses on understanding intergroup relations in Mouraria, a historical neighbourhood in the centre of Lisbon, now undergoing a re-habilitation and transformation process, through the analysis of how residents use public place.

The dynamics of intergroup relations in a community have consequences for its social cohesion and well-being, especially during processes of social transformation. This is particularly evident in multicultural communities, like Mouraria, where different groups use place differently, and some residents dispute that inter-group integration has been successful, as claimed by the "official" discourse (from press and local authorities). In this sense, we want to know if people living in a multicultural community, and under a broader discourse praising multiculturalism in their community, reproduce segregation in the everyday.

For understanding these intergroup relations, we need to look at the meanings groups

construct about place, their behaviour in place and what consequences these have. The way people behave in place informs us about the role it may play for intergroup relations in a community. Place may produce isolation of the groups or their interaction. This can be unveiled by analyzing the micro-ecology of social relations, looking at how intergroup relations are expressed through place use.

The study analyzes how the three main groups of residents of Mouraria – traditional residents, immigrants and new gentrifiers – use two types of public places (transition places and inner places) in the neighbourhood, following the methodology of micro-ecology studies. It was conducted through 24 one hour observations at different day periods, in each of the two spaces. During each observation, the activities of the residents were recorded, regarding: 1) type of interaction - within-group or intergroup; 2) distribution of residents in space; and 3) type of use of public space (as passing places, places of conviviality, or places to use public services). A map of each public place was drawn for each 15 minutes of observation, and the activity of residents registered regarding the 3 activities mentioned above.

Results show that traditional residents, contrary to new gentrifiers and immigrants, are usually confined to the inner places rather than using also the transition ones. All residents interact predominately within their in-group. Immigrants and new gentrifiers, in particular, use the inner places more as passing places. These findings reveal a neighbourhood where there is little intergroup interaction and where patterns of segregation seem to be more frequent than patterns of intergroup interaction. Gathering different groups in the same place does not necessarily lead to a shared place. We discuss consequences for social cohesion.

Parallel Session 27: Pro-environmental attitudes and behaviour at work

Time: Wednesday, June 29 2016: 13:45 - 15:15

Location: Large lecture hall, IKDC

Session chair: Jennifer Senick

Presentations:

Organic conversion choice: Field study with farmers in South of France

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Conversion from traditional to organic farming is a willing and free farmer's choice. They not only decide to stop using pesticides in their lands, but they also have to change their own occupation's conception. Indeed, organic conversion implies deep and daily changes in agricultural practices and important disruptions in the overall meaning of farming. Why and how can this change take place? Which motivations subtend this choice? Is there an evolution of their pesticides' social representation? Do they have an increased perception of risks linked to pesticides use? This field study aims to understand determining factors for a voluntary choice in this process of practice change.

Fifty interviews were leaded with farmers in South of France: half with conventional farmers, and the other half with farmers in organic conversion phase. The interview grid was constituted with three main topics: (1) the farmer's job, (2) the choice between organic conversion and conventional agriculture, and (3) the perception of risks linked to pesticides. These interviews were supplemented with a survey about farmer's social representations of pesticides (Abric, 1994), their sense of membership towards farmers' group, their anxiety level face to pesticides use and their involvement about pesticides decrease.

We expect organic conversion farmers to be more receptive about health and environmental indicators than traditional farmers. In this sense, we believe that organic conversion farmers are more aware about risks linked to pesticides for themselves and for the ecosystem (Cellier & Marquier, 1987 ; Caplat, 2014). We assume that they feel cognitive dissonance linked to a gap between conventional agriculture practices and their farmer job's view (Van Dam et al., 2010). Hence, we expect that social representations of pesticides will be different between conventional farmers and organic conversion farmers. Anxiety level and involvement about pesticides decrease should be lower for conventional farmers than for organic conversion farmers.

Data analysis is in progress. Results will be presented during the conference, in order to put in obviousness links between risk perceptions, conceptions of agriculture and the decision making process.

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Positive strengths of workers in construction: An appreciative inquiry study into the potential for a more sustainable built environment

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The global urgency to tackle climate change through reducing carbon emissions has received renewed momentum through COP21, and recent flooding in the UK and India. The construction industry has a significant role to play, with the built environment producing an estimated third of all global carbon emissions (IPCC, 2014). Research in this sector to date has tended to focus on economic and technical drivers. Despite the sector being characterised as challenged by risk aversion and an unwillingness to change (Green, 2011), creating barriers to economic and technical change, social scientific perspectives have been rare (Henn & Hoffman, 2013). Psychological perspectives have yet to be harnessed but offer potential insights into individual tendencies and capabilities: psychological investigation of the motivations and strengths of people working in construction may suggest routes to behaviour – and industry – change. The current study sought to address the gap in psychological understanding, applying a novel methodology to explore the research question: What strengths do those employed in construction bring to their work that could be leveraged to encourage greater sustainability? Inspired by the field of positive organisational scholarship (Cameron & McNaughtan, 2014), we conducted interviews based on appreciative inquiry (Topfer, 2008) with 18 small builders and tradespeople who worked in UK construction. This theoretical perspective is based on the principle that a focus on positive strengths can unlock creative potential for improvement. We found that the participants enjoyed variety and challenge in their work. They took pride in doing a good job, and particularly enjoyed the sense of achievement of creating a visible and material artefact. Unexpectedly, most also referred to their relationship with co-workers and with customers as contributing to their enjoyment of work. They valued the quality of the job they did as a key personal motivator. The strengths they identified included technical skills, working well with people and problem solving. The findings support Sennett's (2009) perspective on the modern 'craftsman', as well as exemplifying factors proposed as contributing to meaning and motivation in work (Hackman & Oldham, 1976). While not suggesting that such positive motivations necessarily apply to all who work in construction, we propose that nonetheless these positive strengths and values offer a solid basis for development towards the goals of sustainable construction. Three examples of such connections are proposed. Firstly, sustainable construction can be linked with quality, developing the notion that build quality now necessitates attention to energy and water efficiency and use of more sustainable materials. Secondly, craft and problem solving skills can be directed at dramatically improving airtightness in homes. Thirdly, the strong relationships that can develop within building projects and between builders and clients can operate as a network spreading knowledge and influence towards sustainability. By developing discourses around the challenges of more sustainable construction which relate to craft skills, a quality product and on-the-ground problem solving, there is scope to

engage those individuals within the industry who directly deliver the built environment, on bases that speak to their pride in their job and their craft.

Monitoring sustainability culture at the university of michigan: An overview and results from a multi-year program

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The scientific challenges of sustainability on which organizations and cities have focused their efforts represent only part of the necessary social transition to a sustainable society. Universities can play a pivotal role in addressing the more difficult yet critical aspect of the sustainability transition. That role is in creating and maintaining a "culture of sustainability" on university campuses which can serve as a model for what is needed in cities and in the corporate world. Culture of sustainability is defined as a culture in which people are aware of major ecological and environmental challenges, are behaving in sustainable ways, and are committed to a sustainable lifestyle for both the present and future. Therefore in order to promote a cultural transformation, nothing less than a paradigm shift is needed in society generally, and more specifically in universities, other organizations, and in governmental thinking.

This paper reviews efforts to change the culture of sustainability at the University of Michigan (U-M) and discusses an approach to measuring and monitoring that change over time. The Sustainability Cultural Indicators Program (SCIP), initiated in 2012, is intended to inform U-M officials and others responsible for day-to-day operations of the University including its academic programs. Furthermore, it is intended to serve as a model demonstrating how behavioral research can be used to address critical environmental issues within universities, in other organizational settings, and in cities.

Following a review of the SCIP process including the use of surveys of people and buildings, findings to date are summarized as indicators of cultural change. Findings reveal that:

1. Students, faculty, and staff are more aware of sustainability in general and U-M's sustainability initiatives than they were 4 years ago, particularly in regard to waste prevention and sustainable foods.
2. Behaviors have remained fairly constant over time although student engagement in sustainability classes, programs, and activities has increased. While commitment to sustainability has been high among members of the University community, there is still a small but significant number who indicate a lack of commitment.
3. The behaviors of students are far more in tune with the goal of greenhouse gas reduction than the behaviors of staff and faculty. This is largely due to differences in the ways each group travels to and from campus. Students are also likely to know more about transportation options available to them and are more engaged than either staff or faculty in sustainability activities on campus.
4. Compared to students and staff, faculty tend to act in a more sustainable manner with respect to conserving energy, preventing waste, purchasing food, and more generally, engaging in pro-environmental activities outside of the University. Faculty members also express a higher level of commitment to sustainability than others on campus.

Finally, the on-going analysis of data including the use of environmental indicators is

discussed along with its contributions to environment-behavior research and policies dealing with community engagement toward a more sustainable society.

Impact assessment of environmental management systems in Mexican higher education institutions certified with ISO 14001

Claudia Manzano Jiménez¹, Enric Pol¹, Montserrat Yepes¹

¹University of Barcelona, Spain

Introduction

Today the concern for the care of the environment has led many organizations to undertake activities to take protective measures, the origin of this concern can be summarized in three factors:

- a) The effect of increasingly broad and demanding legislation.
- b) Pressure of stakeholders, formed by customers, suppliers, employees, investors, protest groups, the community in general and the citizen as a consumer.
- c) The search for eco-efficiency, for environmental commitment or economic interest.

Environmental Management (EM) is an intentionally structured decision-making process from a pro-environmental vision aimed at a more sustainable development. It involves and conditions the organization's objectives and strategies. It aims to reduce the environmental impact of their activities. It has a central and important technological dimension, but also a dimension relative to organization, behavior and emotional processes.

Technological, organizational and behavioral processes are addressed in this investigation.

In this sense, the education sector has not been an exception, aware not only of the importance of environmental protection, but their responsibility in the training of students.

The educational system "Tecnológico Nacional de México" (TecNM) founded in 1948 is immersed in the ISO 14001 certification process of the 266 higher education institutions that integrate it.

Methodological approach

The design of this research is transversal, descriptive, comparative and based on a mixed triangulation approach.

General purpose:

To analyze the differences in Technological, Organizational and Environmental Behavior dimensions between employees of Mexican higher education institutions that are certified with ISO 14001 and centers that do not have certification.

Specific objectives:

- To describe the changes in technology to achieve certification.
- As for the organizational dimension, to compare the results in people:

◊ Identification and commitment

- ◊ Job satisfaction
- ◊ Motivation
- ◊ Attitude towards change

- To analyze the differences in values, beliefs and behavior prone to sustainability among workers in ISO 14001 certified centers and centers without certification

Being a mixed type research, questionnaires and interviews data collection was used, the instruments used for each dimension are presented in the next chart:

Dimension	Instrument
Technological	Interview
Organizational	Interview and questionnaires HSA (Quijano, 2006) EDC (Martínez, 2011)
Behavioral	Interview and questionnaires ECE (Pato, 2004) y CEE (EDUSOST, 2008)

Main findings

So far, only qualitative data obtained in 21 interviews have been analyzed. The investigation is at the stage of analysis of quantitative data; this will be completed by the dates of the conference, where we will be able to discuss the final conclusions of the research.

Conclusions

There is a similarity in results in the universities of the sample; the purchase of machinery or equipment was not necessary to achieve certification, there is widespread ignorance concerning the certification and organizational issues; about environmental issues there is concern and actions are carried out in the universities whether they are certified or not.

Key words: Environmental Management, ISO 14001 Norms, Mexico's educational system (TecNM).

Environmental Management Systems in universities in Guadalajara, Mexico and the beliefs and pro-environmental behaviors of their students

Diana Peña-Guzmán¹, Enric Pol¹, Montserrat Yepes¹

¹University of Barcelona, Spain

Due to the causes of environmental problems are rooted in human behavior, as mentioned Oskamp (1995), and worried to outline new perspectives for future development that lead to sustainability, Proposals have been generated to change society and its institutions. Higher education is considered as a strategic institution that contributes to the search for environmental solutions and to build sustainable futures. In this sense, the university should be an example, not only concerning to the specific contents of the subjects, but also in their general performance.

The Mexican government is making efforts in order to make the higher education institutes, incorporate sustainability into their systems and, at the same time, to get the certificate in Environmental Management System (EMS). That is why, there is an interest to know

if the work done by universities to achieve and maintain the environment certification, is extended to its students, promoting beliefs and behaviors compatibles with the preservation of the environment.

This research is done from the perspective of environmental psychology. It measures the effects of environmental certification in students of the degree in administration, who will be a key element in the near future, in making business decisions.

The specific objective is to prove whether there are differences in beliefs and pro-environmental behaviors in the students, according to the degree of implementation of the Environmental Management Systems (EMS) in their university.

The degree of implementation of the EMS has the following levels:

- 1) Certified EMS: Universities which are certified with an EMS.
- 2) Implemented EMS: Universities that have implemented an EMS (but, are not certified).
- 3) Not documented EMS: Universities that have not yet introduced policies and environmental strategies in their facilities, in a formal and documented way.

Instruments: environmental beliefs and behaviors were measured through two instruments: The New Ecological Paradigm (NEP) (Dunlap, Van Liere, Mertig & Jones, 2000) and the Expressed Ecological Behaviors (CEE, for its acronym in spanish).

Sample: was carried out with 495 students, in the bachelor or Management and Business, studying from the fifth semester onwards, in six Mexican universities, in Guadalajara Jalisco. Two of these universities have a certified Environmental Management System, two universities have implemented an EMS (but are not certified), and two of them have a not documented EMS.

As for the empirical results, to prove the stated objective, the conclusion is, that there are not differences at a global level, nor as to the measurements of NEP, nor as to the measurements of the CEE.

However, we found significant differences in the factor of anthropocentrism of the NEP instrument, where universities with a not documented EMS, showed the lowest level. There were also found in the factor of "anthropocentric beliefs", in the CEE instrument against the universities with an Implemented EMS.

Parallel Session 28: Supportive indoor environments for vulnerable elderly

Time: Wednesday, June 29 2016: 13:45 - 15:15

Location: Small lecture hall, IKDC

Session chair: Ann Sloan Devlin

Presentations:

Wandering behavior of people with dementia in adult day-care centers

Congsi Hou¹, Gesine Marquardt¹

¹Technische Universität Dresden, Germany

People with dementia often exhibit wandering behaviors within the environments of care facilities. This complex behavior in care facilities can be problematic because of the possible interfering with other caregiving activities. When wanderer infringes on the territorial spaces of other facilities residents, the occasion may provoke interpersonal conflicts. Studies have reported that taking care of wandering residents requires costlier care. In care facilities, wandering is often restricted by caregivers owing to safety risks including elopements, falls, and injuries.

On the other hand, by looking at the potential meaning of wandering from the standpoint of people with dementia, research has suggested that wandering can be beneficial within a safe environment. The behavior promotes circulation and oxygenation, is a form of exercise and can be an indicator of good physical health. In response to this, widespread tolerance, even support, for active wandering has been encouraged to be fostered. However, due to a lack of empirical study on wandering behavior with regards to care environment, caregivers have not come to fully appreciate wandering, and are less willing to let care wandering recipients get out their sight.

Prior studies have suggested that spatial accessibility and visibility have a triggering influence on the movements of their residents in long-term care facilities. Moreover, it has been reported that identifying the wandering pattern of people with dementia contributes in efforts to supervise the behavior. Therefore, the purpose of this study is to give insights into the wandering patterns of people with dementia with regards to spatial configuration in day-care facilities. Two major methods, behavior mapping and Space Syntax, are employed. We performed a rigorous study in 6 adult day-care centers in Germany to investigate the wandering patterns of their care recipients. A four-week observation using the method of behavior mapping was applied in each of the day-care centers, contributing to a total observing time of over 500 hours. Meanwhile, quantitative analyses of the layouts from Space Syntax were conducted. We applied correlation tests to verify the relationship between spatial accessibility and visibility to the frequency of wandering of care recipients. The results report statistical significance of a positive correlation between wandering and spatial visibility, meaning that wandering occurs more frequently in highly visible areas in adult day-care centers. This finding matches to graphic illustrations of wandering patterns in our study. The graphic illustrations indicate a strong preference for wandering in lounges and hallways, which are more visible from other areas, instead of in living rooms or activity

rooms, which are of great interests to the care recipients. The presentation will introduce these findings graphically and provide new insights into the way architects process design of wandering-friendly day-care facilities for people with dementia. Several practical recommendations, including suggestions on floor plan design and furniture organization, will be given.

Keywords:
Wandering behavior; people with dementia; adult day-care centers design

The analysis on the occurrence and incident of residential falling accidents by elderly people in Chichibu-city, Saitama, Japan
Hiroko Mizumura¹, Shin Yamazaki²

¹Toyo University, Japan; ²Oyama National College of Technology, Japan

In 2015, the aging rate in Japan recorded 26.8% and Japanese society has faced to super aged society. Many of social systems to support elderly people limit to function, and also we should reduce social costs to maintain our super aged society.

The social cost compensate for the residential accidents by elderly people is the one of the biggest problem to reduce in Japan. The main purpose of this study is to explore the current conditions of occurrence and incident of residential falling accidents by elderly people, targeting Chichibu-city where is the highest aging rate municipality in Saimata Prefecture, located in the mountainous area and north of Tokyo Metropolitan government.

Cooperating with municipality of Chichibu-city, we attempted questionnaire survey distributing 523 elderly households and we got 460 valid responses (valid response rate: 87.95%) in 2014. The proportion of each gender was composed of 55.2% of male and 43.7% of female and there was in the late elderly more than 50%. Most of them were living in Japanese wooden structured and detached house with their families. For the occurrence and incident situation, we analyzed the reasons of the accidents and their measures to protect these accidents from the points of place, material of floor, time, season, footwear and so on.

As the results, following points became clear. 30% (138 people) of responses have experienced occurrence and incident of residential falling accidents in passed one year. The percentage of occurrence increased as the age of response rose. The main reasons of falling accidents are stumbling and sliding, and these causes were also those induced in the living environment and life style of Japan. Especially a small step to be derived from the traditional residential structure in Japan was the biggest cause of these accidents, we should correspond to eliminate these small steps. 50% of them who experienced accidents had taken measures to protect these accidents, and corresponding to the problem, we can classify 2 approaches. First one was physical environment improvement and second was improvement of physical ability.

Post Occupancy Evaluation of a Co-Housing Project for mixed generations
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The current study examined to which degree the architecture of a co housing project for mixed generations contributes to satisfy the functional needs of senior citizens (Lawton's person-environment fit model, 1972) and particular needs imposed on home environments. Based on Maslow's hierarchy of needs Flade (2006) defined such needs:

- physiological needs: light, silence, thermal comfort, regeneration
- safety needs: legibility, security, privacy
- social needs: communication, being-together, belonging
- self-esteem needs: aesthetics, respect and recognition
- self-actualization needs: personalization, identification

The fulfillment of all these 13 needs and the person-environment fit was examined in a post occupancy evaluation of a residential estate in Salzburg (Austria) with 129 accessible apartments arranged in seven buildings (two - four stories). These are positioned around a centrally located community square with an adjacent common room.

The evaluation used a two-step, multi-method approach. First, hypotheses about the degree of users needs' satisfaction were formulated from an experts' perspective, which was acquired using four different methods:

- 1) Seven in-depth interviews with experts involved in planning (architect, landscape architect, project developer), implementing (builder) and maintaining (property manager, coordinator), asking how they think that the architecture of the project satisfy users needs' satisfaction.
- 2) Analyses of existing plan material
- 3) Observations of physical traces (by-products of use, adaptations for use, displays of self, public messages)
- 4) Observations of residents behavior at the common square and room

The results of each method were then categorized in three "need fulfillment" levels:

- complete need fulfillment: method shows only results indicating fulfillment of the particular need
- partly need fulfillment: method shows results for and against fulfillment of the particular need
- no need fulfillment: the method shows no results indicating fulfillment of the particular need
- not applicable: no insights for the fulfillment of a need could be derived from the method
- These assessments were performed for three units:
 - residential estate
 - building
 - apartment

This procedure yielded three by four matrices for each of the 13 examined needs and the functional person-environment fit. From the matrices hypothesis were derived about

the need fulfillment level (ranging from 1 “very well” to 5 “not sufficient”) using this standardized key:

Very well: “complete need fulfillment” for all units and all methods, maximum one “partly need fulfillment”.

Well: “complete need fulfillment” for more than half units x methods. No “no need fulfillment”.

Satisfying: less than half of the units x methods show “complete need fulfillment” or more than half with at least one “no need fulfillment”.

Sufficient: No “complete need fulfillment” and at least one “no need fulfillment”.

Not sufficient: No “complete need fulfillment” and at least more than two “no need fulfillment”.

The hypotheses were then tested against residents’ perspective of their need fulfillment degree. Twenty-one in-depth interviews with residents varying in age, gender and location of the apartment were performed. Interviews were transcribed and analyzed using a qualitative content analysis (Mayring, 2007).

The results of the POE indicate that most needs were very well satisfied by the architecture of the project. From the results implications for specific improvements of the researched project and design guidelines for further projects similar in type were derived.

Elderly residents’ views on their home and its surroundings. Reflections after the researches on chosen housing estates in Silesia (Southern Poland)

Marek Niezabitowski¹

¹Silesian University of Technology, Poland

The purpose of the presentation is to show the extent to which elderly people are attached, related or bound to their residential environment.

The analysis of these issues has been conducted within several research projects (PolSenior project among them) concerning some housing estates in Silesia (Southern Poland). The empirical material comes from the surveys and in-depth interviews among residents of above mentioned habitats. The main purpose of the interviews was to throw a light on the attitudes of senior citizens towards their residential environment and different reasons for staying in present flat. Another goal of interviews was to indicate connections between these attitudes and the biography of respondents. The function of survey was to observe the frequency of these attitudes among the residents of the housing estates chosen for the analysis.

The research revealed that according to the respondents one of the most significant reasons for staying where they presently live is place attachment. Memories from earlier stages of their lives (autobiographical insideness, according to Graham D. Rowles) and the fact that their residential environment bring back to their mind the people they like, love or they can rely on (social insideness, according to Rowles) constitute the background of that place attachment. This attitude, although quite significant, turned out to be for the elderly residents not the only reason for staying in their present flat till the end of their life. Another very important cause is place dependence, which means the awareness of the fact that seniors’ needs can be satisfied in their habitat and their activities take place there. Yet another reason to stay is the realization of the fact it would be extremely difficult to remove

in old age and adapt to new surroundings. Moreover the research proved the relevance of some of the concepts derived from environmental gerontology, like for example Lawton and Nahemow (1973) model of environmental press. That occurs for instance when elderly residents of the housing estates find advantages of their flat and its surroundings despite its disadvantages and discomforts due to the pride taken in a successful adjustment of that flat to their needs for years.

As researched senior citizens tend to stay in their present flat till the end of their life and younger generation move to other towns or other districts of the same town the demographic aging of the population living in the habitats studied is expected. This implies the need for special infrastructure and facilities available for the older residents. Moreover, as seniors would like to be surrounded by not only their peers but also by younger people in the neighbourhood, something has to be done do make the settlements attractive for younger generations. As some of the senior inhabitants became left alone almost without any support, some methods of social work should be applied to create effective social networks among them.

Key words: elderly people, residential environments, sense of place

Sub-themes: 4 (human environmental perception) and 11 (theories of place, place attachment and place identity)

The impact of architectural layouts on the behavior of people with dementia in adult day-care centers

Congsi Hou¹, Gesine Marquardt¹

¹Technische Universität Dresden, Germany

Dementia represents a major public health challenge as a consequence of rapid increase in aging population. There are more than 9 million people in Europe alone experiencing dementia and the number is expected to triple by the year 2050. Symptoms of dementia affect memory, orientation, language, comprehension, and judgment. As the disease progresses, people with dementia are in increased need for assistance with daily tasks. Therefore, insufficient support for informal caregivers leads to difficulties in providing care for people with dementia at home.

Adult day-care centers, as one type of care facilities for people with dementia, have been attracting attention of researchers and practitioners since the 1990s. They provide community-based programs to meet the needs of people with dementia while relieving their families from the stress of full time care. Prior research suggests that a majority of care providers and care recipients find day-care service useful, and overall levels of satisfaction are high. Unlike nursing homes or other long-term care facilities offering accommodations, day-care facilities are relatively small in size and less complex in spatial configuration. These factors make day-care centers easier to establish. However, systematic studies of the building layouts of day-care facilities are still lacking.

Architectural layout has been increasingly recognized as one of the important environmental variables influencing the quality of care for people with dementia. Our research, therefore, aims at conducting quantitative study on building layouts of adult day-care centers and providing guidelines for the design of adult day-care facilities. We applied two major methods in the study: Space Syntax and behavior mapping.

Previous studies from Space Syntax have suggested that in long-term care facilities spatial integration has a significant influence on human behavior. Spatial accessibility and spatial visibility perform positive impacts on socializing activities and movements. Assuming that these positive impacts also exist in day-care facilities, we analyzed the floor plans of two adult day-care centers in Germany. They represent two typical layouts of day-care facilities: one living-room-dominated and one hallway-dominated. Their spatial accessibilities and visibilities were calculated by Space Syntax software. Meanwhile, five common behaviors of people with dementia were observed and traced. These behaviors consisted of wandering, standing, sitting, socializing and leisure activity. After an 84-hour observation on each care center using behavior mapping method, two groups of data about targeted behaviors were accumulated: the frequency and the location information.

Study results show positive correlations between spatial visibility and the frequencies of three behaviors, including wandering, standing and socializing. In hallway-dominated case, positive correlations of spatial accessibility to these three behaviors are also reported. Although the impacts of building layout on sitting and leisure activities were not significant, the trace illustrations indicate a preference of sitting and leisure activity in common space, especially close to the location of furniture.

The presentation will introduce our study with statistical results and detailed graphic illustrations. Guidelines for adult day-care centers design, as well as practical recommendations on furniture organization, will be given.

Keywords:

Behavior of people with dementia; adult day-care centers; space syntax

Parallel Session 29

Symposium: Psychological factors influencing (un)sustainable lifestyle choices and wellbeing in European societies

Time: Wednesday, June 29 2016: 13:45 - 15:15

Location: Room 4057, 4th floor, The A-building

Session chair: Adina Dumitru

Adina Dumitru¹, Ricardo García-Mira¹, Giuseppe Carrus², Tony Craig³

¹University of A Coruña, Spain; ²Roma Tre University, Italy; ³James Hutton Institute, UK

The need for a societal transition towards sustainability requires the concerted action of a variety of stakeholders and a keen understanding of the factors supporting or hindering the processes composing it. Transformative social innovation, defined as innovation that aims to achieve broad societal change, can be a key element in achieving sustainability. Profound changes in lifestyles are required to achieve a sustainable, smart and inclusive society that Europe is striving for.

Within the GLAMURS project, we propose a new conceptualization of lifestyles that shifts the focus of current thinking and research on what is needed to achieve significant transformations in our patterns of consumption, economic structures and prevailing social practices around work and leisure. It suggests a need to move away from the exiting additive conceptions of lifestyles (with a consequent focus on changing specific behaviours) and from sustainable consumption as a proxy for sustainable lifestyles. Instead, it proposes a definition of lifestyles as patterns of activities structured around the domains of work, home production and leisure, undertaken for a variety of goals and stemming from a wide range of motivations, which have associated consumption patterns. A special emphasis is placed on the relevance of dimensions of time and space for sustainable lifestyles. A wide range of pressures related to the domains of work and leisure have led to an increased experience of time scarcity and time pressure in contemporary societies. Together with increased complaints about wellbeing and the environmental crisis, such phenomena have led to a discourse and practice of alternative lifestyles. However, to date, a comprehensive understanding of the factors influencing environmentally-relevant lifestyle choices, patterns of lock-in into either sustainable or unsustainable trajectories or the motivations for joining sustainability initiatives has not been achieved. Furthermore, the relationship between certain environmentally-relevant lifestyle choices and wellbeing is not well understood either.

The conference theme states that the boundaries between home, work and leisure in modern life are increasingly blurred which has created new pressures on the individual. The GLAMURS project also starts from this acknowledgement and asks what the implications are for carrying out research on sustainable lifestyles. The present symposium will thus aim to unpack these issues and provide tentative answers to the following questions:

1. How can we best conceptualize lifestyles in general and sustainable lifestyles in particular?
2. What are the psychological and social factors that have most influence on (un)sustainable lifestyle choices?
3. What is the role of time and space in the understanding of lifestyle choices?

4. What is the relationship between (un)sustainable lifestyle choices and wellbeing in different European regions?
5. What future aspirations do European citizens have and what is their role in both desired and actual lifestyle changes?
6. What role do perceptions of time affluence/time scarcity have for environmentally-relevant choices?
7. What are the main drivers and effects of joining sustainability initiatives?
8. How does membership in sustainability initiatives influence lifestyle choices in different behavioral domains as well as levels of wellbeing?

Presentations:

Sustainable lifestyles as patterns of time-use: Preliminary results from a seven-region European survey

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Lifestyles characterized by patterns of intensive consumption are a key challenge for sustainability objectives. However, lifestyles cannot be equated to patterns of consumption, as they are in the first place patterns of activities and behaviours that fulfil needs and hold complex functions of group identification, identity formation and status signalling, the pursuit of happiness and wellbeing, and social communication (Scott 2009, Jackson 2009). As any human activity possesses both a temporal and a spatial dimension, and most natural systems exist within defined spatial and temporal boundaries (Mee et al. 2015), lifestyles need to be considered as patterns of time-use, that take place in given locations, and have associated consumption patterns.

Determinants of patterns of time-use – relevant decisions that lock us – the role of aspirations on both actual behavior and desired lifestyle changes.

Within the GLAMURS project, a large-scale FP7 project studying the conditions that are necessary for the promotion of sustainable lifestyles and a green economy in Europe, a critical assessment exercise of the concept of lifestyles has been undertaken (Carrus et al., 2014). Based on this, we have proposed an alternative way of looking at lifestyles that takes both their temporal and spatial dimension into account and departs from both an additive view of lifestyles as well as the use of sustainable consumption as a proxy for sustainable lifestyles (Dumitru et al., 2014).

This conceptualization focuses on people's choices in terms of their patterns of time-use in everyday life and their drivers, in five domains of interest (work-leisure balance, food consumption, consumption of manufactured products, mobility and energy-use in homes). After discussing the implications of such a framework for research on sustainable lifestyles, with illustrations from focus group findings, we present the results of a survey undertaken in seven different European regions, with samples of respondents ranging from 100 to 400 subjects. Specifically, we will focus on the role of intrinsic and extrinsic aspirations (Gouzet et al., 2015) on the experience of work-leisure balance and on (un)sustainable lifestyle choices in the domains mentioned above. Preliminary results point to the fact that aspirations have an important effect both on actual lifestyle choices as well as on desires for further sustainable lifestyle changes. Secondly, we will focus on the role of the

subjective experience of time affluence/scarcity on lifestyle choices and the relationship both of these have with wellbeing. Taken together, the results point out to important drivers of sustainable lifestyle changes that go beyond promoting specific sustainable behaviors towards more integrative understandings of sustainable lifestyle transitions.

Keywords: patterns of time-use, intrinsic and extrinsic aspirations, desired lifestyle changes, time-affluence, sustainable lifestyle choices, wellbeing.

Main drivers and effects of joining sustainability initiatives

Karen Krause², Maxie Schulte³

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As one part of the FP7 EU-funded project GLAMURS, we analyzed sustainable lifestyle initiatives in seven regions across Europe to reach a better understanding on how and why such initiatives emerge.

The overall objective refers to the determinants for the adoption and evolution of sustainable lifestyles on micro-level. We focused on the main drivers for joining such sustainability initiatives as well as influences of a membership on lifestyle choices.

We used a two-part standardized online questionnaire. The first part covered topics such as work-life-balance, mobility choices, energy use, food production and consumption, norms, values and aspirations. It was distributed across the population of the same seven European regions. Sustainable initiative members were asked to fill in that same questionnaire as well as the additional second part. In this additional part, we included questions on topics such as motives for joining and changes in time use after joining the initiative.

In comparison to the results from the regional survey, we analyzed how members of initiatives differ from non-members, and how internal factors (e.g. values, well-being, goals, perceived time pressure, etc.) do relate to selected decisions and actions relevant for a sustainable lifestyle. First results from the different analyses will be presented. Using multiple regression analysis, we investigated if both pro-environmental values and social norms are strong predictors of becoming a member of a sustainable lifestyle initiative. We also investigated the strongest motives for joining said initiatives. A group comparison analysis, considering their daily life behavior, was carried out to answer how initiative members differ from people in the region when it comes to energy use, food consumption, shopping behavior and mobility choices. We hypothesize to find significantly more sustainable behavior style with the initiative members.

Based on our results, appropriate strategies to promote sustainable lifestyles in European societies are proposed.

Green breaks: The effect of green areas within school environments upon child's attention and performance

Tony Craig[‡]

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It is generally accepted that above a certain level of time pressure, a person's coping resources are placed under stress, and this leads to physiological, behavioural, and psychological changes (Gärling, et al., 2014). Allocating time to non-work activities such as restorative leisure activities has been shown to have an important protective effect against the depletion of mental resources that is common symptom of time stress (Gärling, et al., 2014).

One common intervention aimed at reducing time-pressure and reducing energy consumption is that of employers allowing their staff to work from home. Schipper, et al. (1989) note that the practice of working from home "alters both commuting and home energy use patterns, while reducing occupancy in places of employment and services" (Schipper p.310). If such practices are scaled up beyond small experiments, the impact on energy use patterns can potentially be quite dramatic. Corresponding shifts in flexible working policies (essentially resulting in an extended potential working day) can be useful in helping people to accommodate the various pressures on time, and the juggling of home and work. In addition, moving the practice of work away from predictable fixed hours has the potential to help reduce peak loads on the electricity grid, as the level of energy synchronicity is lower. That said, societies do not change quickly, and as Shove (2009) points out, despite the gradual broadening of the shoulders of the working day, the level of 'sociotemporal coordination' across society serves as a reminder of the strength of social practices. We do what we do because that is what is done. Although home-working is becoming increasingly common, the rhythm of work/leisure has not changed greatly, possibly due to the non-changing nature of other social structures such as the working hours of other businesses, and the fixed timing of other aspects of everyday life such as childcare and education.

This paper will present findings from a questionnaire survey (N=800) examining the relationships between time pressure, flexible working and wellbeing, with a particular focus on commuting between home and work. Early results show that there is negative correlation between reported levels of time pressure and life satisfaction, and that time pressure and difficulty sleeping are positively correlated. These findings will be discussed in relation to measures related to flexible working arrangements and satisfaction with leisure time.

Gärling, T., Krause, K., Gamble, A., & Hartig, T. (2014). Emotional well-being and time pressure. *PsyCh Journal*.

Schipper, L., Bartlett, S., Hawk, D., & Vine, E. (1989). Linking Life-Styles and Energy Use: A Matter of Time? *Annual Review of Energy*, 14, 273-320.

Shove, E. (2009). Everyday Practice and the Production and Consumption of Time. In E. Shove, F. Trentmann & R. Wilk (Eds.), *Time, Consumption and Everyday Life: Practice, Materiality and Culture* (pp. 17-34): Bloomsbury Publishing.

Keywords: time pressure; flexible working; life satisfaction; wellbeing; commuting

Social cognitive frameworks to understand sustainable lifestyles

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It is commonly assumed that substantial reductions of greenhouse gases emissions are required in the short term, to adequately tackle the unsustainable trend of human impacts on climate and ecosystems (Intergovernmental Panel on Climate Change – IPCC, 2013). While there is a growing consensus that a substantial portion of global climate change is due to human activity, still relatively few individuals are willing to adapt their lifestyle and reduce their ecological footprint. According to studies in this field, a consequence of the perception of climate change is an increase in ecologically responsible behavior, but little is known about antecedents of this phenomenon. It is therefore relevant to explore the potential of psychological theories to understand how humans develop more accurate perceptions of climate change and consequent environmentally friendly behaviors. Classical psychological frameworks (e.g., Theory of Planned Behaviour, or similar rational choice models) have been widely adopted to investigate how people shape their lifestyle, and to shed light on mechanisms underlying human sustainable lifestyle. Conversely, the potential of more recent social cognitive psychological frameworks (i.e., "Dual Process Accounts" and "The Strength Model of Self-Control") is relatively unexplored. We argue that these models might help to understand sustainable lifestyles, for two reasons. First, cognitive-psychological frameworks shed light on mechanisms underlying humans bounded rationality, which is likely involved in the shaping of unsustainable habits. Second, these models offer an interesting point of view on how people use their habits to restore physical and mental energy. Thus, in this work we review these models to understand how they can drive choices when individuals are faced with a decision involving two options (i.e., an eco-friendly behaviour and an eco-damaging behaviour). Dual-process accounts show that human functioning is based on two systems, so-called cold and hot. While the hot system works automatically, effortlessly, by associations, and relatively fast, the cold system is slow and effortful. Moreover, the hot system is often prey of emotions, while the cold system is controlled. We may deduce that rationality of decision making resides on the cold system, and whenever agents use more of the hot system, they give place to manifestations of bounded rationality. In other words, the cold system is involved in deliberative decision-making processes, whereas the hot system occurs when emotional arousal is triggered and can lead to irrational choices. The strength model of self-control has been proposed in order to account for the determinants of hot and cold systems being at work. The main idea is that individuals have a limited resource of self-control, and when this runs out they progressively fall into the hot system, so that the individual becomes ego-depleted. Thus, a second aim of this work consists of showing how daily habits by which individuals restore their depleted self-control resources might often rely on unsustainable options. Fruitful insights and guidelines to use these frameworks in future studies and practical intervention are proposed.

Promoting sustainable lifestyles in Europe: barriers and drivers

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¹University of A Coruña, Spain

Changes in communities are already taking place in many parts of Europe, through convincing initiatives like responsible food consumption groups, but achieving a concerted transition to more sustainable lifestyles is still far from becoming a reality. Within this context, GLAMURS Project aims to provide an empirically-grounded understanding of patterns of time-use and associated consumption patterns for different areas like food consumption, reviewing cooperative behaviour factors influence in initiative members representing different lifestyles. The GLAMURS Project identifies how lifestyles can change in a sustainable direction in Europe and what types of transition pathways need to be supported, with the aim of formulating policy recommendations that would support these transitions.

This paper will present a part of the empirical research carried out in the region of Galicia (Spain). Using a definition of lifestyles as patterns of time-use that take place in given locations, and have associated consumption and production patterns (Carrus et al., 2014, Dumitru et. al., 2014), and starting from the recognition that a certain level of consumption is a constant in human life, we investigated patterns of time-use and associated consumption, internal and external factors influencing lifestyle choices, and relevant trade-offs and spillovers between categories of time-use and consumption options. A series of focus groups and interviews with participants representing different lifestyles were conducted. Focus groups were carried out both with urban and rural residents in the region (one urban focus group and one rural), as well as with sustainable lifestyle “adopters”, which were selected based on their membership in two sustainable lifestyle initiatives in the region (one responsible food consumption initiative and one sustainable clothing initiative). Interviews were carried out with three categories of residents: those involved in sustainable lifestyle initiatives, a category of persons not involved but having an interest in getting involved and those with no interest whatsoever in a sustainable lifestyle. The data was analyzed using Atlas.ti, a computer assisted qualitative analysis software, and using principles of grounded theory (Willig, 2008).

Results underline the importance of sustainable lifestyle initiatives as supporters of sustainable lifestyle choices. Being a member of such a group creates possibilities for finding ways to deal with the inconsistencies between everyday sustainable and unsustainable choices and to deal with obstacles. However, in order to become a member in the first place, personal commitment to sustainability issues appears as a key driver. They also show that understanding patterns of time-use in everyday life holds a great potential for a more refined analysis of the barriers of and drivers to sustainable lifestyles. Policy implications based on these results will be discussed.

Keywords: time-use, consumption, sustainable lifestyles, cooperative behaviour, transition pathways, pro-environmental behaviour

Between Knowing, Wanting and Doing: Motivational lock-ins in sustainable lifestyle decisions

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Previous research on sustainable behaviours suggests that unsustainable choices might not necessarily be due to insufficient knowledge or an absence of concern or social norms. Instead, the obstacle might lie in the multifaceted and contradictory nature of the norms, emotions and knowledge associated with the issue: Some people, especially those concerned about environmental issues in general, might know and feel too much in order to make pragmatic pro-sustainability decisions. This may result in the inhibition of sustainable behaviour in spite of pro-sustainability values in general. Such blockages, where the pursuit of one motivation interferes with another one, can be conceptualised as intrapersonal conflicts or, where these are enduring, motivational lock-ins. These are relevant as they might indicate potential areas for behavioural change towards more sustainable lifestyles. Here, we explore data from semi-structured interviews conducted as part of GLAMURS with 105 members of the public in seven countries for such motivational conflicts. Approximately two-thirds of these were active members in sustainability-related initiatives (most of these of grassroots character). The remaining third were potentially interested in sustainability matters, but not formally organised.

Our interviewees reported on many behaviours and decisions where they strived for greater sustainability. At the same time, it became clear that even those actively engaged in sustainability issues were able to change only parts of their consumption patterns and lifestyles. Interestingly, interviewees attributed hardly any changes in their behaviour to their membership in a sustainability initiative. Indeed, for most of the highly engaged individuals, their membership seemed to be the continuation (and to some degree, reinforcement) of a prior engagement or lifestyle.

While we had expected especially our highly engaged interviewees to face motivational conflicts due to their knowledge about and attitudes towards the consequences of different behaviours, this was not the case. However, our data still produced rich insights into the ways in which people perceived and dealt with actual and potential conflicts.

For example, many individuals applied cognitive emotion-focused coping strategies such as relativization and rationalisation. Interestingly, most of the interviewees were highly aware of themselves applying emotion-focused strategies and of the long-term inefficiency of these strategies. The most important problem-focused strategies entailed the development of habits or heuristics, e.g. non-negotiable aims that bypassed the need for repeated negotiation of competing motivations. Family reasons and responsibility for children were arguments that were frequently claimed to override most other concerns.

Overall, our findings on behaviour and motivational conflicts suggest that the expectations placed in grassroots initiatives as an engine of larger societal change might be misplaced: Most initiatives studied in our sample did not seem to be the place of lifestyle change that many would like to see in them. The general absence of motivational conflicts also suggested that our interviewees were largely rather confident about their current way of life in terms of its sustainability. This implies that governance following a business-as-usual scenario, with a strong reliance on bottom-up initiatives to generate societal change, will not lead to sufficient improvements in terms of mitigation of climate change.

A comparative study on wellbeing, sustainable behaviours, and time use of urban residents vs. Ecovillagers in Romania

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keywords: ecovillages, lifestyles, sustainability

The present paper aims to highlight a series of striking lifestyle differences between urban/suburban residents and members of rural-based ecovillage initiatives in the Timis County region of Romania. This is achieved by means of a comparative analysis of the two samples in terms of various lifestyle aspects, such as lifestyle satisfaction, desired lifestyle changes, patterns and experiences of time use, drivers and barriers to sustainable lifestyle choices, and subjective wellbeing. A series of behavioural domains with pertinent implications for sustainable lifestyles are also taken into account in said analysis, e.g. food, mobility, consumption etc.

Our analysis is based on data collected over the course of three Focus Groups which were carried out in Timis County during the spring of 2015, as part of the Romanian regional case study in GLAMURS. The Focus Groups had an average duration of 100 minutes and involved an average of seven participants. Each Focus Group's sample was composed of representatives of a particular category of interest: urban residents, rural residents, and ecovillagers, respectively. In order to analyse the collected data, researchers used a computer software for qualitative data analysis. Based on verbatim transcripts of the discussions, the answers were analysed using ATLAS.ti, and the researchers developed the codes and code families.

Our findings provided support for the assumption that membership in an ecovillage-type community initiative fosters the emergence of some very distinctive lifestyle aspects that provide a sharp contrast to a more conventional, urban-based lifestyle. Due to the fact that most ecovillagers had also been urban residents at some point in the past, parallels between their transition from the city to the ecovillage community and the emergence of said contrasts are vividly illustrated in their statements.

In our opinion, differences between the two samples pertaining to time-use as a source of wellbeing and experiences of time affluence and time scarcity are particularly noteworthy. While for urban residents, time comes across as one of their most pressing day-to-day concerns and a potent source of distress with dire implications for work-leisure balance and the quality of family life, ecovillagers provide a diametrically opposed perspective, with their particular views on time use describing it as a major source of subjective well-being and an indicator of high levels of personal autonomy and self-determination.

The themes of self-determination and autonomy also emerge in discussions of the drivers and barriers to sustainable lifestyle choices, as perceived by the Focus Group participants. Data shows that ecovillagers view sustainable lifestyle choices as predominantly governed by individual, dispositional factors, while in the case of urban residents, it appears that they perceive their opportunities to act sustainably as more dependent on external, contextual factors.

On the strength of our findings, the current paper provides insight into the benefits of membership in an ecovillage as an alternative lifestyle, with positive implications in terms of wellbeing, lifestyle satisfaction and environmentally-friendly behaviours, while also shedding light on the process of transitioning to such a lifestyle, with its inherent drivers and obstacles.

Parallel Session 30

Symposium: Restorative environments: Developments in Theory and Application

A symposium with five sessions

Co-chairs: Terry Hartig & Henk Staats

Terry Hartig¹, Henk Staats²

¹Uppsala University, Sweden, ²Leiden University, Netherlands

The restorative environment concept aids understanding of the health and developmental values that people can realize with natural environments, and largely for this reason it has received increasing amounts of research attention over recent decades. Much of the work done on nature experience and restoration has been informed by one or both of two theories in environmental psychology, the attention restoration theory of Stephen and Rachel Kaplan and the stress reduction theory of Roger Ulrich. The two theories differ in a variety of ways; they refer, for example, to different antecedent conditions from which people can be restored, to different kinds of restorative process, and to different outcomes in which restoration can be recognized. The conventional set of theoretical narratives continues to inspire and guide research, but the development of the field over the years has also involved efforts to refine, elaborate and integrate these theories and to identify significant gaps in theoretical coverage. This development has been accompanied by expansion in the scope of potential application, as researchers and practitioners have recognized ways in which environmental supports for psychological restoration can be more effectively recruited in the pursuit of a wide range of societal functions, such as health care, education, and public health. Although much of this work has focused on encounters with nature, other research has also sought to expand the scope of environmental coverage, emphasizing that restorative environments are not necessarily natural and that natural environments are not necessarily restorative.

The present symposium provides a snapshot of the current state of affairs in the development of theory and research on restorative environments. It brings together talented researchers from diverse countries and disciplinary backgrounds to share some of their recent work. The symposium comprises five sessions, each with five contributions. The first two sessions will cover basic issues in theory and research, including critiques of extant theory, possibilities for theoretical integration, problems in conceptualization, environmental simulation techniques, and neglected topics such as the relative contributions of top-down versus bottom-up cognitive processes and the link between restorative experience and transcendent experience. The subsequent sessions will include contributions concerned with the ways in which qualities of the natural environment and attitudes toward the natural environment figure in restorative experience; with the variety of needs for restoration and restoration opportunities that can be found in the some of the settings in which people young and old do their daily work; and with the potential significance of contact with nature in different clinical or therapeutic contexts. Through much of this innovative and exciting new work, a recurrent theme still is the classic one - the concern for restorative effects of encounters with nature.

Key words: nature, restorative environments, psychological restoration

Symposium: Restorative experience in clinical AND therapeutic contexts, part 5

Time: Wednesday, June 29 2016: 16:00 - 18:00

Location: Room A:B, The A-building

Session chair: Femke Beute & Terry Hartig

Femke Beute¹, Terry Hartig²

¹Eindhoven University of Technology, Netherlands; ²Uppsala University, Sweden

Presentations:

Restorative effects of green space: The need for more clinical evidence

Agnes Van Den Berg¹, Jolanda Maas², Karin Tanja-Dijkstra²

¹University of Groningen, Netherlands; ²Vrije Universiteit Amsterdam, Netherlands

Over the past decades, evidence for restorative effects of green space has been accumulating. However, the vast majority of this evidence comes from correlational research linking green space to public health outcomes, and experimental studies among healthy participants. Only few studies have been conducted in a clinical context among patient groups. Moreover, most of the available clinical research on restorative effects of green space has been conducted without random assignment of patients to experimental and control conditions, or even without control groups. The limited amount of clinical evidence constitutes an important gap in the literature on restorative environments.

In this presentation, we will first outline why it is important to collect more clinical evidence on green space as a supportive environment for therapy and other health care practices. Among other things, we will argue that the availability of clinical evidence is a vital requirement for a greater acceptance of the restorative potential of nature and green space among medical professionals. Furthermore, clinical evidence is needed to determine optimal dosing, treatment duration and relative effectiveness of different types of green interventions for different groups of patients.

In the second part of the presentation, we will discuss some methodological issues in clinical research on green interventions, including the selection of proper control groups and concerns related to random assignment of participants to green and non-green interventions. The 'random controlled trial' is generally considered the gold standard for clinical studies. However, there are indications that the effectiveness of green interventions, especially more intensive types of interventions like horticultural therapy, may depend on the extent to which participants feel connected to nature and are open to such interventions. If a positive attitude towards nature and green space is a requirement for

participants to derive beneficial effects from green interventions, then ruling out self-selection by random assignment could lead to an underestimation of the restorative potential of green interventions.

Finally, we will provide an overview of a four-year (2014-2018) research program in the Netherlands on impacts of green space in and around hospitals on the well-being and health of patients, staff and visitors. In this program, several innovative green interventions, including a pavilion for chemotherapy, a garden with a greenhouse, and a green-exercise rehabilitation program, will be evaluated. We will discuss possible options for study designs in order to get comments pointing out possible errors or suggestions for improvement.

Chemotherapy outdoors: A biophilic design approach

Karin Tanja-Dijkstra¹, Agnes Van den Berg², Jolanda Maas¹, Ruth Nijhof³, Pieter van den Berg³, Bert Jan Grevink³

¹Vrije Universiteit Amsterdam, Netherlands; ²University of Groningen, Netherlands; ³Tergooi Hospital, Netherlands

Proponents of so-called 'biophilic design' have suggested that healthcare environments can be made less stressful and more restorative by incorporating natural elements in these environments, for example by using natural materials, allowing natural light, and incorporating plants. Biophilic design aims to incorporate people's inherent propensity to affiliate with natural life forms, known as biophilia, into the design of built environments. Consistent with this, healthcare providers are increasingly using nature in healthcare environments, for instance, by decorating waiting rooms with plants, creating gardens in hospitals, and even virtual reality simulations of nature.

Chemotherapy is increasingly used to extend the lives of patients or even provide a cure, however, these results come at the cost of adverse side effects and a negative impact on the quality of life. Based on previous evidence of beneficial effects of nature in restorative environments research, a garden pavilion was created on the hospital grounds of a Dutch hospital. The pavilion was opened in the summer of 2015 and consists of a wooden structure, a glass roof, a view on grass and trees, comfortable seats and planter boxes. In this garden pavilion, cancer patients can receive their chemotherapy session outdoors. As part of the larger research program "Healthy Green Hospitals" we will carry out an evaluation of the chemotherapy pavilion. The aim of this evaluation is to gain insight into patients' experiences of receiving chemotherapy outdoors and potential effects on their well-being. In the spring of 2015, before the construction of the pavilion, we carried out pre-measurements among all patients at the chemotherapy ward who were willing to cooperate. More than 100 patients completed a questionnaire with questions about the attractiveness, restorativeness and climate conditions of the indoor patient rooms. They also provided information on their current emotional well-being and stress and pain levels.

Post-measurements are scheduled for the spring of 2016. Patients who are undergoing chemotherapy in the pavilion will fill out a questionnaire with questions similar to the pre-measurement. To control for possible self-selection effects and temporal trends the post-measurements will also include patients who prefer to receive the chemotherapy indoors. During the symposium, we will present the findings of the pre-measurement and

preliminary outcomes of the comparisons between the pre-and post-measurement.

Control and distraction to recover from stress in dental treatments

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Dental treatments are often associated with pain and anxiety. There is a growing body of research that provides evidence that nature can provide distraction during medical treatment and result in recovery from stress. Not feeling in control in a medical situation may be an additional source of stress for patients, but research shows that individuals differ in the general desirability of control (DoC) over the events in their life. The main aim of this study is to examine the interaction between distraction (provided by the exposure to a video of nature) and DoC, and between control (provided by the choice between 3 different nature videos) and DoC. We expect that both distraction and control will lead to a greater sense of well-being (less anxiety and pain). Moreover, we hypothesize that high DoC may enhance the benefits of control, and decrease the benefits of distraction. Dental clinic patients undergoing treatment will be randomized into three groups: 1) standard care control group, 2) nature, 3) nature and control. All groups will provide baseline measures of stress to show the effects of nature distraction on recovery. Findings will be presented.

Experiences of blue and green spaces by women with Postnatal Depression

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¹Heriot-Watt University, UK; ²University of Edinburgh, UK

Recent statistics reveal that up to one in five parents suffer from perinatal mental health issues. Perinatal mental health problems, including Postnatal Depression (PND), lead to an adverse impact on the individual, their children and family, as well as a huge financial cost to society. Research has shown that quality blue and green spaces tend to positively influence psychological wellbeing as they are places for physical activity, promoting social contact, and enabling psychological restoration. Despite this body of evidence, the role and impact of the environment, positive or negative, on parents with PND has not been explored. Therefore, this study took a qualitative approach with the aim of exploring if natural environments can provide opportunities for psychological restoration and improved wellbeing for those suffering with PND.

One interview and two focus groups were conducted, involving a total of 10 women who suffered from PND. Participants were recruited through charities supporting parents with PND and via an on-line forum for parents. A semi-structured interview schedule consisted of core questions to uncover the processes and mechanisms at which outdoor environments can be salutogenic for people with PND. Questions revolved around establishing outdoor places they visited, without initially focussing on blue or green spaces. Exploring their emotional experiences, before, during, and after their visit to these places was discussed. Results are in the process of being thematically analysed.

Initial results reveal that blue spaces (coastal areas, beach, and harbour) and green spaces (gardens, parks, and woodlands) were among their favourite places. Being outdoors in blue and/or green spaces, and contact with nature generally contributed to maintaining or improving mood, including feeling calmer. Safety was never mentioned as a barrier to the use of outdoor environments. When feeling depressed, there was a desire for solitude and avoidance of social contact when outdoors for the majority of the participants. Therefore, although social engagement is usually referred to as a positive aspect of being outdoors, further research in its role in emotional restoration for different groups of people within natural spaces is necessary.

This study is a starting point for further exploration into the role of natural environments for people with PND. The findings will contribute to informing designers and planners, as well as PND practitioners to help improve the mobility and wellbeing of people with PND and their family.

Beneficial effects of nature on stress and self-regulation in everyday life for (mildly) depressed individuals

Femke Beute¹, Yvonne de Kort¹, Wijnand IJsselsteijn¹

¹Eindhoven University of Technology, Netherlands

Restorative effects of nature on human wellbeing have been widely established in both laboratory and epidemiological studies. With diary studies such as Ecological Momentary Assessment (EMA) these findings can be expanded by investigating the salutogenic effects of our environment in the realm of everyday life. The opportunities offered by diary studies are legion and include extending findings beyond the strict dichotomy of natural versus urban environments by including the rich variety of environments encountered in everyday situations. In addition, they also allow for capturing aspects of stress and self-regulation that have previously been unexplored in restoration research such as rumination and ability to resist temptations.

Salutogenic effects of the environment may be especially potent when experiencing mental issues. Indeed, studies have pointed to benefits of nature for people suffering from depression (e.g., Berman et al., 2012) and have even pointed to superior restorative effects for people experiencing mental problems as compared to a healthy sample (Roe & Aspinall, 2011).

In two studies, the beneficial effects of natural environments on mood, stress, and self-regulation for people suffering with depressive symptoms were explored using EMA. Study One explored cross-sectional relations between naturalness of the environment and mood, stress, and self-regulation. A total of 59 participants entered this study (30 healthy; 29 with (mild) depressive symptoms). For 6 consecutive days, participants reported their mood, stress level, rumination, psychosomatic complaints, self-control capacity, whether they experienced a temptation, and whether they had given in to a previous temptation eight times per day. In addition, they also reported on their environment using a semi-objective checklist (based on Ryan et al., 2009). They were asked to indicate for a selection of urban and natural elements whether they were present in their current environment. From this

checklist, the overall naturalness of the environment was calculated.

Study Two expanded on these outcomes by investigating how twice-daily exposure to natural versus urban slideshows, delivered on a tablet, influenced daily reports of mood, stress, and self-regulation. A within-subjects design was employed, with each participant being exposed to both environment types in two separate experimental weeks (in counterbalanced order). A total of 15 participants that scored above-threshold on depression and stress levels participated in the study. While watching the slideshow, they were instructed to imagine being in the displayed environment. Participants reported on their mood, stress, and self-regulatory capacity four times per day.

Results of Study One revealed that exposure to a more natural environment improved mood in both groups (healthy and clinical), but only led to lower reported levels of stress and rumination and better levels of self-regulation in the healthy group. In Study Two we found lower stress levels and higher mood levels when participants were exposed to natural content on a day-to-day basis. In this study, rather than mere exposure effects, we explicitly instructed participants to imagine being in the displayed environment. Possibly, for individuals suffering from depressive symptoms a cognitive instruction to take record of the physical environment may foster salutogenic effects of the environment.

Perceived restorativeness, psychological restoration and environmental preferences among high school students in Xalapa, Mexico

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The Attention Restoration Theory suggests that there are places, environmental elements and activities that facilitate recovery from mental fatigue, which is a consequence of the effort for keeping direct attention. The aim of this study was to compare the perceived restorativeness of the scholar environment and the psychological restoration reported by high school students, between favorite and non favorite places inside the school. In addition, the study reported differences by sex, age and socioeconomic level.

A total of 706 students of seven public high schools in Xalapa, Mexico, aged between 15 and 18 participated. Data were obtained with the Scale of Restorative Potential of Scholar Spaces, developed and validated for this study. This scale had five factors: fascination ($\alpha=0.90$), compatibility ($\alpha=0.78$), being away ($\alpha=0.79$), coherence ($\alpha=0.71$) and extent ($\alpha=0.76$) and its structure was assessed with confirmatory factor analysis (CFI=0.907; GFI=.906; RMSEA=.069). There was also used a Scale of Perceived Psychological Restoration, divided in three factors: cognitive ($\alpha=0.82$), affective ($\alpha=0.79$) and mood ($\alpha=0.71$).

Results showed that during break in school, most of pupils stayed in their classrooms, although these are the less favorite places for participants. The most favorite places mentioned were the courts and the green areas. When comparing favorite and non favorite places, results confirmed that students who spent their break in their favorite places obtained higher values of fascination ($p<.001$), compatibility ($p=.013$), possibility of being away ($p<.001$) and extent ($p<.001$) and reported higher psychological restoration ($p<.001$). Data also showed that there were significant differences by sex, age and socioeconomic

level. Men and older pupils perceived more fascination ($p=.003$), possibility of being away ($p=.011$), and general restorativeness potential ($p=.021$). In addition, men reported more mood restoration ($p=.029$) than women, and older students reported higher cognitive restoration than younger ($p=.029$). Furthermore, pupils whose parents had lower educational levels reported significantly higher values in both scales.

These findings assess the importance of school scenarios for promoting restoration in students, and the relevance of favorite places for higher levels of psychological restoration.

What constitutes a natural environment? Identifying components of perceived naturalness in the development of a multidimensional measure of the concept

Emma White¹, Birgitta Gatersleben¹

¹University of Surrey, UK

The ability of natural environments and natural features within everyday spaces to improve well-being and preference is something which has been of particular interest to environmental psychologists, given the implications for society. It is generally accepted that there is a positive association between viewing nature and both actual (e.g. Hartig, Evans, Jamner, Davis, & Gärling, 2003; Herzog, Black, Fountaine, & Knotts, 1997) and perceived (e.g. Van den Berg, Koole & van der Wulp, 2003; White & Gatersleben, 2011) levels of restoration. Natural environments have also been shown to be consistently more preferred than urban ones (e.g. Ulrich, 1983; Kaplan, Kaplan & Brown, 1989).

But unpicking what exactly we mean by 'naturalness' is more difficult. Within environmental psychology research, many different terms, such as natural (e.g. Sullivan, 1994), naturalness (e.g. Lamb & Purcell, 1990), green space (e.g. Taylor, Kuo & Sullivan, 2002) and wilderness (e.g. Hartig, Mang & Evans, 1991) have been used to describe the concept, often interchangeably. But naturalness appears to be most widely conceptualised as a dichotomous nature-urban variable (e.g. Ulrich et al., 1991). As such, there is little insight into what is meant by naturalness or what exactly helps explain the restorative effects.

The results of a series of three studies conducted by the authors to identify components of perceived naturalness, intended to be used in the development of a new, multidimensional measure of the concept, will be presented and discussed. The first study comprised an online survey, completed by 558 participants in the UK, formed of open-ended questions in which participants defined naturalness and identified features of the concept. A second study utilised the same survey in paper form, completed by 186 participants in the Cardiff area of the UK. In the third study, the survey was completed by 198 participants in the USA, in order to examine the universality of the features which participants perceived as being natural.

For the purposes of the present paper, the three studies will be examined together, in a presentation of the themes and subthemes which developed through content analysis of the open-ended responses regarding what constitutes naturalness. The themes which developed appear to support those classified in previous research as being natural, such as water (e.g. Arriaza, Cañas-Ortega, Cañas-Madueño & Ruiz-Aviles, 2004), greenery (e.g. Karmanov & Hamel, 2008), and an absence of built elements (e.g. Kaplan, 2001). But they also extend the concept into new areas and suggest ways in which the various components may be linked together. Components such as water, the sounds associated with water, and trees all appear to be particularly restorative.

These themes will be invaluable during the next phase of research, in the development of a multidimensional measure of the concept for use in restoration and environmental perception research. Ultimately, it is hoped that identifying the different features which contribute to a place being perceived more natural, and understanding how they affect restoration and preference, will enable environmental planners and designers to create more relaxing and desirable spaces.

Parallel Session 31

Symposium: EDRA-IAPS pro-environmental behaviors in various organizational settings

Time: Wednesday, June 29 2016: 16:00 - 18:00

Location: Room A:C, The A-building

Symposium chair: Richard Wener

Richard Wener¹

¹New York University, USA

Energy conservation is one of the most important approaches to reducing the diffusion of greenhouse gases and avoiding, delaying or reducing the impact of global climate change. The cleanest kilowatt, it is said, is the one not used. While much conservation can be achieved with more efficient technology or better design, many measures depend on the knowledge, acceptance and motivation of users in their places of work or residence. Years of research have shown that changing environmental attitudes and behaviors is possible but not always easy. In depth quantitative and qualitative research in real settings shows how complex the problem can be as individual behavior intersects with design, social group, and organizational realities. What behaviors are called for? and when? Who sets the conditions and goals? Who benefits from reducing energy use, in the short and long term? The goal of this symposium, through the papers presented here, is to increase our understanding of factors affecting and limiting pro-environmental behaviors in office and residential environments. They address these issues directly, based on research findings in field settings, describe ways in which the organizational contexts within which the users live or work are critical to energy and environmental outcomes, and do so in ways that suggest approaches to more effective interventions.

Senick looked at office buildings in which the owner/managers had made sophisticated retrofits in lighting and HVAC systems in response to load shedding needs from local utilities, especially during very hot summer days. This paper relates behavior of workers in that setting, and energy conservation outcomes to organizational use structures as well as to theories of diffusion of innovation.

Hewitt discusses the potential benefits of decentralized decision making in energy conservation in context of residential buildings in New York City. She looks at organizational issues, including leadership, as important variables affecting energy use outcomes, and user behaviors and attitudes.

Keul reviews studies of 20 Austrian housing developments that make use of Passive House design to reduce energy use. Passive House approaches have the potential to significantly reduce energy use over standard design, but they are not, in marketing terms, "carefree and automatic" or "plug-and-play." For Passive House models to work efficiently occupants need to understand the overall model as well as specific features and use – manipulation of features in timely fashion is required. Keul's research reveals how and how much these organizational and behavioral factors impact outcomes.

Presentations:

Day without cars as an intervention and research opportunity

Richard Wener¹, Delphine Grinberg², Sangari Datta¹

¹New York University, USA; ²Journee Sans Voiture, France

Cities around the world have been experimenting with events called "Day Without Cars" which have been growing in frequency and ambition. While the nature of these days varies by time and place, largely they involve declaring and enforcing a no-driving zone in part or all of an urban area for a set period of time. In some places, such as Bogota, and now Paris, these days without cars have become regular yearly or even monthly events. They are promoted to support environmental policies, and are often they are accompanied by environmental themes, rallies, and festivities.

In many ways there is tremendous potential for the car free days to affect the environmental discussion and impact strategies for reduction of pollution and greenhouse gases. They can have direct impact, lowering emissions on the declared days, and delayed impact, exposing residents to other travel options, potentially changing longer-term behavior. They also have the potential for affecting environmental awareness and concern, possibly changing attitudes and behaviors with wider-ranging consequences. Environment-behavior research on the impacts of these days has been lacking.

In this poster we will present the highly successful Journee Sans Voiture in Paris, September 27, 2015. The poster will describe in images and text the process with which the day was organized and developed, how the day unfolded and the streets were used, and future plans. We will also discuss research strategies for using these days in Paris and other cities (including New York City) to study environmental attitudes and behaviors.

Promoting sustainable behaviour in the workplace: Creating contexts for behavioural autonomy in University settings

Adina Dumitru¹, David Uzzell², Ricardo García-Mira¹

¹University of A Coruña, Spain; ²University of Surrey, UK

Organizations and their employees are among the largest users of the world's energy resources (Kempton, Darley, & Stern, 1992; Oskamp, 2000; Stern, 2000). Recently, there has been a growing recognition of the role of universities in the transition towards a more sustainable society (Ki-Hoon et al., 2013; Lans et al., 2014; Sedlacek, 2013).

The present research focuses on the barriers to and drivers of pro-environmental behavior in a public higher education organization, in three categories of practices: consumption of materials and energy, waste generation and management, and work-related mobility. The research was carried out taking a public university in Galicia (Spain) as a case study, and used a multi-method approach that included focus groups, in-depth interviews, a questionnaire and a back-casting scenario development methodology.

We will report here on the findings regarding the role of structural, organizational and individual factors in the adoption of pro-environmental behavior in organizations and in the creation of contexts that support innovation leading to sustainable organizational change. Results give support to predictive models of pro-environmental behavior that postulate a normative route to behavior for both workers and students, and point to the potential for

organizations to become autonomy-promoting contexts that encourage the pro-active engagement of workers in formulating and implementing creative sustainability solutions.

Keywords: pro-environmental behavior at work, autonomy, structural equations modeling, social norms.

Pro-environmental behaviors in various organizational settings

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⁴University of Salzburg, Austria

Energy conservation is one of the most important approaches to reducing the diffusion of greenhouse gases and avoiding, delaying or reducing the impact of global climate change. The cleanest kilowatt, it is said, is the one not used. While much conservation can be achieved with more efficient technology or better design, many measures depend on the knowledge, acceptance and motivation of users in their places of work or residence. Years of research have shown that changing environmental attitudes and behaviors is possible but not always easy. In depth quantitative and qualitative research in real settings shows how complex the problem can be as individual behavior intersects with design, social group, and organizational realities. What behaviors are called for? and when? Who sets the conditions and goals? Who benefits from reducing energy use, in the short and long term? The goal of this symposium, through the papers presented here, is to increase our understanding of factors affecting and limiting pro-environmental behaviors in office and residential environments. They address these issues directly, based on research findings in field settings, describe ways in which the organizational contexts within which the users live or work are critical to energy and environmental outcomes, and do so in ways that suggest approaches to more effective interventions.

Learning from 895 austrian passive house building units

Richard Wener¹, Alexander Keul²

¹New York University, USA; ²University of Salzburg, Austria

After a pioneer phase, the Passive House concept of construction physicist Wolfgang Feist entered Austrian multistorey housing development planning at about 2005. After 2007, a dozen of urban housing developments were completed, occupied and evaluated. Up-to-date, the Austrian dataset comprises 20 housing developments with 895 evaluated building units and has revealed structural information on the public Passive Housing image, use and shortcomings. In the presentation, three main topics are discussed: a) Passive Housing in the multistorey building mainstream is nice-to-have for lay users, but is not chosen as a preferred brand, since location, infrastructure and fittings are still more important to occupants than energy saving. b) The dissemination of useful technical skills to operate Passive Housing effectively is the main obstacle for user identification with the new building type and low-friction operating in summer and winter. c) Passive Housing is no plug-and-play appliance but needs intelligent communication of the developers (at first contact) as

well as the property management (in long-time contact) with the occupants to make PH developments a success with high housing satisfaction. Examples from different housing developments are given, and the necessity to compare conventional and innovative housing architecture (as benchmark process) is pointed out.

Why energy-saving measures in commercial office buildings fail: Deep versus shallow use structures

Richard Wener¹, Jennifer Senick²

¹New York University, USA; ²Rutgers University, USA

A longitudinal study of the introduction of deep energy retrofits into multi-tenanted commercial office buildings in the U.S. demonstrates that innovations that are not compatible with organizational context (use structures) will result in negative quality of use and thus be unlikely to lead to anticipated resource savings or sustained pro-environmental behaviors. This session presents select results of multi-year mixed methods case study of high-performance (LEED and ENERGY STAR certified) and conventional commercial buildings (12 in total) that were outfitted by a publicly traded large real estate owner with advanced "smart" lighting and HVAC energy conservation technologies. Data sets collected include a series of manager interviews of 27 different tenants, intercept interviews (n=100), baseline and follow-up surveys (n= 161) and daily surveys (n=841) to measure occupant perceptions and actions on load shedding and control days, the former entailing adjustments in lighting and temperature levels in order to meet utility-based energy conservation goals. This presentation will comprise of three main parts: 1) a mapping of common lighting and HVAC energy technology use attributes to organizational use structures in the study buildings (Bevan and MacCleod); 2) empirical responses of building occupant and operators responses to these technological-organizational use structure constructs; and 3) the relationship of use structures to innovation diffusion factors (Rogers). An important policy finding of this research is that organizational strategies which elevate energy management as a key business process, and entail rank-and-file engagement in associated activities, results in superior energy performance.

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Testing policies to promote the adoption of pro-environmental behavior in the workplace

Richard Wener¹, Ricardo Garcia-Mira²

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Promoting pro-environmental behavior has been a key interest of the field of Environmental Psychology, given the knowledge we now have that people and their everyday practices are responsible for a large share of greenhouse gas emissions. Pro-environmental behaviors have primarily been analyzed in the home (e.g. recycling, energy use, etc.), with little

attention to other important contexts in the life of a person. The aim of this research was to carry this analysis to the study of the workplace as a relevant area of everyday life, analyzing factors promoting transition to sustainable production and consumption patterns in a large-scale organization, the University of A Coruña, in Spain.

A previous diagnosis of everyday behaviors at work was the basis for a multi-method approach to explore the role of the different factors, which consisted of focus groups, in-depth interviews, and a questionnaire exploring behavior at work. The conclusions of the empirical research were used to develop simulations of this case study in which effects of scenarios for transitions to sustainable practices were tested. These scenarios were built using participatory back-casting scenario development approaches, and by formalizing theoretically and empirically driven conclusions on factors influencing transitions to sustainable everyday practices. Scenarios included policy pathways that were tested with a social simulation approach based on agent-based modeling. The analyses of potential policy tracks to achieve transition to sustainability demonstrated that University policy should strengthen worker participation and autonomy in all levels of decision making, should be sustained over time and should combine different measures of medium intensity for behavior change, instead of isolated policies of high intensity. Results also show that policies should take into account the high influence of social networks and social norms in the workplace and should harness bottom-up participative processes.

Keywords: multi-method approach, social simulation, back-casting, scenarios, agent-based modeling.

Sustainability and wellbeing in the workplace: Theoretical perspectives and avenues for research

Richard Wener¹, Giuseppe Carrus²

¹New York University, USA; ²Roma Tre University, Italy

According to recent estimates (e.g., Emission Database for Global Atmospheric Research, 2000), large organizations are a substantial source of greenhouse gases (GHG) emissions in the global atmosphere, and this trend will even increase in the future. These emissions are not only related to the standard industrial production process, but also from workers daily behaviors in the workplace.

Environmental psychology has so far dedicated more attention to the study of ecological behaviors in the domestic domain; for this reason, the performance of ecological behaviors in the workplace still remains a less explored issue in people-environment studies. In this presentation we will discuss theoretical models and results of recent empirical research in this field. We will focus in particular on the concept of "positive environments" (e.g., Corral Verdugo et al., 2015), as a key concept to understand and promote, at the same time, sustainable behaviors and wellbeing in the organizational contexts. This idea is based on one of the most fundamental assumption of positive psychology. That is, people may get substantial benefits at the psychological level from engaging in activities that, while being within the range of the possibilities and skills of the individual, require a certain degree of sustained and conscious effort. We argue that ecological behaviors in the workplace can easily assume these characteristics. The theoretical and practical implications of these ideas

will be discussed, in light of the major current developments of present-day social, cognitive and environmental psychological research.

Keywords: positive environments; ecological behavior; wellbeing; work environments; sustainability

Transmission of pro-environmental norms in large organisations

Richard Wener¹, Tony Craig²

¹New York University, USA; ²James Hutton Institute, UK

Large organisations have a very important role to play in the collective effort to transition to a more sustainable future. Although at a technical and inter-firm corporate level, large organisations have been the focus of much attention in the environmental and organisational literature (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013), less attention to date has been given to understanding the importance of the pro-environmental behaviours of individual employees who work in such organisations (Lülfes & Hahn, 2014). There has been a considerable amount of research in the field of corporate social responsibility (CSR) that has examined the relationship between management and the translation of corporate responsibility into organisational practice (Battisti & Perry, 2011). The personal values and beliefs held by top managers about sustainability issues has been found to be a key motivator for pro-environmental engagement at the level of the organisation (Williams & Schaefer, 2013). The process of internalising such organisational values and encouraging others to behave in a manner consistent with these values involves people not only developing personal norms for behaviour, but also a number of social-organisational processes including organisational identification and norm transmission.

This paper focusses on the relationship between organisational identification, local descriptive and injunctive norms, and the likelihood of encouraging other people to behave pro-environmentally (i.e intentional norm transmission). We will present findings from questionnaire studies from three large organisations: A public university (N=176), a green electricity company (N=102), and a local authority (N=162). Results indicate that organisational identification was a significant predictor of norm transmission in all three case study organisations. The contribution of local descriptive and injunctive norms was however found to be more nuanced. These results will be discussed in relation to social psychological theory, and conclude by reflecting on the relevance of these findings to the changing nature of large organisations.

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Promoting sustainable behaviour in the workplace: Creating contexts for behavioural autonomy in University settings

Richard Wener¹, Adina Dumitru²

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Organizations and their employees are among the largest users of the world's energy resources (Kempton, Darley, & Stern, 1992; Oskamp, 2000; Stern, 2000). Recently, there has been a growing recognition of the role of universities in the transition towards a more sustainable society (Ki-Hoon et al., 2013; Lans et al., 2014; Sedlacek, 2013).

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We will report here on the findings regarding the role of structural, organizational and individual factors in the adoption of pro-environmental behavior in organizations and in the creation of contexts that support innovation leading to sustainable organizational change.

Results give support to predictive models of pro-environmental behavior that postulate a normative route to behavior for both workers and students, and point to the potential for organizations to become autonomy-promoting contexts that encourage the pro-active engagement of workers in formulating and implementing creative sustainability solutions.

Keywords: pro-environmental behavior at work, autonomy, structural equations modeling, social norms.

Parallel Session 32: Nature experiences promoting health and ecological behaviour

Time: Wednesday, June 29 2016: 16:00 - 18:00

Location: Full Scale Lab, The A-building

Session chair: Caroline Hägerhäll

Presentations:

Created gardens as places of nature, ecology and home

Ruth Rae¹, Anne O'Neill²

¹New York University, USA; ²Horticultural Consultant, USA

This research project examined how gardens were conceived, created and changed over time. Initial interviews with new home owners investigated hopes and dreams for their gardens and the process of turning that dream into a reality. The developed gardens were places of leisure and work, reflected environmental identity and place attachment, and also extended the domestic space of the home outdoors. Through the gardeners work, the gardens also became places with increased ecological diversity.

This research project followed the creation and development of gardens over several years using a case study methodology with semi-structured interviews along with photo elicitation methods. Two longitudinal case studies were conducted with new owners of private homes in the United States and France. Interviews explored motivations and goals for their gardens, their environmental history which included past gardening experience and exposure to gardens of various types, and how they planned to work in their garden. The process of creating the garden was documented through multiple interviews that included walks through gardens and photography. The photographic method was used to document the gardens as they evolved over the years, to elicit the responses of the gardeners to their evolving gardens, and to demonstrate the most important or meaningful changes over time.

Although motivations and goals for gardens were important, so were the resources available, and the physical and horticultural attributes of the space itself. The shape a garden takes was dependent on the space it occupied, its relationship to the home, and desires of the people who created it. Gardeners changed the landscape and ecology of private spaces through the process of cultivating the soil, changing the topography and planting food and flower gardens. Over the years, as horticultural expertise improved, the gardeners became more adept at working with nature, and their garden dreams became more realizable.

Respondents revealed how their garden image and goals, combined with their feelings about gardening and nature, strongly influenced the actual development of their garden. The meaning of the gardens created reflected place attachment, personal aesthetics and environmental identity. The gardener's environmental history also shaped both the garden

goals and what their garden became. In this study the gardens became an extension of the home, providing outdoor rooms through which residents experienced being part of nature and appreciated the biodiversity they nurtured.

Key words: Gardens, Nature, Place Attachment

Mindful health, an egocentric path towards ecological conservation?

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Introduction:

Mindfulness has been defined as an ability to “pay attention [...] on purpose, in the present moment, and non-judgmentally.” (Kabat-Zinn, 1994, p.4). There are first results that point towards a positive relationship between this ability and ecological behaviour (e.g. Barbaro & Pickett, 2015; Brown & Kasser, 2005), suggesting intrinsic values or a heightened sense of connectedness to nature as possible mediators. However, a far greater body of literature points to the positive effects of increased mindfulness on health behaviours such as improved nutrition, increased exercise and less substance use. That personal health behaviours in turn might be interrelated with environmental conservation, has been conceptually proposed by various authors (e.g. Nisbet & Gick, 2008), although with sparse empirical evidence. Based on these two assumptions the main aim of the study was to test the following mediation hypothesis: the positive effect of mindfulness on ecological behaviour is mediated (completely) through personal health behaviours. As an additional objective and partial condition for the mediation we sought to empirically corroborate the notion of a relationship between personal health behaviours (e.g. washing fruits before eating) and ecological behaviours (e.g. recycling) on and beyond behaviours with simple positive consequences in both spheres (so-called “motive alliances” as e.g. biking to work or eating fresh local produce).

Method

We tested the mediation hypothesis with an online questionnaire study (n=147; 59% females, 28.5 years mean age). The three constructs of interest were assessed with validated instruments each. To measure mindfulness we used a 20-item German version of the Kentucky Inventory of Mindfulness Skills (KIMS, Höfling, Ströhle, Michalak, & Heidenreich, 2011). Health behaviour was assessed with the 50-item scale by Byrka & Kaiser (2013) and ecological behaviour with the general ecological behaviour scale (GEB; Kaiser & Wilson, 2004).

Results and Conclusion

First order bivariate correlations established meaningful relationships between all three variables, including the relationship between health behaviours and ecological behaviours ($r = 0.37, p < 0.01$). A mediation analysis following Baron and Kenny (1986) revealed a full suppression of the direct effect of mindfulness on ecological behaviour, when controlling for the influence of health behaviours ($\beta(c') = .096, p > .05$) and a significant indirect path ($Mab = 0.114, SEab = 0.039, 95\% CI [.05, .20]$). We conclude that a main mechanism in which increased mindfulness of people might be beneficial for the environment, is through the

boost of personal health behaviours that in turn are positively related with ecological conservation. We call this an “egocentric” path because it is foremost focused on physical well-being of one’s own body instead of a more general biospheric interest. Even so the indirect effect implies that increased mindfulness might be an effective method to enhance ecological conservation for behaviours without naturally occurring motive alliances.

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Natural environments promoting physical activity: Environmental perceptions and the mediational effect of social network and feelings about nature

Giovanna Calogiuri¹

¹Hedmark University College, Norway

Introduction

Insufficient levels of physical activity (PA) are one of the leading risk factors of mortality worldwide [1]. Natural environments (NEs) can be particularly suitable for PA promotion purposes because of their attractiveness and convenience [2]. Studies have shown positive associations between availability of NEs and PA levels [3]. However, there is scarce evidence to explain the motivational processes underlying this relation. The aim of this study is to investigate the extent to which the availability of NEs can promote participation in recommended levels of PA, emphasizing the role of NEs perceptions and possible mediators.

Methodological approach

Data were retrieved from a cross-sectional survey among adult Norwegians initiated by Norsk Friluftsliv (n= 2168) [4]. Multilevel logistic regression was used to establish the extent to which the perceived availability of NEs predicts participation in low levels (at least 60-minutes/week) and high levels (at least 150-minutes/week) of NE-based PA, before and after controlling for confounders and mediators. The model was repeated for two measures of perceived availability of NEs: “walking distance to the closest NE” and “availability of NEs that support PA”. Control variables comprised intra-individual, inter-individual and environmental factors, including an objective measure of NE-coverage within the municipality which was obtained from a web-based resource of the national statistics agency [5]. Tested mediators were “feelings about nature” and “perceived social network”. Aroian test equation was used to establish the extent of the mediational effects.

Main findings

Unlike “walking distance to the closest NE”, “availability of NEs that support PA” predicted low and high levels of NE-based PA. The relation was significant before and after controlling for the confounders. Among these, age, gender, region of residence and “childhood experiences of nature” showed significant associations with NE-based PA, but their inclusion

in the model did not lead to noteworthy reduction of the NE-PA relation. "Feelings about nature" and "perceived social network" were also positively associated with low and high levels of NE-based PA. Moreover, when these variables were added to the model, "availability of NEs that support PA" was no longer significant. The Aroian test confirmed a significant mediational effect for both, "feelings about nature" and "perceived social network". These variables also mediated the relation between "childhood experiences of nature" and NE-based PA.

Conclusion

Availability of NEs perceived as supporting PA can help people achieving and sustaining recommended PA levels. However, to promote participation in NE-based PA, not only is access to NEs that support PA required, but it is also necessary to promote positive feelings about nature alongside opportunities to share nature experiences with others.

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My friend the whale: Emotional connectedness and willingness to behave pro-environmentally in whale watchers

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Our psychological self-definition shapes our behaviour in everyday life and is in turn affected by our everyday experiences. Such interactions between sense of self and everyday experiences are part of our daily routine. Exceptional experiences in the natural environment, however, can profoundly change the way we see ourselves, our sense of connectedness with the world around us, and our willingness to act in order to preserve it. We studied the psychological effects of such an exceptional experience, watching marine mammals – especially orcas and white-beaked dolphins – in the wild, in a sample of N = 200 whale watchers in Western Iceland. The fact that the chance of seeing the animals on one of the tours was roughly 50 percent allowed for quasi-randomised sub-samples. We could therefore control for the high self-selectivity of the overall sample and test for the effects of actually seeing certain animals (e.g., orcas) in a systematic way. More specifically, we expected those participants who had seen marine mammals to feel a higher sense of emotional connectedness with the animals and, as a consequence, to be more willing to protect the oceans and the environment in general. While differences with regard to the emotions experienced during the tour (e.g., joy, awe, fascination) emerged, our main analyses focused on the links between these emotions and a more specific sense of connectedness to the animals on the one hand, and participants' willingness to

take pro-environmental action (e.g., sign a petition, take part in a protest) or refrain from environmentally harmful behaviours (e.g., visiting zoos, marine parks, and circuses, using products such as plastic bags, eating meat or fish) on the other hand. In further analyses, we also explored the role of participants' general environmental awareness, habits, and past experiences in nature. Discussion focuses on the potential of exceptional experiences in outdoor spaces to foster pro-environmental behaviour by inducing a sense of emotional connectedness to animals and nature in general. We also encourage more multidisciplinary work investigating psychological variables such as emotional connectedness with nature during exceptional experiences and more common leisure activities. Such research should be useful in understanding how the natural environment shapes individuals' sense of self and vice versa.

An integrative conceptual framework to understand human-nature interaction in diverse cultural contexts

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¹Okan University, Turkey; ²University of Northern Iowa, USA; ³Mersin University, Turkey;

⁴University of North Carolina, USA

This paper presents a systematic literature review addressing the human-nature interaction from the perspective of diverse cultures. By focusing on different cultures, we intend to reveal mediating factors affecting people's relationship with nature and to draw particular attention to the influence of tangible and intangible cultural heritage in the perception and use of everyday natural environments. The main questions are: (1) How do people perceive and define nature in Western and non-Western societies? (2) What are the design elements and qualities of natural environments that promote people's health and well-being according to research conducted in diverse cultural contexts? In order to develop an integrative conceptual framework, we undertake a systematic literature review in environment-behavior studies (EBS), landscape perception and planning, and urban studies. The review includes six selected databases (PsychInfo, ScienceDirect, PsycARTICLES, JSTOR, SCOPUS, and Urban Studies Abstracts) for the identification of papers (1990-2016) using a variety of strategies, including keywords and subject headings. Key EBS literature, such as the Handbook of Environmental Psychology and PION journals (i.e., Environment & Planning A, B & D) will also be included. The review addresses specific landscape attributes in urban, peri-urban, and rural landscapes and assesses their possibilities of use for diverse cultural groups. The questions set forth here are examined in light of the actual demands posed by climate change, the continuing destruction of landscapes, and the current frameworks proposed for protecting landscape quality (e.g., European Landscape Convention) which requires us to rethink the ways we conceptualise and study human-nature interaction. In the European context, the Landscape Convention (adopted in 2000) has driven attention to human perception of landscape qualities and the need to manage and protect non-exceptional/everyday landscapes (in addition to exceptional landscapes) and to assure the availability and value of these landscapes to different cultural groups. The implementation of joint landscape protection, management and planning programmes demands an understanding of different conceptualisations and practices in landscapes. While there is a need for such a cross-cultural understanding of human-nature interaction, the literature lacks an encompassing conceptual model to integrate diverse world-views,

conceptualisations and practices. Moreover, there are no models that explore different modes of integration relevant to planning and management of contemporary landscapes. The growing literature in EBS on human-nature interaction has been structured on a division between natural and built environments which falls short in acknowledging the diversity of contemporary social groups. Several theories have been proposed to explain human-nature interaction, using biological, evolutionary, cultural and individual factors. A few integrative models (e.g., Zube et al., 1982; Kaplan & Kaplan, 2009) have also been proposed, however, what is still missing is an evaluation of these different models with a view of applying research knowledge to the management and planning of natural environments. This paper ends with a critique of the current literature and the presentation of a conceptual framework.

Parallel Session 33

Symposium: Older adults inside and outside their home: The stakes and challenges of social sustainability in late life years, part 1

Time: Wednesday, June 29 2016: 16:00 - 18:00

Location: Black Box, The A-building

Symposium chair: Carole Després

Carole Després¹

¹Laval University, Canada

This year's conference theme challenges us to understand sustainability in late modern everyday life with regards to human-environment transactions, namely for vulnerable groups in society. It questions more specifically how key environmental elements and social factors interact and how they contribute to people's quality of life, wellbeing, health and social participation. This symposium focuses on older adults in late-life years. Its objectives are: 1) to share cutting-edge scientific evidences, innovative theoretical perspectives and research methods that address the complex issue of housing location, experience and meaning in late life years, and 2) to discuss the immense challenges ahead that need to be tackled by multiple stakeholders to address the deficiencies in the housing stock and community preparedness. Indeed, multiple analyses show that the majority of very old people are still living at home, for the most part because they want to. That being said, since the majority of older adults will eventually experience difficulties in performing daily activities, actions must be taken to assure that they can age in desirable, affordable, and adapted homes and communities. The challenges are even greater when one considers the aging of the baby boom generation whose housing aspirations are not quite different from those of their parents. The higher proportion of them without spouses and/or children suggests a potentially greater dependency on government, service establishments and communities, as well as more vulnerability in terms of financial means. Even those with children are likely to suffer from a lack intergenerational support since those are less likely to live in close proximity because of their career paths. Finally, baby-boomers' health in old age is worsening compared to the generation before them, making staying active both mentally and physically a precondition for remaining at home and in one's community in old age. The "visitable" character of neighborhood and other favored destinations (built and social) are thus important factors to consider beyond the dwelling unit. This symposium brings together researchers from Québec, Montréal, Vancouver and Stuttgart, with ongoing research on home and community for older adults in late life years. Their respective communication will shed light on some of the following questions. What alternative housing options are offered to older people with functional incapacities? Which factors influences their decision to move or stay? What is the experience of home for those who have relocated? To what extent does the near-home territory and neighborhood facilitate or infringe older adults daily mobility and social participation? Where do they go to socialize? What strategies do they adopt to counter difficult urban or climatic conditions? Do their lifestyle, values, memories and experiences of their housing and neighborhoods contribute their daily life and wellbeing? Finally, how can the housing and care offer for older adults be improved in ways that will support the maintenance or reconstruction of a

meaningful experience of home and community? By which means and which avenues?

Presentations:

1.1 The impact of housing location in late life years: A systematic review

Carole Després¹, Roxanne Dubé¹, Noémie Roy¹, France Légaré¹

¹Laval University, Canada

In the province of Quebec, older people represent 17% of the population and statistics predict that they will triple in number by 2056. Most of them are living at home and desire to grow old there. However, older people living at home face major challenges when they begin to lose autonomy. Indeed, 69% of the people aged 75 years old and more present physical disabilities and 75% of them use homecare services, which represent 84% of all the homecare services deserved. Those difficulties related to their living situation may force them to decide between staying at home or to relocate to a more suitable environment. The overarching goal of the research is to synthesize scientific knowledge regarding housing options in the late-life period and to identify the factors influencing the decision to stay home or relocate for older people experiencing loss of functional autonomy. A systematic literature search was performed on AgeLine, EBSCO, ERIC, PubMed, Taylor and Francis and Web of Science until February 2015, using the research keywords “housing decision”, “elderly”, “frail” and “housing relocation”. Studies reporting the impact of material, social and emotional factors linked to the dwelling and neighborhood on the residential choice of frail older people with functional autonomy loss were included. Those factors were extracted and a content analysis was completed. From the 749 articles identified and evaluated, 89 were kept for the systematic literature review (of which only ten were signed by housing or aging experts). The 110 factors identified as influencing the decision to stay in or move out from their home for older adults were grouped in three main domains: personal, material and societal, with some factors belonging to more than one domain (personal-material, personal-societal and material-societal). The comparative analysis of the findings led to seven main findings. (1) Studies about housing decision generalized to all older people regardless of their living environment (city vs. rural), their age range, or tenure status (with tenants rarely considered). (2) Family members influence the decision process, but also the location choice and size of the new dwelling. (3) Physical capacities influence daily activities in and around the house, namely with regard to dwelling maintenance and ownership. (4) Urban characteristics (access to car and walking infrastructures) can restrain older people’s mobility, however some features can rather enable their every-day moves. (5) Economic factors narrow the housing possibilities of older people. (6) Past housing experiences influence present and future housing choice. (7) Home attachment is one of the most influencing factors influencing the decision to relocate and of post-relocation adaptation. This systematic literature review show the influence of the built environment related factors on the housing location choice, but also of personal and emotional factors resulting from the transaction between older people, their home and their community.

1.2 Revisiting the meaning of home for older adults with declining health in various housing contexts

Carole Després¹, Julien Simard¹

¹Laval University, Canada

The objective of the paper is to explore the multidimensional meanings of home for older adults with declining health, residing in different housing contexts (owner-occupied house, private-market rentals, and social housing). The study is based on semi-structured interviews with 22 older adults living in both central and suburban neighbourhoods of the city of Montreal, Canada. The sample includes long-established and newly arrived residents. The main themes covered during the interviews were the meaning of home for each participant, the dimensions of their home they most valued, and their relationship with their neighbourhood. Interviews were transcribed and analysed using the constant comparison method. Findings revealed that home means different things for different older adults. Some participants felt more attached to their dwelling unit, while for others, social connections established in the neighbourhood and specific places were their main source of attachment. While most of participants spoke fondly about their dwelling, a minority of them did not feel at home. Importantly, this study highlights that after a move, many older adults actively engage in the reconstruction of home as a meaningful place, even in a new neighbourhood and in a different housing context, thereby demonstrating their agency and resilience. Furthermore, most of them feel comfortable, secure and enjoy their new place of residence as it best suited their needs. Finally, after a move in a new neighbourhood, some participants keep a meaningful relationship with their former neighbourhood, still participating in activities and visiting friends. So feeling-at-home is not necessarily restricted to older adults’ current dwelling and neighbourhood of residence. By providing a more nuanced and dynamic understanding of the concept of home, this study challenges dominant Aging in Place theoretical frameworks that suggest that remaining in the same place for as long as possible is better for the wellbeing of older adults.

1.3 Prosocial behaviour of older adults and community participation: A pilot study

Atiya Mahmood¹, Jennifer Lay², Christiane Hoppmann², Sandra Petrozzi³

¹Simon Fraser University, Canada; ²University of British Columbia, Canada; ³Kitsilano Neighbourhood House, Canada

The purpose of this community based research is to better understand the motivations and facilitators of volunteering as older adults engage in their typical life routines and environments. As part of a mixed-method multi-year project, this paper presents preliminary findings from the participatory photo-elicitation part of the study. Data from a community sample of 50 adults aged 51-85 years living in Metro Vancouver is presented here (total targeted n=100). During a 10-day period, participants used iPad minis to capture photos representing prosocial behaviour (i.e. to give of themselves to others) opportunities they encountered in their daily activities. They used the photos to reflect on their experiences by making voice recordings and completing questionnaires at the end of each day. Each participant captured, on average, 14 photos (range 4 - 55). Preliminary findings reveal that the majority (87 %) of photos captured times when participants chose to engage, rather than refrain, from behaving prosocially. Photo descriptions revealed

a range of prosocial behaviours, e.g., support with instrumental activities of daily living (IADL), volunteer activities for organizations, symbiotic (reciprocal) social support, small acts of kindness, teaching activities, and support with activities of daily living (ADL). Prosocial behaviour were typically with friends and family or those in a formal caregiving arrangement, but also included service providers and strangers. The preliminary findings suggest that a variety of volunteer pro-social behaviour takes place in diverse formal and informal social contexts. Further analysis will focus on the nature of social circumstances and motivating factors.

1.4 A guided journey through the daily mobility of older adults and its meaning

Michel Després¹

¹University of Montreal, Canada

The metropolitan area of Montreal, just like many urban areas in North America and Europe, will see a drastic increase of its aging population in the coming years, brought in large part by the aging of the baby-boomer generation. Its sprawled territory is drawing attention in research with regard to the potential difficulties of a more vulnerable population in daily mobility. This communication focuses on the experience of 20 older adults (75+ years old) living in different part of Montreal metro area. Part of a doctoral study inspired by the ecological perspective of Lawton & Nahemow as well as recent theoretical work on aging and mobility, this communication focuses on how their experience of the built environment in different neighborhoods contributes in shaping their daily mobility. To uncover the meanings attached to their daily trips, we combined face-to-face interviews at participants' home and go-along trips to destinations of shopping for basic commodities, like groceries or drugstores (reached either by foot, public transit or car). The pre-trip questionnaire focuses on their attachment to their neighborhood, their daily activities and residential trajectory, their spatial and temporal strategies for getting to the destinations and their perception of the physical effort it requires, and finally, their representation of aging and mobility. The go-along trip, after the interview, was the occasion for them to talk about the meanings of the frequented urban environment, favored routes, difficulties encountered, place of social encounters, memories, etc. In progress pre- and go-along trip interviews are being recorded; they will be transcribed and their content analyzed for the presentation next June. Preliminary insights suggest that older adults experience the urban environment with differentiated micro-geographies of meaning -personal meanings attached to specific places or features of the urban environment- and that different lifestyles might help account for these differences. During the-go-along interviews, some older adults talked only about what had disappeared or changed, seeing the urban environment through the lenses of the past. Others described what they do during their travels, like taking stairs or walking frequently, as a means to keep healthy for futures projects. Others, finally, saw their trips through very utilitarian lenses, without thinking much of the urban environment, except as part of a strategy to adapt to new difficulties. In depth analyses will examine more closely the contribution of older adults personal characteristics, personal experience and lifestyles to their perception of the built environment as contributing or infringing their daily mobility.

Parallel Session 34: Soundscapes for restoration and performance

Time: Wednesday, June 29 2016: 16:00 - 18:00

Location: Room A:A, The A-building

Session chair: Eja Pedersen

Presentations:

Perception of sound as hindering or supporting restoration among participants in nature based rehabilitation

Gunnar Cerwén¹, Anna-Maria Palsdottir², Eja Pedersen²

¹Swedish University of Agricultural Sciences (SLU), Sweden; ²Faculty of Engineering (LTH), Lund University, Sweden

The relationship between natural environments and people's health has a strong foundation in research (Kaplan and Kaplan 1989; Pálsdóttir 2014; Grahn and Ottosson 2010). However, while most research has tended to focus on visual aspects, other sensory inputs have been given less focus. This is noteworthy, considering recent findings indicating that sensory stimulation (including sound) may be a crucial factor to consider in restorative contexts (Palsdottir et al. 2014; Adevi and Lieberg 2012). Sound has materialized as a factor to consider, not only in regards to noise (WHO 2000), but also for the positive qualities inherent in natural sounds such as bird song (Schafer 1994 [1977]; Cerwén 2016). Similarly, in other, related contexts, it has been found that there is a relationship between exposure to natural sounds and recuperation from stress (Alvarsson, Wiens, and Nilsson 2010; Annerstedt et al. 2013; Saadatmand et al. 2013). Understanding the role of sound in restorative contexts is crucial in order to optimize design and management of rehabilitation gardens and other restorative spaces in the future.

The present research means to increase the understanding of the role sound plays in restorative contexts. Transcribed interviews with care-takers suffering from mental fatigue and undergoing a 12 week therapy program in the rehabilitation garden in Alnarp were analyzed with a grounded theory approach. In the first step, a random sample of interviews was examined and sound related expressions used by the interviewees listed. The list, complemented by synonyms, was used for identifying relevant text parts in the total dataset. The texts were then analyzed by the three authors independently and the results compared, going back to the data until a model emerged.

The results show that the meaning of sound among the participants varied between individuals. The sounds mentioned could be categorized as natural (e.g. wind in the leaves, bird song), technical (e.g. road traffic), or people induced (other people talking). The sounds were both embraced and avoided; sounds perceived as intruding hindered the restorative process, while sound perceived as masking or barrier for interaction with other people supported restoration. Quietness in a broad sense, including the possibility to contemplate and being alone, did not require total absence of sound, but a soundscape dominated by gentle natural sounds. The attitude towards people induced sounds changed depending on

treatment phase, a fact which can be related to the notion of “social quietness” (Pálsdóttir 2014).

The findings are discussed in relation to nature based rehabilitation in general, as well as the specific design of future rehabilitation gardens. The findings suggest that rehabilitation gardens should be designed in a manner that supports a variety of sonic environments, giving the participants a possibility to choose depending on personality, mood, and phase in treatment. Future designs could enhance the sound from natural biotopes as well as the shielding from technical sounds. The study also suggests that access to “louder” sound environment could be beneficial in supporting “social quietness” making this a possible design feature.

Restoration by Imagination:

Andreas Haga¹, Niklas Halin¹, Mattias Holmgren¹, Patrik Sörqvist¹

¹Gävle University College, Sweden

A brief exposure to nature environments can have restorative psychological effects in comparison with exposure to built environments. Previous research has tried to find the reason for this restorative effect of nature by studying the features of the stimulus. Here, we test the novel hypothesis that the restorative qualities of a stimulus do not depend on the stimulus’s features per se but on how the stimulus is perceptually classified (i.e., the source to which a stimulus is attributed to). Participants conducted cognitively demanding tests prior to and after a brief 3-minutes pause. During the pause, the participants were exposed to an ambiguous sound consisting of pink noise with white noise interspersed. Participants in the “nature sound-source condition” were told that the sound originated from a nature scene with a waterfall; participants in the “industrial sound-source condition” were told that the sound originated from work-conducting machinery; and participants in the “control condition” did not receive instruction about the sound origin. Self-reports of mental fatigue and other stress indicators showed that participants in the nature sound-source condition were more restored than participants in the industrial sound-source condition. Theoretical and methodological implications for the literature on restorative environments are discussed.

The perception of human voices in natural soundscapes

Jacob Benfield¹, Benjamin Cherian¹

¹Pennsylvania State University, USA

While the distance between cities and developed areas shrinks, the desire for outdoor recreation and leisure in natural environments remains high. As such, city planners and managers of protected natural areas have to balance the protection of wilderness and development of recreational access to those spaces, often using studies on environmental perception to inform policy.

One emerging area of research on human environmental perception and the interplay between built and natural (or urban and rural) environments deals primarily with soundscapes, or the complex acoustic elements found within a space. Research shows

perceptions of environmental quality, including scenic beauty and tranquility, can be negatively impacted by human voices or transportation noise when compared with the same scene under completely natural sound conditions (Benfield et al., 2010; Mace et al. 1999). Other research shows that natural sounds such as birdsong are believed to be restorative (Payne, 2008, 2013; Ratcliffe et al., 2013) while human voices or signals of potential danger do not have restorative benefit (Benfield et al., 2015). In short, research shows that natural soundscapes are good for environmental perception and health; other sounds such as human voices or transportation are harmful to users’ perception and health. The current study was conducted to test conditions in which the presence of others in an outdoor recreation setting could be favorable rather than detrimental to evaluation of the environment. Based on research that humans prefer the presence of others when threatened or stressed, it was predicted that human voices would be beneficial when presented immediately following a stressful event or alongside other sounds that indicate threat, such as thunderstorms or howling canines. This was tested using an experimental laboratory simulation in which participants (N=107 to date) were exposed to a negative mood manipulation video and then assigned to one of six sound conditions (control, all natural, natural with threat/disruption, natural with voice, threat/disruption with voices) lasting 5 minutes. Heart rate was monitored continuously with self-report measures of mood, restoration, and well-being collected prior to and immediately following both the mood manipulation and sound exposure recovery period.

Preliminary analyses (n=11 in the smallest condition) largely support previous research and current hypotheses. Self-report data shows better mood recovery for those in the natural sound condition and very little recovery in the “natural and threat” and “natural and voices” sound conditions (F=4.13). However, those in the “threat followed by voices” condition showed greater recovery (but not equal to the purely natural condition). Early heart rate variability data indicates different reactions to the human voices based upon the condition it is presented with greater recovery for those hearing voices alongside other threats. Final data collection will conclude by March 2016.

Acoustic and soundscape management is an issue in both urban and rural areas. The current study findings add to a larger literature showing that the interplay between natural and human-caused sounds and the subsequent impact on environmental perception is complex with context being as crucial as actual stimuli.

Explanatory model of environmental noise in classrooms and their impact on psychological processes

Patricia Ortega¹, Cesareo Estrada¹

¹National Autonomous University of Mexico,

The literature documents the importance of studying acoustics in classrooms (Evans, 2006; Sato & Bradley, 2008; Shield & Dockrell, 2004; WHO, 2004), because noise and other acoustical variables in educational settings have a negative impact on some of the students’ psychological processes, which may indirectly influence their academic performance. However, there are limited studies of the impact of environmental noise in Mexican educational settings; for example, Estrada and Reyes (2009) identified an explanatory model of the psychological effects produced by environmental noise in a Mexico City elementary school. Subsequently, Estrada and Mendez (2010) tested that explanatory

model at different schools in Mexico City, offering an empirical explanation of the different psychological effects students experience in response to differential environmental noise levels in their schools; also, Estrada and Mendez (2014) developed a comparative model between schools with greater and lesser environmental noise to prove differential changes in psychological and educational effects on students.

Based on the evidence, we designed this study with the aim of proving a new explanatory model for classrooms in Mexico City, to explain the multiple simultaneous relationships of noise and design variables on the psychological attributes tested previously, adding the variable of working memory, for elementary school students.

Method. The design of the study tested the independent variables of environmental noise and teacher-student physical distance, integrating the multiple relationships with the seven (dependent) psychological variables which were evaluated: annoyance and two for interruption of communication with the teacher and with classmates, intelligibility of speech, attention, working memory, and reading comprehension.

Results. Two hundred and forty students participated in the study. In the school with the highest noise exposure, 92 (38.3%) students participated; in the school with the lowest noise exposure, 148 (61.7%) students participated. There were 134 (55.8%) female and 106 (44.2%) male students. The age range was 8 to 13 full years, with a mean of 10 years.

To empirically prove the theoretical model, we used the statistical methods of structural equation modeling (SEM). Calculations of the method for estimating ML with $N = 240$ observations provided indices of goodness of fit $\chi^2 = 27.56$; probability of $\chi^2 = 0.15$ and RMSEA = 0.03, and CFI = 0.99, TLI = 0.98. These indices support the conclusion that the model was satisfactory.

In conclusion, we can emphasize for the model of measurement confirms the factorial structure of two latent variables tested: emotional impact with high factorial loads (.83, .87, and .92) and cognitive impact with acceptable loads (.43, .46, and .55). For the structural model tested, we can underscore the effects of environmental noise on psychological variables: noise has a positive influence (.14) on emotional impact, noise has a negative influence (-.20) on cognitive impact, and we observed lower reading comprehension scores among students (-.05). The direct effects of the model point to a negative relationship (-.42) between environmental and cognitive impacts, combined with the strong positive influence of cognitive impact on reading comprehension (.83).

Unmasking the effects of masking on performance: The potential of multiple-voice masking in the office environment

Marijke Keus Van De Poll¹, Johannes Carlsson², John E. Marsh³, Robert Ljung¹, Johan Odellius⁴, Sabine J. Schlittmeier⁵, Gunilla Sundin⁶, Patrik Sörqvist¹

¹University of Gävle, Sweden; ²Chalmers University of Technology, Sweden; ³University of Central Lancashire, UK; ⁴Luleå University of Technology, Sweden; ⁵Catholic University of Eichstätt-Ingolstadt, Germany; ⁶Akustikon Team in Norconsult AB, Sweden

Broadband noise is often used as a masking sound to combat the negative consequences of background speech on performance in open-plan offices. As office workers generally dislike broadband noise, it is important to find alternatives that are more appreciated while being at least not less effective. The purpose of experiment 1 was to compare broadband noise with two alternatives—multiple voices and water waves—in the context of a serial short-

term memory task.

A single voice impaired memory in comparison with silence, but when the single voice was masked with multiple voices, performance was on level with silence. Experiment 2 explored the benefits of multiple-voice masking in more detail (by comparing one voice, three voices, five voices, and seven voices) in the context of word processed writing (arguably a more office-relevant task).

Performance (i.e., writing fluency) increased linearly from worst performance in the one-voice condition to best performance in the seven-voice condition. In Experiment 1, multiple voices probably reduced the magnitude of the changing state effect, creating a more continuous sound, which is less disturbing in a serial recall context. In Experiment 2, the effects of masking with multiple voices are probably due to reduced speech intelligibility of the speech signal, towards a non-intelligible babble, reducing the disruptive impact of the semantic properties of irrelevant speech on writing performance.

Parallel Session 35: The role of place attachment in sustainable development

Time: Wednesday, June 29 2016: 16:00 - 18:00

Location: Large lecture hall, IKDC

Session chair: Maria Nordström

Presentations:

Residents' relationships with place in a suburban planned community: Place attachment and the role of nature

Shunsuke Itoh¹, Natsuko Nagasawa², Yurika Yokoyama³

¹Tokyo Denki University, Japan; ²Ochanomizu University, Japan; ³The University of Tokyo, Japan

Place attachment of residents of a suburban planned community was investigated in this study. The aim was to understand planned communities' qualities as a place and evaluate them from the perspective of residents' long-term psychological relationships with the environment. In-depth interviews were conducted to residents of one of the largest planned communities in Japan (called "new towns") in a suburb of Tokyo. They were interviewed about their life history, experiences living in the town, and evaluations, opinions and feelings towards the environment. Interviewees fell in distinctive categories in terms of age level and length of residence. They were: First generation over 60 years old who settled as the first residents of the town under construction; Second wave in their late 40s and 50s with a length of residence between 10 and 20 years; New comers in their 30s who moved in less than 10 years ago to the completed town; New town raised in their 20s, children of the first generation.

First generation, second wave, and new town raised residents felt attachment to the town. However, new comers had mixed feelings and expressed resistance to being attached to the town because they were not sure whether they would settle ("I try not to become attached"). Second-wave residents also expressed some reservation ("I don't want to admit it, but I came to feel attached"). Their choice to live in the new town was a practical compromise between dwelling conditions and price, and the fact that it was not the ideal place in the beginning made them reserved. In contrast, the first generation had little choice in acquiring a house at their time due to housing shortage, and viewed the town with a taken-for-granted attitude.

Interviewees were generally satisfied with the environment and resources of the town. However, they rarely came up with specific features or places of the town that were emotionally significant to them. Emotionally important elements were mostly places, landscapes and views in existing rural communities outside the new town. They were important not only for their restorative qualities, but as reminders of hometown to the first generation, and where the new town raised used to play as children. The rural landscape was considered a part of interviewees' images of "home", though social interaction with surrounding communities was almost non-existent.

Varieties were observed in views and processes of developing attachment to the town. They

corresponded to certain age levels, and interviewees of the same category had common feelings and attitudes towards the town. This pattern likely emerged because each group moved to the town at the same time in certain stages of the town's development. The rural landscape around the town played a fundamental role as a source of residents' sense of place. Greenery in the planned town and nature in the rural landscape played different roles: greenery was amenity while nature had diverse meanings in relation with individual experiences. In case of this particular new town, the rural context helped the town become a place.

Place, identity and pro-environmental behaviors: Theoretical and applied understanding for collective environmental action

Stefano De Dominicis², Erica Molinario¹

¹Sapienza University of Rome, Italy

As argued in a 2010 special issue of the Journal of Environmental Psychology by Dr. Devine-Wright and Dr. Clayton, a greater conceptual and methodological integration in future research on the interconnections among place, identity, and behavior should be pursued. Also, with the impending need of promoting collective pro-environmental action to cope with climate change (IPCC, 2014), it is wise to apply the study of the above-mentioned theoretical issue on pro-environmental behaviors occurrence. Accordingly, we structured a research project aimed at understanding the interconnections between place attachment and group identity in shaping pro-environmental behaviors. In fact, past research shows that place attachment ambiguously predicts environmental action, and further research is needed to understand such a relationship. In two studies, we demonstrated that the place attachment relationship with pro-environmental behaviors is moderated by a third variable, namely the identification with a reference group enacting the desired behavioral outcome. Because social norms consistently predict individuals' behaviors, identification with a specific group approving and enacting the behavioral outcome should strengthen the place attachment-environmental action consistency. On the contrary, identification with a group not approving neither enacting the behavioral outcome should weaken such a relationship. Within our framework, we tested this general hypothesis for identification with groups approving and enacting pro-environmental behaviors. In experiment 1, we hypothesize that group identity moderates the relationship between place attachment and pro-environmental behaviors: specifically, this relationship will be maximized for higher identification with the reference group. Within a University campus, we administered a survey measuring students' attachment to the campus, their identification with the student group, and their in-campus pro-environmental behaviors. Results show a significant interaction effect between place attachment and group identification confirming our hypothesis. In experiment 2, we tested the same hypothesis within a lab-based 2 by 2 full factorial experiment. By manipulating place attachment and group identity, we replicated the results emerged in our first experiment. Specifically, the relationship between place attachment and pro-environmental behaviors is strengthened for higher group identification. Moreover, a third real-world experiment aimed at replicating the results emerged in experiments 1 and 2 is actually being conducted using an online sampling procedure through the use of social networks. Results will be eventually presented once the experiment will be completed. The overall set of results will further explain the complex

relation between place attachment and place-specific behaviors, such as pro-environmental ones. Moreover, results will provide evidence for real world applications in promoting collective environmental actions. Theoretical and practical implications will be discussed within a general theory of place typical of the Environmental Psychology framework.

The role of place attachment in attitudes towards re-landscaping river interventions

Laura Verbrugge¹

¹Radboud University, Netherlands

Flood risk mitigation measures are often costly and have large social and biophysical impacts such as possible relocations of local residents, changes in land use and possibly drastic changes in landscape structure. Identifying and assessing residents' place attachment and attitudes toward re-landscaping river interventions is therefore important to ensure societal expectations regarding flood mitigation are adequately addressed. This paper reports on a comprehensive study (n = 1,102) on place attachment and attitudes towards river interventions of residents living along a ten kilometer stretch of the river Waal, The Netherlands. The river Waal is the site of an ambitious new development involving the replacement of traditional groynes with longitudinal training dams which will drastically change the appearance of the Dutch river landscape. We first examine the relationship between the local residents' socio-demographic characteristics and four dimensions of place attachment: place identity, place dependence, social bonding and a new dimension of narrative bonding. Second, we examine the influence of place attachment and flood safety perception on local residents' evaluation of the proposed river management intervention. The results show that local residents feel strongly attached to the area, especially in terms of place identity. Socio-demographic variables explain between 21 and 41% of variation in place attachment scales. Important predictors include place of residence, being born in the area and scenic beauty, followed by length of residence, frequency of river visits and recreational value. The importance of each place attachment dimension differed between the four residential areas highlighting the need for participatory processes tailored to different sub-regions. Overall the planned construction of the longitudinal training dams was positively evaluated, especially in terms of increasing flood safety. Social bonding, scenic beauty and recreational values had a positive influence on the evaluation of the proposed measure. Studying public perceptions in early stages of the planning and implementation phase provides valuable information to managers and policy makers as this allows for targeted communications and timely adaptation to circumstances.

Effects of urbanization on the perception of coastal wetlands: The case of Los Batros Urban Wetland, Biobio Region, Chile

Carolina Rojas¹, Paula Villagra², Alexis Muñoz², Juan Munizaga¹

¹University of Concepción, Chile; ²Austral University of Chile

Fragile natural systems such as wetlands are subjected to urban pressures due to the lack of proper urban planning. Urbanization processes create newer neighborhood types of a wide variety - from the garden city to more informal ones like favelas - which in most cases lack of planning strategies to ensure the conservation of biodiversity. Even less consider

the effects of newer urban forms in the values people give to natural systems. These values, which express the type of relationship people have with nature, affect the conservation of biodiversity. Values may vary from naturalistic, scientific and aesthetic to other more negative ones such as dominionistic and negativistic values (Kellert and Wilson, 1993). The question addressed here is: What are the characteristics neighborhoods that affect community values of urban wetlands areas?

Los Batros Urban Wetland, in the Bio Bio Region of Chile, is an interesting example to explore this question. Since 1960, neighborhoods of different socio-economic classes and urban forms have been developed around this wetland to satisfy housing demands. Three different types can be observed today: Gated communities; garden city neighborhoods; and 'favelas'. Wetland areas beside these neighborhoods have taken different appearances; while some are full of trash, others depict agricultural fields and infrastructure for recreation. What make people use and value this wetland in different manners? According to the Place-Based theory is the proximity and position of the neighborhood which affect the perception of wetlands, influenced by the density of the neighborhood and intensity of social networks. Alternatively, the Theory of Cultural Sustainability assures that the extent wetland areas are 'well-cared' for, influence perception the most. Besides, Perception Theory of Wetlands overall, indicate that age, gender, income, education, political influence, wetland tenure and past experience affect perception of wetlands.

Using as study units two samples of each neighborhood type, we developed a questionnaire to ask people living in these neighborhoods about the values they assign to the wetland. At the same time and using Geographic Information Systems, Census Data and on-site observation, we were able to determine the location of neighborhoods with respect to the wetland, and collect other spatial and demographic data. Data was analyzed using measures for spatial autocorrelations and multivariate analysis methods. Spatial measures show that awareness about the wetland area is more likely to occur closer to the wetland site, and that values for wetlands in these neighborhoods vary with respect to people's involvement in environmental organizations and wetlands uses, regardless of demographics and wetland aesthetics.

While this study is exploratory in nature, it has important implications for planning implementation that can be further explored in other urban wetland areas. If the aim is the conservation of biodiversity in wetlands under urban pressure, a strategy that assures people's involvement in environmental organization groups increasing social networks may be more effective than creating buffer zones around wetlands, which is currently the planning approach undertaken.

Keywords: Urban wetlands, urban planning, perception of wetlands.

We would like to thank CONICYT - Fondecyt N. 1150459, for funding this study.

Using social learning to envision sustainable futures

Ann L Kolodziejcki¹

¹University of Bolton, UK

Humans depend on the landscape and ecosystem processes for their survival and well-being. Traditionally, studies on landscape processes have mainly been concerned with bio-physical factors and have largely ignored the human dimension while the social sciences have often treated the environment as a backdrop to human interactions. There is a need for more research into the relationships between people and their environments. Environmental protection may have little chance of success unless there is a real cultural concern for nature and engendering a 'sense of place' may be vital if sustainability objectives are to be achieved (Adams, 2003).

As part of my PhD research, a group of residents in the town of Bolton (UK) took part in interviews before and after a series of workshops which were designed to facilitate social learning with regards to place perceptions. Participants worked on envisioning sustainable future landscapes at a range of scales – connecting the local with the global. The workshops used a range of tools to share observations and to foster dialogue amongst residents. These included the creation of mental maps, observation exercises outdoors, identification of valued assets within the study area, discussion of desirable future development trajectories, and provision of space to share thoughts, feelings and memories about particular places.

This qualitative approach involved analysis of interview transcripts to reveal emergent themes and examined the artefacts produced by participants. These took the form of ideas generated during the visioning process and also solicited diaries.

Results revealed that residents had difficulty relating to the neighbourhood level of scale, which agreed with previous research conducted by Hidalgo & Hernandez (2001). This may be because the boundaries of neighbourhoods are often ill-defined and not congruent with what individuals perceived as their neighbourhood. The town centre, however, and other places in the wider borough such as parks and sports facilities were also familiar to people. Sharing stories about different parts of the study area expanded and reframed people's knowledge of the locality. Another finding was that residents reported much greater freedom to explore the local environment as children but as adults felt constrained. They were more mobile compared to previous generations but less knowledgeable about the places in which they lived. This was partly related to mobility choices but also to feelings about entitlement to be in certain places.

Discussing sustainable futures people wished for their places, looking at the scale of the borough through to the region, nation and beyond, helped to contextualise the impact that local development trajectories had upon global issues such as climate change and resource use.

Policy relevant outcomes of this research relate to land-use planning and the ways in which decision makers take account of place perceptions and local assets valued by citizens. Planners and agencies working to enable participation and engage with communities may

benefit from facilitating social learning. Addressing issues at a range of scales could make global issues more salient at the local level.

Revisiting the appropriation of space in metropolitan river corridors

Marta Benages-Albert¹, **Sergio Porcel**², **Andrés Di Masso**³, **Enric Pol**³, **Pere Vall**¹

¹International University of Catalonia (UIC), Spain; ²Autonomous University of Barcelona, Spain; ³University of Barcelona, Spain;

This research reintroduces the concept of 'appropriation of space' into current theoretical debates and empirical approaches in environmental psychology. We present an analysis of a case study conducted in a Barcelona metropolitan river corridor, aimed at exploring how the development of people-place bonds can foster pro-environmental behaviours in a natural open space.

The multi-method qualitative analysis based on participant observation, documentary research and interviews with 57 inhabitants reveals a long-term process of appropriation of the riverside environment that typically results in a sense of responsibility of the subject towards it. The research specifically shows that the time factor is crucial in the explanation of the process of appropriation, and that future longitudinal studies in this and other cases will be required to assess more accurately its importance. Finally, we stress the benefits of taking proper advantage of citizens' cumulative awareness of the management of river corridors.

Attractiveness of streets in a commercial district: Cognition of space components at a corner from pedestrians' view

Naoyuki Oi¹

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Keywords: attractiveness, streetscape, pedestrian

Outdoor spaces where everyone could enjoy walking around in everyday life are important to the well-being and health as well as social relationships between people. With globalisation follows the 24-7 society, profoundly changing the places where people of all age groups live, work and spend their leisure time. People have become more and more busy, and it is difficult for the people living in urban areas to find time to go to suburban areas. From the perspective of global environment, enjoyable streets in urban commercial districts where public transportations are existed are beneficial, as they should encourage people to walk around regardless of shopping in everyday life or spending their leisure time. Therefore this study aims to find the knowledge on the attractiveness of a commercial district for pedestrians.

One of the factors of the attractiveness of a commercial district is the attractiveness of street corners. When strolling around without any specific destination, how do people choose their way to enjoy walking? This paper explores the relationship between the cognition of space components and the attractiveness of street corners.

Two experiments were conducted. The first experiment is choosing the most attractive street at the corners on site. The selected site is a street located at the central commercial

district of Fukuoka City, Japan. This site has 7 corners (T-shaped intersection) leading to the other street. Subjects were instructed to walk and choose one of the streets which they felt as the most attractive to walk into at the street corner, and asked the reason and the components which draw their attention. As a result, most of the subjects note the components of shops such as facades of shops, shop windows and name boards as well as the components of streets such as electric wires. Subjects can be categorized into 2 groups: a) choosing the street after looking deep into it, b) choosing the street by looking at the corner only.

The second experiment is evaluating the attractiveness of the street corner from various sequential viewpoints with photographs on the high definition display. From the results, elements which could lead to attractiveness of streets at the corner and preferable placements of the elements are discussed.

These findings should be useful to improve the environmental design of the commercial districts, could contribute to the well-being of people and hopefully the global environment.

Parallel Session 36: Supportive outdoor environments for elderly, part 1

Time: Wednesday, June 29 2016: 16:00 - 18:00

Location: Small lecture hall, IKDC

Session chair: Anna Bengtsson

Presentations:

Older people's experiences of mobility and mood in an urban environment: A pilot protocol for comparing electroencephalography (EEG) information with self-reports

Sara Tilley¹, Chris Neale²

¹OPENSspace Research Centre, UK; ²University of York, UK

This study is part of a wider research project exploring older people's response to place and their mobility in the built environment. This study aims to develop a protocol to help understand how walking through different urban environments affects mood. The protocol uses mixed methods including electroencephalography (EEG), self-reported measures and interview results.

Recent studies using neuroimaging methods in environmental psychology research have shown that different types of urban environments may be associated with distinctive patterns of brain activity, as analysed by proprietary software (Emotiv EEG 'Affectiv Suite'). The Affectiv Suite interprets neural activity into categories. For this study the 'engagement', 'excitement' and 'frustration' parameters were used.

This presentation describes the protocol, practical implications, and a critical review of the methods used. In addition to a summary of findings, case studies of individual participants will be presented to highlight themes.

A total of 96 healthy participants aged over 65 were recruited for the main research project, of which 43 walked a continuous route that comprised an area of green space and a busy urban street in Edinburgh, UK, wearing an EEG headset. A week later, interviews were completed with 8 participants.

During the interview, participants watched a 10-minute video of the route, paused at 4 equal intervals per environment type, creating 8 segments for the walk. For each segment, participants described their experience of walking. At the end of each segment, participants completed a Likert scale indicating how 'excited', 'engaged' and 'frustrated' they felt whilst walking, corresponding to time matched Affectiv Suite outputs as measured by the mean of each emotional dimension.

An inductive thematic analysis was carried out on the transcribed interviews. Descriptive statistics of Affectiv Suite outputs and the self-reported Likert scales between walk segment tested for significant differences between the two measures. In addition to the overall themes and analysis, a case study approach was adopted to compare all three analysis

outcomes.

Affectiv outputs and Likert scales suggest participants experience changing levels of excitement, engagement and frustration in different environments whilst walking. This was further reflected in the themes that emerged from the transcribed interviews.

Participants could recall how they had felt and describe events that occurred during the walk. Some common themes emerged, including: anxiousness upon commencing the walk due to headset visibility; awareness of the experimental set-up and looking for landmarks during the walk for navigation. The weather on the day and social interaction along the route also mediated their experience.

Initial comparative analysis between Affectiv Suite and the Likert scales show no statistical difference between the two. Case studies highlight changes in mood and correspond these with participants' remembered experiences.

A novel mixed methods protocol has been developed focusing on mood in natural and built environments. This study shows that a synergy of methods may offer a deeper understanding of mood across time whilst walking in city settings amongst older people.

Applying this methodology to a larger sample would provide further insights and test the robustness of combining quantitative and qualitative research for evaluating neuroimaging studies.

Alzheimer's and the neighborhood environment: An exploratory study of the relationship between neighborhood spatial configuration and physical activity in people experiencing Alzheimer's Disease?

Keith Diaz Moore¹, Amber Watts², Farhana Feerdous²

¹University of Utah, USA; ²University of Kansas, USA

Lawton's Ecological Model of Aging suggests that as an older person experiences decline in domains of personal competence, the environment plays an increasingly salient role. This model has been highly influential in informing design advances for people with Alzheimer's Disease, particularly in long-term care settings. Much less research has been conducted on the relationship between the neighborhood setting and outcomes associated with Alzheimer's Disease (AD). Working with the University of Kansas Alzheimer's Disease Center which focuses on physical activity, this study examines 100 older adults that are clinically well characterized. This population is constituted of 47 individuals with mild cognitive impairment and 53 healthy older adults who reside in neighborhoods that exhibit great diversity in particular spatial configuration characteristics, namely integration and connectivity. These are two variables hypothesized by the theory of space syntax to have great impact on personal mobility as well as social encounter. Both physical activity and social isolation are considered likely pathways linked to cognitive decline. This study focuses on the physical activity pathway and seeks to answer the question:

To what degree do neighborhood characteristics influence physical activity in older adults with/without mild Alzheimer's Disease?

In order to increase the transferability of the research approach, the researchers sought to limit ourselves to physical environment data available in the public domain (of the United States) via Geographical Information Systems (e.g. roads, sidewalks, topography). With this geographical data we subsequently engaged in space syntax analysis of those neighborhoods to generate scores according to the procedures documented in the space syntax literature. Working with the Alzheimer's Disease Center Registry, documented individual health characteristics include: waist-to-hip ratio, abdominal and gluteal circumference, cardiorespiratory capacity, and Maximum Rate of Perceived Exertion (RPE). Physical activity was assessed through triaxial accelerometry worn on the dominant hip. The data was analyzed via multiple regression with the identified covariates of age, sex and education (serving as a proxy for socio-economic status). Dependent variables were Time in Physical Activity, Time in Sedentary Behavior, and Step Counts with the interaction terms being neighborhood (characteristics) x AD status. Interestingly, the analysis found that neighborhood characteristics influenced levels of physical activity for the AD group, but not the control group. Higher path connectivity is associated with lower rates of sedentary behavior ($B = -.650, p = .008$) and higher rates of light activity (e.g. walking) ($B = .888, p = .026$) in people with AD. Additionally, higher land use mix density predicted higher cardiorespiratory fitness ($B = .498, p = .013$) in people with AD. Finally, for both people with AD and the control group, higher residential density predicted lower gluteal circumference. The findings align with the hypothesis underlying Lawton's Ecological Model of Aging with path connectivity associated with more activity and less sedentary time in people with AD. There is the ubiquitous question of whether there is a self-selection effect in regard to neighborhood effects, but with over 50% of the sample residing in the same location for 20+ years, it may well be

Environmental qualities to support experience and use of the outdoors for people with dementia. A literature review.

Anna Bengtsson¹, Maria Nilsson², Åsa Wallin², Peter Fröst³, Patrik Grahn¹

¹Swedish University of Agricultural Sciences (SLU), Sweden; ²Lund University, Sweden;

³Chalmers University of Technology, Sweden

Introduction

Dementia is a major health problem in the western world and it was estimated that 35,6 million people were effected worldwide in 2010. Since the incidence of dementia increases sharply with age the number is expected to double every 20 years (Prince et al 2013). In different parts of the world, efforts are made to build cities in a more sustainable way from the persons with dementia's points of view, i.e. dementia-friendly environments (Blackman et al 2003). It is of particular interest that experience and use of the outdoor environment may positively affect people with dementia in several ways (Rodiek & Schwartz, 2007). This would mean benefits for society as well as for the patients and their relatives. However, the development of dementia friendly environments is crucial in order for persons with dementia to be able to gain access to the positive effects of contact with the outdoors. In addition dementia-friendly design benefits people in general for instance by improving wayfinding and orientation in the outdoors (Blackman et al. 2003).

Objectives

This study aims at compiling existing evidence on dementia friendly environments and describe this in form of specific environmental qualities with the intention to support evidence based design processes.

Method

A systematic literature review (Gough et al. 2012) that focused on outdoor environment and persons with dementia was conducted during August-December 2015. The search strategy consisted of three steps:

1. Searches in Web of Science and Google Scholar.
2. The initial search was widened by including reference checking.
3. Studies with information relevant to dementia-friendly design and in particular studies that brought novel information useful to describe and define environmental qualities were selected.

The selected studies were analyzed by the first author and verified by the co-authors, to describe consistent environmental qualities.

Main findings and conclusions

The main findings suggest that it is extremely important for people with dementia that the outdoor environment is designed with knowledge of which environmental qualities are particularly important to the users. People with dementia have specific needs in relation to a number of environmental qualities and the systematic review here conducted compile relevant information in relation to the design of such qualities. Closeness and easy access, familiarity, orientation and wayfinding are some of the most important qualities for persons with dementia to be comfortable in the outdoor environment. The knowledge compiled in the present literature review is intended to support evidence based design processes and is therefore discussed in relation to such processes.

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How do park pathway design characteristics relate to senior walking

Yujia Zhai¹, Perver Baran²

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Urban parks are easily available settings for seniors to engage in daily physical activity. Among all park facilities, park pathways are most significantly related to physical activity (Kaczynski, Potwarka, & Saelens, 2008). Walking is an easily accessible (Bassett, Mahar, Rowe, & Morrow, 2008) and the most popular physical activity among US adults (DHHS, 1996), which is especially beneficial to senior health (DHHS, 2000). The present study aims

at exploring how specific park pathway design characteristics relate to senior walking within urban parks, by examining two neighborhood parks in Beijing, China. On-site observations were utilized to collect data on pathway characteristics and senior walking behavior. In total, 34 pathway segments in Rendinghu Park and 41 pathway segments in Yuetan Park were included in the study.

We utilized gate method (Chang, 2002) to collect data on senior walking, each round of observation for each pathway segment lasted for two minutes. The observations were conducted during a three-week period in August of 2013, in three different periods, including morning, afternoon, and evening, on both weekdays and weekends. In total, each pathway segment was observed for 24 rounds and 23 rounds in Rendinghu Park and Yuetan Park, respectively.

Pathway design characteristics were measured by onsite observations utilizing a protocol developed based on existing park environment measurement tools (Bedimo-Rung, Gustat, Tompkins, Rice, & Thomson, 2006; Giles-Corti et al., 2005; Kaczynski, Stanis, & Besenyi, 2012; Saelens et al., 2006; Troped et al., 2006). Pathway characteristics were conceptualized at three levels, including pathway attributes (pathway pavement, pathway form, presence of benches, presence of flowers, presence of steps, degree of shade, presence of light fixtures, pathway width, and pathway length), pathway surroundings (type of enclosure, degree of enclosure, whether pathway was along a water body, visual connection with water, and visual connection with landmark), and pathway connection with activity zones. In addition, to obtain information about areas preferred and disliked for walking, we conducted 46 face-to-face interviews with senior park users.

We calculated the average number of observed seniors in all observations to represent usage of each pathway segment. Regression analysis revealed that a number of pathway characteristics are significantly correlated with senior walking behavior. For instance, in Rendinghu Park, compared with uneven pavement, pathways with pavements of brick ($B = 3.440$) and plastic track ($B = 6.008$) were used more by seniors. Numbers of observed seniors were positively associated with pathway length in both parks, $R^2 = .338$, $p < 0.001$ and $R^2 = .270$, $p < 0.001$, respectively. Moreover, interview data analysis indicated that seniors prefer to use pathways that are along water body or have visual connection with water. The results indicate that senior users prefer pathways that have soft or even pavement (plastic track and bricks), and have benches, flowers, and light fixtures. Also, seniors were attracted to pathways with width between 3-3.9 meters, were longer, and did not connect to activity zones. The study results provide helpful insights for park design practice to support senior walking as well as a protocol to measure park

A theoretical model for the investigation of walking among vulnerable groups in society

Elizabeth Marcheschi¹

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Introduction

The behavior of walking is largely investigated across different research disciplines, due perhaps, to the positive benefits found to be associated with such physical activity for, individual and environmental issues (Lee and Bucher, 2008). However, the majority of the investigations have been conducted with consideration to public health outcomes and have primary tackling individual with standard functioning. Thus, a lack of theoretical developments and understanding in regard to the processes involved in this human – environment interaction, and specifically, among vulnerable groups in society have been indicated (Forsyth & Southworth, 2008).

Vulnerable groups can be defined in terms of individuals that experience a lack, or a reduction, in their physical and mental abilities such as, elderly people and people with cognitive impairments (Casas, 2007). Accordingly to ecological theories, the influence of the environment increases when frail populations are involved, suggesting the need for greater research attention in regard to this specific human – environment interaction (Lawton & Nahemow, 1973).

Hence, aim of this work is to advance research on walking among vulnerable groups, by proposing a theoretical model that combines knowledge from traffic planning research and environmental psychology. Traffic planning research has traditionally focused on the relationship between the characteristics of the physical setting (e.g. surface conditions) and the performance of walking whereas, environmental psychology has addressed the psychological processes involved and the related well-being outcomes (Johansson, in press).

Methodological approach

Experts, from traffic planning research and environmental psychology, have met to discuss and to integrate theories, concepts and methods regarding the topic object of investigation. Owing to the centrality of the individual's ability, needs and characteristics for walking activities, stressed by both disciplines, the HEI model (Küller, 1991) was selected as theoretical departure point. The model describes how the quality of walking experiences results from the interplay between the individual abilities, emotional processes and physical and social dimensions of the environment. The greater the human – environment fit, the better the individual emotional response, which in turn is expected to positive affect well-being outcomes. Each of the model's dimensions have been operationalized by the group of experts and the results are reported as follows.

Findings

The individual dimension was defined in terms of functional abilities, which are guidelines that discriminate between vulnerable groups and help define their needs.

The physical environment was described with molecular and molar approaches. The former addresses single infrastructure elements association with walking behaviors whereas, the latter one focuses on the overall impression of the environment.

Social environment was operationalized in terms of perceived quality of social situations whereas, the individual emotional processes were explicated throughout the stages of, activation, orientation, evaluation and control.

Finally, well-being outcomes were operationalized in terms of, frequency of mobility and quality of life.

Conclusions

The theoretical model suggested advances previous approaches by focusing on the interplay between human – environment characteristics and by simultaneously addressing diverse human factors (physical functioning & psychological processes). Pilot investigations, conducted in real-life settings, are suggested in order to validate the present model.

The impact of facility relocation on patients' perceptions of ward atmosphere and quality of received forensic psychiatric care

Helle Wijk¹

¹Institute of Health and Caring Sciences, Sweden

The impact of facility relocation on patients' perceptions of ward atmosphere and quality of received forensic psychiatric care

In recent years, large groups of forensic psychiatric patients have been relocated into new medium- and maximum-security forensic psychiatric facilities in Sweden, where a psychosocial care approach is embedded. From this perspective and on the assumption that physical structures affect the therapeutic environment, a prospective longitudinal study was designed to investigate the impact of the facility relocation of three forensic psychiatric hospitals on patients' perceptions of ward atmosphere and quality of received forensic psychiatric care. Participants were patients over 18 years of age sentenced to compulsory forensic psychiatric treatment. Data were obtained by validated questionnaires. Overall, 58 patients (78%) answered the questionnaires at baseline with a total of 47 patients (63%) completing follow-up 1 at six months and 38 patients (51%) completing follow-up 2, one year after relocation. Approximately two-thirds of the participants at all time-points were men and their age range varied from 18 to 69. The results of this study showed that poor physical environment features can have a severe impact on care quality and can reduce the possibilities for person-centered care. Furthermore, the study provides evidence that the patients' perceptions of person-centered care in forensic psychiatric clinics are highly susceptible to factors in the physical and psychosocial environment. Future work will explore the staff's perception of ward atmosphere and the possibilities to adapt a person-centered approach in forensic psychiatric care after facility relocation.

Key words: Person-centered care, ward atmosphere, forensic psychiatry.

Parallel Session 37

Symposium: Human-nature relationships: The diversity of values, ideas of stewardship and strategies for community engagement

Time: Thursday, June 30 2016: 10:30 - 12:30

Location: Room A:B, The A-building

Session chair: Arjen Buijs

Arjen Buijs¹, Anke Fischer², Christopher M. Raymond³

¹Wageningen University, Netherlands; ²James Hutton Institute, UK; ³University of Exeter, UK

Human-nature interactions are often portrayed either in a way that highlights the beneficial effects of ecosystems on human wellbeing (and therefore reduces nature to the status of a source of human 'wellness'), or as exploitative relationships based on resource extraction (portraying the human role as destructive). Looking at the perceived dichotomy of protective and exploitative behaviour, much of the quantitative social sciences emphasise generating an understanding of what drives individuals by focusing on revealed or stated preferences, transcendental values, beliefs and norms. However, most scholars recognise a major 'value-behaviour gap' wherein values, beliefs and norms are only able to account for a small proportion of the variance in behaviour.

To address these issues, broader questions need to be considered, including the different meanings of human-nature relationships, the worldviews used to understand human-nature dynamics, and the practices through which human-nature relationships are developed.

This symposium aims to expand the type of theories, concepts and research methods conventionally used to understand human-nature relationships. First, we suggest that conceptualisations of human-nature relationships vary between an interactional (perception-cognition-action processes can be separated) or a transactional (perception-cognition-action processes cannot be separated) perspective. Second, we explicitly recognise the diversity of ways of engaging with the natural environment and conceptualise the diversity of actors and their practices, as well as their motivations and values, in an inclusive fashion. Such practices may range from following the local forester on twitter, to gardening to engaging in environmental activism. Depending on contexts, they may be enactments of different visions of human-nature relationships.

Our contributions will i) consider multiple ways of conceptualising human-nature relationships as well as a critical analysis of research perspectives; ii) investigate the diversity and context-sensitivity of ways in which people engage with their natural environment, and the meanings they assign to their activities, and the implications that this diversity has for public support and public action; iii) explore the role of practices of engagement between people and nature for novel forms of governance and emerging civil society actors, including unexpected combinations of values and ideas of human-nature relationships.

Presentations:

Emotions motivate actions: How anger turns grievances into collective environmental action

Arjen Buijs¹, Mirjam De Groot¹, Birgit Elands¹

¹Wageningen University, Netherlands

Community involvement in natural resource management, nature conservation or rewilding ranges from public participation and self-organisation in support of management decisions to massive protests and legal action against such decisions. All such forms of practical and political engagement of people critically depends on crossing the great divide between on the one side individual enthusiasm or discontent and on the other side people's engagement in collective action in order to change their natural environment. Understanding why people not remain inactive but decide to act is therefore crucial to understand when discontent is transformed into political actions.

To understand why people engage in protest or supportive actions, we seek inspiration from social movement theory, and especially from research on the role of emotions as driver for political actions. Theoretically, the study is inspired by the social psychological theory of political protest as developed by Van Stekelenburg and Klandermans (2010). As this is a general theory of political action, we translated it to the field of environmental behaviour, replacing for example the general concept of group identity by the environmental concept of sense of place. Our revised model includes four variables deemed relevant to understand environmental political actions: sense of place, environmental attitudes and grievances, the efficacy of perceived effectiveness of political actions, and individual anger.

To investigate the relative importance of emotions in relation to more commonly used concepts in environmental studies such as sense of place, we focus on a local example of a social movement, the Save Our Forest protest group. This social movement has been criticising a major ecological restoration plan in a forested area in the eastern parts of the Netherlands. The core strategy of this social movement was to mobilise local people to organise themselves and stand up against the proposed changes as proposed by two major Dutch nature conservation organizations in cooperation with local municipalities. We conducted a questionnaire consisting of both quantitative and qualitative questions. While many political action research focuses on action tendencies, we decided to focus on actual actions. In this, we distinguish between two different kind of actions: people's information seeking activities, such as visiting an information evening or joining an excursion, and actual political protests such as signing a petition, writing a protest letter or email to the initiators of the project, or becoming a member of the protest group.

Results show that while 59% agrees with the actions against the project, only 20% engages in informative actions and 13% in political actions. Regression analysis revealed that information seeking was only significantly related to people's environmental attitudes, while engaging in political protest was significantly related to both environmental attitudes and anger. However, structural equation modelling revealed that the relationship between environmental attitudes and engaging in political protests was mediated by the negative emotions evoked by the project. Based on this result, we conclude that research into

people's actions towards the environment indeed needs to take the role of emotions into account, including negative emotions such as anger.

Mastery over nature as a paradoxon: Societally implemented but individually rejected

Andreas Muhar¹, Kerstin Böck¹

¹University of Natural Resources and Life Sciences BOKU, Austria

Empirical research of human-nature-relationships (HNR) uses a variety of categories, metaphors and narratives to describe the individual understanding of a persons' relationship to nature, such as stewardship, partnership or mastery over nature. These categories are all rooted in traditional narratives of HNR that evolved parallel to the cultural development of mankind and are reflected in religious and philosophical texts as well as in works of art.

Our paper focuses on the concept of mastery over nature. In scholarly literature, the wording of the associated narratives is slightly different. What they have in common is that they describe humans as superior to nature, capable and entitled to control nature in the sense of improving nature's productivity to provide food and other resources for humans and to reduce the risk from natural hazards such as floods or pests.

Recent empirical research on HNR in many different contexts revealed a continuous trend towards rejection of the concept of mastery over nature at the individual level. In most investigations, a significant majority of respondents does not identify with the concepts of mastery. This is in strong contrast to the fact that on the global societal level the mastery concept has been fully implemented: humans have assumed control over nature at all levels of scale from changing the composition of the atmosphere at the macro level down to modifications of the genome at the micro level.

We evaluated existing literature and conducted qualitative interviews in which we confronted study participants with this discrepancy and asked them for their explanation. In a preliminary analysis we identified the following aspects:

Discrepancy between private and professional sphere: Many respondents pointed at discrepancies between their private understanding of HNR and the conditions under which they conduct their professional life, which force them to act rather according to the mastery concept. These situational factors need to be considered when relating HNR scores from quantitative scales to actual behavior.

Interpretation of mastery as stewardship: Some respondents who in their daily life are acting in the sense of mastery over nature, e.g. in the field of hydraulic engineering and hydropower construction interpret their activities rather as stewardship in the sense of caring for nature with their interventions.

Social desirability: Due to current discourses on sustainability interviewees often feel that an identification with the mastery concept is regarded as inappropriate. Although acting according the mastery concept is part of our daily lives people do not want to be described as "dominators" of nature.

Critical wording of narratives: Small changes in the wording of narratives can create big differences in the results. In various interview situations, in particular during pre-testing of questionnaire formats and different versions of narratives, interview partners stated that they would identify only with some aspects of mastery such as prevention of natural hazards but strongly oppose to others such as genetic modifications.

This presentation will be delivered as part of the Human-nature Relationships in Socio-ecological Systems symposium.

Addressing the implementation gap in biodiversity policy

Riyan Van Den Born¹

¹Radboud University, Netherlands

The public discourse on biodiversity is dominated by 'objective', 'rational' and abstract language of arguments for biodiversity in terms of ecosystem services, health and intrinsic value of nature. These arguments represent two types of values: hedonic values, characterized by pleasure, consumptive happiness, health and economic efficiency, and moral values, expressing the moral considerability of non-self entities such as other people, other species (nature) and other generations (sustainability). Despite ongoing efforts to motivate politicians and public in Europe for nature conservation, biodiversity continues to decline. Existing efforts of monetary evaluation of ecosystem services appear to be insufficient to close the gap between policy goals and policy implementation, suggesting that non-hedonic values have a crucial role to play. In the European FP7 project BIOMOT, we empirically studied why people act for nature beyond legal or work obligations ('committed action'). The results of this paper are based on 105 life-history interviews in seven EU countries in which the motivations of the interviewees to act for biodiversity conservation are explored in detail and traced back to their childhood and the specific environments of their past.

Results show that hedonic values do not explain committed action for nature and moral values only weakly do so. The core concept for understanding committed action for nature is meaningfulness. People act for nature because nature is meaningful to them, connected to a life that makes sense and a difference in the world. Thus, we reveal that the core values that drive committed action for nature are eudemonic. Based in the interviews, we will elucidate what these values are and how they work in shaping 'lives for nature' Some policy implications will be briefly pointed at.

This abstract is submitted as part of the proposed symposium Human-nature relationships in social-ecological systems: The diversity of values, ways of engaging and ideas of stewardship by Arjen Buijs (Wageningen University, the Netherlands), Anke Fischer (James Hutton Institute, UK) and Andreas Muhar (BOKU, Austria)

Connections between people and nature: A multidisciplinary review of the empirical literature

Christopher Ives¹

¹Leuphana University Lüneburg, Germany

'Connection to nature' has become a buzz phrase in the literature over the past decade. A lot of the attention on the topic has sprung from the assumption that a disconnection of humanity from the natural world is at the root of current sustainability problems, and that reconnecting people is part of the solution. In response, different scientific disciplines have explored how people connect with the natural world and what are the implications of this connection (or disconnection). However, research has generally remained within disciplinary boundaries because of terminological, methodological and conceptual differences. In order to direct research and practice on human-nature connections, it is imperative that work from diverse fields is synthesised. Here we present results from a systematic review of the literature on human-nature connections. Carefully chosen search terms were applied to the Scopus research database, which returned a total of 660 empirical studies for analysis. These studies spanned disciplines such as environmental psychology, human geography, anthropology, sociology and applied ecology. Papers were reviewed to answer the following questions: (i) what are the motivations for researching human-nature connections? (ii) which types of natural systems have been the focus of research? (iii) what kinds of people have been studied? (iv) what types of connections with nature have been explored? (v) what are the factors that effect people's connections to nature? (vi) what are the implications of people's connections to nature, and (vii) which interactions between types of human-nature connections are evident? We found that human-nature connections can be broadly divided into psychological, philosophical, experiential and material connections with nature. There is also a need to further explore interactions between various human-nature connections in future research to progress our understanding of the concept. Implications of this work for sustainability and conservation outcomes are discussed.

Engagement and interaction with nature by diverse groups in Britain: What does it mean for management and decision making?

Liz O'brien¹

¹Forest Research, UK

People engage and interact dynamically with nature in a range of ways and through a variety of practices from viewing a street tree from their window to, walking through a park or getting involved in practical conservation activity. They may gain a range of benefits from these different types of engagement and value them as part of everyday life; however they may also experience disbenefits. This paper draws on Church et al's (2014) socio-ecological conception of cultural ecosystem services to explore how diverse groups in Britain engage and interact with nature. Data is drawn from an existing large scale national survey undertaken in England to illustrate a spectrum of engagement with nature and show that particular groups within society visit nature spaces less than others. Also, drawing on a recent synthesis of qualitative research on engagement, specifically with trees and woodlands, this paper provides more in-depth understanding of human-nature relationships by exploring the processes and practices of engagement related to specific

places or concepts of nature. Results from the survey shows groups that engage less with nature include Black and Asian minority ethnic groups, those living in deprived areas, of lower socio-economic status and with a disability or long term illness. It also shows that these groups tend to be less positive about nature. Findings from the qualitative research illustrate how the above groups can be encouraged and enabled to engage with and benefit from interaction with nature through targeted and facilitated or led programmes. This engagement can help form or reinforce benefits and values and lead to meaningful action. In recent years there has been a move towards greater partnership working and more effort has been made to understand the needs of various groups. This has led to different sectors (environment, health, education) working more closely together to meet mutually agreed objectives. However these targeted approaches have implications for decision makers in terms of the challenges associated with resources, management and partnership working across different organisations and sectors.

This presentation will be delivered as part of the 'Human-nature Relationships in Socio-ecological Systems symposium'.

Dimensions of human-nature relationships among Illinois farmers

Courtney Flint¹, **Yuki Yoshida**²

¹Utah State University, USA; ²University of Tokyo, Japan

Human-nature relationships are conventionally dichotomized, and the nature-domineering or "master" type of relationship is often theorized as the cause of human-induced environmental problems. Runoff of excess fertilizer in the United States Midwest contributes to the hypoxic zone in the Gulf of Mexico, and farmers in the area are thus key stakeholders in the global-scale environmental issue of nutrient management. In this presentation we present a typology of human-nature relationship concepts with application in the context of large-scale agriculture. Mail surveys (n=620) and interviews (n=53) with farmers in two watersheds of Illinois were the basis of analysis to assess how farmers relate themselves to their land and nature. The analysis employed three dimensions of the human-nature relationship that were previously theorized but not empirically investigated.

The main findings are threefold. First, the Master concept, previously found to be rejected in other studies, was found to be a component of respondent perspectives. Though agreement levels with ecocentrically oriented relationship types were greater, this finding exemplifies uniqueness of farmers relative to the general public samples previously studied. Second, while the positionality of humans vis-à-vis nature (e.g. whether humans are separate from or part of nature, superior to or inferior to nature) has been the focus of typological analyses of human-nature relationships, this relationship dimension was least discussed by the interviewees. Rather, farmers' perspectives concentrated on how they perceived the character of their bond with nature (e.g. strength and spirituality of the relationship) and on their understanding of nature itself (e.g. whether nature is fragile or resilient). The anthropocentric orientation of the aforementioned Master type, for example, was expressed more often in terms of having a duty to provide for humanity than as the traditional concept of opposing and suppressing nature. Finally, both survey and interviews found farmers agreeing with theoretically contradictory statements and relationships

types. In particular, unexpected commonalities were found in the understanding of nature in the Master and Participant types that are typically thought to be oppositional in terms of positionality. Interviews further revealed the complexity of competing interests and pressures that farmers face as inducing the theoretical contradictions and internal conflicts.

The results posit a fundamental reconsideration of the conceptualization of human-nature relationships as well as of the understanding of midwestern farmers in the context of nutrient management. This research challenges the conventional approach of categorizing people under one, mutually exclusive relationship type. Instead, empirical methods are needed to better understand the complexity of human-nature relationship perspectives and their relationship to environmental actions and conservation behavior. Many farmers were conscious of the societal blame placed upon them, and most farmers were ecocentrically oriented, expressing a desire to steward their land. Thus, despite being the final actors in the industrial system that has disrupted the nutrient cycle, the findings shift the focus of the blame away from these farmers.

This presentation will be delivered as part of the Human-nature Relationships in Socio-ecological Systems symposium.

Why does civil society engage in ecosystem management: The case of wetland restoration in Sweden

Malgorzata Blicharska¹, Patrik Rönnbäck¹

¹Uppsala University, Sweden

The current efforts of biodiversity conservation, including restoration, have to date not led to reversing the ongoing biodiversity decline, stressing the need for complementary approaches facilitating successful conservation. One way forward is to identify drivers and motivations for engaging civil society in activities that do not directly focus on biodiversity conservation, but nonetheless lead to positive conservation outcomes. In our study we detect such drivers and motivations in a case study of wetland restoration in Sweden. Wetlands are habitats important for both facilitating proper functioning of ecosystems and maintaining biodiversity, and delivery of essential ecosystem services to society. Because of the multiple benefits they provide, they constitute an interesting arena for investigating the nature-society interactions in complex socio-ecological systems. The need to maintain and restore wetlands is well established by governmental agencies and environmental policies, however, it is civil society that is currently a main actor in Swedish wetland restoration. The Swedish Anglers Association, in cooperation with land-owners, has restored wetland in around 20 locations since 2010. Using semi-structured interviews with key restoration actors and ranking exercise of cards with different motivations we scrutinize the motivations behind the restoration effort. Moreover, we assess actors' knowledge of the different ecosystem services generated by wetlands and thus their perception of the different values wetlands provide. We then analyse and discuss the relationship between actors' understanding of the value of wetlands and motivations that may lead individuals to engage into activities that, although not directly aimed at biodiversity, deliver the "by-product" of conservation.

This presentation will be delivered as part of the Human-nature Relationships in Socio-ecological Systems symposium.

The contribution of affordance theory to the non-monetary valuation of ecosystem services: Challenges, opportunities and future directions

Christopher Raymond¹

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A range of tools and methods have been developed to assess non-monetary values for ecosystem services, including deliberative valuation, public participation GIS, participatory scenario modelling and Q-methodology. Implicit within all these approaches is an interactionist worldview which treats the valuer, environmental setting and contextual factors as independent entities. A broadening of the framing of human-environment relationships is required to a transactional worldview which recognises that there are relational qualities (interdependent interactions) between an individual, their biophysical and social contexts and other actors within the ecosystem. Affordances, the perceptible properties of the environment that have functional significance for an individual, are based on a transactional worldview. Affordances have been considered in-depth within environmental psychology but have never been integrated into ecosystem service valuation or management before. Such integration may provide for a better understanding of how ecosystem services are co-generated between humans and nature, as called for through global initiatives such as Future Earth and the Intergovernmental Panel on Biodiversity and Ecosystem Services. This perspective critiques the challenges and opportunities associated with the integration of affordance approaches into the non-monetary valuation of ecosystems. Ontological, methodological, community engagement and management challenges and opportunities will be presented to assist researchers understand the merits of affordance theory. I conclude with a discussion of future research directions with respect to the integration of affordances into ecosystem service research and decision-making in a global context.

This presentation will be delivered as part of the Human-nature Relationships in Socio-ecological Systems symposium.

Parallel Session 38: High quality housing and social life

Time: Thursday, June 30 2016: 10:30 - 12:30

Location: Full Scale Lab, The A-building

Session chair: Thorbjörn Laike

Presentations:

Effects of size of housing schemes on the level of satisfaction with the dwelling and social interaction among residents

Maria Cristina Dias Lay¹, Patricia Prado Oliveira¹

¹Federal University of Rio Grande do Sul, Brazil;

The paper investigates how levels of integration of housing schemes can affect social interaction among residents within the scheme and with its urban context, further affecting resident social and emotional health. It addresses the process of social exclusion as related to housing programmes implemented in Brazil in order to attend the low income population, which illustrate the problem of lack of relation of social housing with its urban context. Its main purpose is to analyse the influence of types of insertion of low income housing schemes on the levels of satisfaction with the dwelling and its effects on the intensity of social interaction among dwellers in the housing schemes as well as interaction between the housing scheme and its urban context, taking into consideration aspects related to the size of the housing schemes (number of units) and the quality of infrastructure in the areas where the housing schemes are located. Methodological procedures included a comparative study carried out with isolated units (31) inserted in pre-existent urban contexts and seven housing schemes of different sizes located in two urban areas characterised by different urban conditions and locations in the city of Santiago, Brazil. The comparison between the two areas was carried out through the perceptions of the different groups of residents. Data were collected by complementary techniques, such as archives information, physical measurements, mental maps with interviews and questionnaires. Following the perceptive approach adopted, user satisfaction with the dwelling was employed as indicator of environmental performance. Results showed that the layout characteristics studied are related and can influence social interaction between residents and its urban context. It has been sustained that interaction of low income residents with its urban surroundings can be favored by the number of units, where isolated dwellings located in a pre-existing context and housing schemes with the smaller number of units show higher levels of interaction. It was also verified that the smaller the size of the housing scheme, more positive tend to be the self esteem of residents, due to the perception of being similar to residents of the surrounding areas, and the higher is level of satisfaction with the place where they live. It was confirmed that these results are related to the fact that the stigma of being a low income resident is less perceived, which increases the possibility of social integration with residents of the surrounding areas. It can be concluded that successful integration of the housing scheme in its urban context helps residents integrate into the neighbourhood and the city, increase satisfaction with their place of residence and promote sense of belonging and citizenship, all of which support residents' well-being.

Why don't we live together? Attitudes of young people in Serbia towards cohousing

Jelena Milic¹, Jingmin Zhou¹

¹College of Architecture and Urban Planning, Tongji University, China

Privatisation of the major housing funds in Serbia in the nineties, followed by the general lack of land regulations and economic crisis, resulted in impoverished social housing sector and provided hardly any opportunities for new housing production. The poor financial situation and job scarcity, led to great number of people, aged 19-35, living with their family of origin, with modest prospects of obtaining residential independence in the near future. Young adults continue to be widely excluded from the housing market in Serbia, and, to the present day, there is no appropriate housing policy or government subventions which would, in some way, tackle this problem.

Research explores the attitudes of young population towards housing models alternative to what the current Serbian market has to offer. The main focus is cohousing model where we look into perspectives towards some of its' main characteristics (resident management and decision-making, common facilities) as well as spatial proximity and sustainable living principles. Additionally, we examine differences in attitudes with regard to the socio-economic characteristic of young people (gender, relationship status, current place of living and living arrangements). The sample consisted of 312 respondents 19 to 35 years old. For the purpose of this study, a survey of 30 questions was created.

The main results showed that young people have positive attitudes towards the cohousing model.

For the price lower than the market one, most of our respondents would live in a housing community where they have to commit to recycling the trash (96,5%), maintaining the building (90,4%), taking part in the community board and decision making (88,8%), and taking care of the community garden (86%). Using communal food preparation presented the biggest issue, where only 58% of the total sample had positive attitudes.

Big part of the respondents wouldn't mind sharing the garden (93,9%), common storage room and pantry (78,5%), and laundry room (69,9%), while sharing kitchen is not the most appealing option for the many (34%).

Major part of the respondents stated that they would live in a housing model with communal space and residential management if they are provided with the proximity of the following services: public transportation (78,5%), supermarkets (77,9%), park and green areas (75%).

When talking about the preferred factors that potential community should fulfil, on a scale of 1 to 5, the most important is the sense of safety (M=4,53), followed by the possibility of environmental protection through the everyday sustainable practices (M=3,84). Majority of youth would prefer to live in a similar age group (M=3,70) or in a community where they can have a sense of belonging and where mutual help is available (M=3,64).

Even though cohousing model is not yet developed in Serbia, the results indicate that the attitudes towards this type of communal living are positive. Respondents expressed readiness to actively engage in their possible housing solutions, but only if there were opportunities available. The diversification of the current housing sector models presents one of the possible strategies towards residential independence of young adults.

Missing Conviviality: Socially integrated housing in Chile

Beatriz Maturana¹, Ralph Horne², Scarlet Romano¹

¹University of Chile, Chile; ²RMIT University, Australia

In Chile, contemporary urban policy places social integration as an important goal. This work analyses two socially integrated housing developments in Chile using the concept of conviviality, understood as the “art of living in community” (Esteva, 2012). The concept of assessing conviviality is proposed as a means to further understand social integration. This work argues that materially intermingling different socio-economic groups within housing developments is insufficient on its own to achieve the objectives of social integration advocated in the national urban policy. In particular, when it leaves aside community and cultural processes and therefore disregards considerations of inclusion, equity and conviviality. Furthermore, mixing different social-economic groups is inadequate in meeting the sustainable cities and quality of life objectives of the National Urban Development Policy. As a result, this presentation raises critical questions for the implementation of national policy objectives designed to contest the segregation of cities.

This presentation is concerned with the ongoing problem of residential segregation of communities—in particular along socio-economic lines. In this respect we take as our starting point Henry Shaftoe’s principles for convivial spaces (Shaftoe, 2008), which complement the work of urban theorists, from Kevin Lynch to Jane Jacobs, and from Jan Gehl to Richard Sennett, who argue in various contexts for integrated communities (Gehl, 1987; Jacobs & Abad, 1973; Lynch, 1960; Sennett, 2003). In such conceptualisations of the city, it is street level interaction in convivial spaces that provides essential urban fabric; it creates and maintains neighbourhoods. This interaction may be facilitated (or not) by design of the materiality of the city, but it is the interaction itself that provides evidence of urban fabric.

The presentation discusses how we can assess and recognise convivial spaces as both social and physical expressions of social integration in a housing development (neighbourhood) that is assumed and designed to be socially integrated. The evaluation of social integration through the current policy framework and design regulations does not include the quality of shared spaces through subjective feelings or social cohesion. Without a measure of conviviality, the current model will continue to create a typology of segregation through a narrow definition of social integration.

Quality of life in social housing in porto alegre: Indicators for temporal analysis of environmental aspects in the life of the residents

Paula Silva Gambim¹, Maria Cristina Dias Lay¹

¹Federal University of Rio Grande do Sul, Brazil

This paper addresses the quality of urban life through urban indicators that characterize access to infrastructure and services of the city in order to demonstrate how different may be the potential of participating in urban public life around the city. The study aimed to relate urban characteristics to the characteristics of social housing, exploring how much of the promotion of a more accessible city to low-income people has been implemented in

practice. The definition of the indicators of quality of life considered the adoption of seven major variables that synthesized the conditions of the house according to the ONU-DESC (Legal security of tenure, availability of infrastructure and services, affordability, habitability, universal accessibility, location, and cultural adequacy), adding to each of these indicators relevant dimensions associated with social housing and quality of urban life. The indicators were modeled through the analysis of 68 social housing developments produced by the city of Porto Alegre - RS, Brazil, from 1989 to 2014. By creating a final index through those indicators it was also explored relations between time of production of the social housing and the improvement of living conditions, assessing the evolution of those developments. Data were collected from georeferenced data through municipal institutions (SMURB, DMAE, DEMHAB and OBSERVAPOA) and complemented by satellite images (Google Maps) and local pictures. The construction of the indicators was achieved by using Principal Component Analysis (PCA). The results suggest that over time there was improvement for certain aspects of the social housing produced in Porto Alegre, such as rise in internal areas of the housing unit and more typological and functional diversification (both to internal and to collective areas). Nevertheless, different design strategies are displayed between more accessible and integrated areas of the urban area and more peripheral and segregated areas, being perceived more functional and typological diversity in housing projects produced in more accessible areas of the city. From the results, it seems important to rethink deeper the relationship of social housing projects and their location in order to reverse and not strengthen the social and spatial segregation, as it has been occurring.

Environmental quality in a public housing setting in Montreal, Canada: Tenants’ perspective on environmental priorities, strengths and improvements

Simon Coulombe¹, Stephanie Radziszewski¹, Stéphanie Robert¹, Janie Houle¹

¹Université du Québec à Montréal, Canada

Introduction: Millions of people around the world live in public housing. Their well-being is challenged by low income. If public housing constitutes a safety net (Ruel et al., 2010), little is known about the environmental quality of this setting and how it answers tenants’ needs. According to Horelli’s (2006) model of collective environment fit, well-being is promoted to the extent that four types of structures in the setting (physical, functional, participatory, cultural) support the community’s needs. Objective: The study aimed to explore tenants’ perspective on the quality of their residential setting’s structures, highlighting environmental priorities, strengths and areas for improvement, as well as its relation to well-being. Method: Mixed-method interviews were performed in a public housing project (N=88 tenants) in a suburban borough of Montréal, Canada. The interview included a questionnaire on environmental priorities and satisfaction, a well-being questionnaire (Keyes, 2009), as well as open-ended questions about improvement suggestions (housing units, building, outdoor site, neighborhood). Quantitative answers were aggregated and included in regressions to predict well-being. Qualitative answers were coded by two raters (agreement >80%) using thematic analysis principles (Braun & Clark, 2006). Findings: When asked about the structures that are most important for their well-being, tenants prioritized physical aspects of their unit and building (design promoting privacy; cleanliness, maintenance; air quality) and functional neighborhood aspects (proximity to healthcare, school and daycare facilities; urban design promoting safety). When tenants rated their

satisfaction with diverse characteristics, proximity to school and daycare facilities obtained one of the highest averaged scores. Natural elements, variety of shops and services, and availability of healthy food in the neighborhood were other perceived strengths. In contrast, safety and cleanliness of the building obtained a low score. Indeed, participants' improvement suggestions concerning the building included more tenant adherence in maintenance and cleanliness, as well as measures for increased safety (e.g., cameras). Concerning the dwelling, they suggested a more spacious layout, improved functionality, as well as better air quality. Installation of sports equipment and socialization areas in the courtyard was suggested. In the neighborhood, suggestions also concerned increased safety and interventions for traffic management (e.g. installation of stop signs). Although participatory and cultural structures (e.g. opportunities for opinions about the setting to be heard, relationships with neighbors) were not salient priorities for participants, regression analysis suggests that these could contribute to their well-being. Conclusion: While the findings are context-dependent, they highlight the existence of a complex dynamic between tenants' well-being and quality of the public housing setting, which was overlooked in environmental psychology. Although tenants might not be conscious of the importance of some environmental structures, they were overall mindful of their relationship with their setting, as they were able to recognize several strengths and give pertinent suggestions. A local action plan is being elaborated with tenants and stakeholders partly based on these results. Contrary to their usual portrayal as a disempowered group, the study suggests that tenants could contribute to housing and urban interventions, putting their knowledge and agency to the service of their community's well-being.

Striving in public housing? An inter-site action research on residential environment and well-being

Stephanie Radziszewski¹, Janie Houle², Simon Coulombe¹

¹Université du Québec à Montréal, Canada

Introduction. The home environment is an intrinsic factor of health and well-being (Shaw, 2004). This relationship is especially pronounced for locally dependent underprivileged groups (Horelli, 2006), such as public housing tenants. Despite the hardships they face (e.g. stigma and social exclusion), studies underline the possibility of experiencing well-being and collective sense of community in the public housing context (e.g. Manzo, 2014; Tester & Wingfield, 2013). The research program aimed to develop a comprehensive understanding of the relation between environment and well-being in the public housing context, while involving tenants in the improvement of their environment. Objectives. The study presents an inter-site comparison of a participatory action research program implemented in both an urban (site A) and a suburban (site B) public housing development in Québec, Canada. Highlighting similarities and differences between the two sites, the paper aims to describe the implementation process, the results and the environmental improvements that followed the project. Method. The first research stage was a Photovoice process (Wang & Burris, 1997), where ten tenants in site A, and eleven tenants in site B took pictures of their environment, discussed them in group sessions, and contributed to the thematic analysis. The active collaboration of these tenants in every step of the study designated them as peer-researchers (Guta et al., 2013). The second research stage was a participatory observation grid measuring collective environment fit. Nine peer-researchers in each site

filled the grid in small teams and participated in consensus-seeking group discussions. The inter-site comparison is based on the results of each research stage (photos and thematic analysis; observation notes and consensual scores) as well as on field notes from the facilitators. Main findings. New recruitment strategies were put in place in site B, which successfully gathered a more diverse group of peer-researchers than in site A. The results mainly underlined the similarity between sites, with themes emerging on the importance of nature, social support and local resources. The global portrait reflected the nuanced relationship tenants experienced with their residential environment, with positive elements as frequently named as negative elements. However, tenants in site A reported their need to have control over life situations, whereas tenants in site B focused more on family-related features. Differences also appeared concerning the improvements following the research phases: peer-researchers from site A began with changes that brought forth a greater sense of control while the group in site B opted for an activity intended for children of the development. Various characteristics, such as gender, age and immigration status, can account for a portion of the contrasting results. As differences between urban and suburban neighborhoods have been observed to influence residents' health and well-being (Atav & Spencer, 2002; Brownson, 2002), this could explain additional variance. Conclusion. These results highlight that urban design and community involvement influence not only physical and ecological health, but also mental and social health of residents (Jackson, 2003). Hence, the described approach could prove useful for collective urban planning as well as in-depth intervention with public housing tenants.

From Courtyards to Condominiums: The experience of re-housing in Addis Ababa

Peter Kellett¹, Yohana Eyob²

¹Newcastle University, UK; ²Addis Ababa University, Ethiopia

Ethiopia is currently experiencing rapid economic growth and investing heavily in ambitious programmes of development and modernisation. These include upgrading infrastructure, transport and housing, with the aim of achieving middle income status by 2025. However per capita income is among the lowest in the world at \$550 (World Bank, 2015). Over the last 10 years the government has been implementing a large scale programme to improve the living conditions of the poor and simultaneously to modernise the capital city of Addis Ababa. Well-established communities are being moved from centrally located traditional courtyard housing to multi-storey blocks (condominiums) on the periphery of the city, to make way for new developments in the centre.

This paper reports on fieldwork undertaken in Addis Ababa in June 2015 to document the lived experience of such rapid urban transformation, social change and housing re-development through detailed case studies of low-income households and communities. The research aims to give a voice to those with the least control and power and to gain insights into how such communities cope with change, their levels of resilience and how they adapt to radically different social, spatial and economic circumstances.

Two groups of low-income residents were interviewed in depth by the two authors to probe the impact of such changes on patterns of daily living, livelihoods, affordability, social networks, expectations and aspirations – and the implications for ontological security and

place attachment. The first group were residents of an inner city neighbourhood on the eve of demolition; the second were residents who had recently moved to the peripheral condominiums.

The fieldwork data shows how this large scale movement of people is proving disruptive to livelihoods and social networks, particularly for the poorest citizens. Such insights are valuable to complement ongoing policy critiques of housing and urban redevelopment programmes and contribute to academic debates about how to achieve more equitable and sustainable urban change in the cities of the global south.

This project forms part of on-going research collaboration between the Ethiopian Institute of Architecture and Building Construction (EiABC) at Addis Ababa University and the Global Urban Research Unit (GURU) at Newcastle University, UK.

Seat choice and personal space judgment in public spaces

Olavo Avalone Neto¹, Jun Munakata²

¹Chiba University, Japan

Normally an individual will regulate the interpersonal distance between he/she and an unknown person using the same space. In public spaces, however, often seats are fixed and a user will judge the distance between a vacant seat and an unknown person seating nearby. In this case, not only the distance may not be regulated, but the user must assess if the distance between seats will satisfy his or her needs before they actually sit down. Once he or she have taken the seat, the interpersonal distance may be reassessed as to whether it match the previous judgment or appear to be closer, which may lead to a change in seats. This research explored if users would accurately predict, from afar, if the distance between a vacant bench and another occupied by a stranger would provide a comfortable interpersonal distance and whether that assessment was different from the one made after taking a seat.

Measurements were made through a simulated version of the stop-distance procedure which allowed for the control of extraneous variables. A co-relation between real and virtual procedure was found.

The experiment consisted of two stages: before and after seating. Both stages tested four different seating orientations (face-to-face, two 90° orientations and side-by-side), with distance between seats varying from 80 to 340cm in both approaching and retreating conditions. The before seating stage also tested for the distance between the user and the vacant seat in three levels (20, 35 and 50m) and a virtual version of the stop distance method was applied for validity purposes.

Results showed that necessary distance to preserve one's personal space is almost the same for face-to-face and 90° orientations and these orientations require more distance than side-by-side. Overall, subjects judged that less distance between seats was required before than after sitting. The judgment of required distance between seats was not affected by the distance between the observer and the seats and subjects had the same judgment at 20, 35 and 50 meters from the evaluated seats. Average distances and a logistic regression of each setting are provided as a design tool.

Parallel Session 39

Symposium: Older adults inside and outside their home: The stakes and challenges of social sustainability in late life years, part 2

Time: Thursday, June 30 2016: 10:30 - 12:30

Location: Black Box, The A-building

Session chair: Carole Després

Carole Després¹

¹École d'architecture, Université Laval, Canada

This year's conference theme challenges us to understand sustainability in late modern everyday life with regards to human-environment transactions, namely for vulnerable groups in society. It questions more specifically how key environmental elements and social factors interact and how they contribute to people's quality of life, wellbeing, health and social participation. This symposium focuses on older adults in late-life years. Its objectives are: 1) to share cutting-edge scientific evidences, innovative theoretical perspectives and research methods that address the complex issue of housing location, experience and meaning in late life years, and 2) to discuss the immense challenges ahead that need to be tackled by multiple stakeholders to address the deficiencies in the housing stock and community preparedness. Indeed, multiple analyses show that the majority of very old people are still living at home, for the most part because they want to. That being said, since the majority of older adults will eventually experience difficulties in performing daily activities, actions must be taken to assure that they can age in desirable, affordable, and adapted homes and communities. The challenges are even greater when one considers the aging of the baby boom generation whose housing aspirations are not quite different from those of their parents. The higher proportion of them without spouses and/or children suggests a potentially greater dependency on government, service establishments and communities, as well as more vulnerability in terms of financial means. Even those with children are likely to suffer from a lack intergenerational support since those are less likely to live in close proximity because of their career paths. Finally, baby-boomers' health in old age is worsening compared to the generation before them, making staying active both mentally and physically a precondition for remaining at home and in one's community in old age. The "visitability" character of neighborhood and other favored destinations (built and social) are thus important factors to consider beyond the dwelling unit. This symposium brings together researchers from Québec, Montréal, Vancouver and Stuttgart, with ongoing research on home and community for older adults in late life years. Their respective communication will shed light on some of the following questions. What alternative housing options are offered to older people with functional incapacities? Which factors influences their decision to move or stay? What is the experience of home for those who have relocated? To what extent does the near-home territory and neighborhood facilitate or infringe older adults daily mobility and social participation? Where do they go to socialize? What strategies do they adopt to counter difficult urban or climatic conditions? Do their lifestyle, values, memories and experiences of their housing and neighborhoods contribute their daily life and wellbeing? Finally, how can the housing and care offer for older adults be improved in ways that will support the maintenance or reconstruction of a

meaningful experience of home and community? By which means and which avenues?

Presentations:

2.1 Staying mobile in the city in the face of climate change

Carole Després¹, S. Penger², K. Conrad³, F. Oswald², D. Wittowsky³

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Western societies are simultaneously facing major challenges, such as urbanization, climate change and demographic change. On an individual level remaining mobile while ageing in place is a basic concern for most people in their later life. On a societal level communities have to be prepared to maintain social participation and well-being of older citizens in the future of hot summers and dense inner city districts. The interdisciplinary autonomous MOBIL research group focuses on the study of multiple interactions between the physical out-of-home environment (climatic, noise and air pollution) and individual needs and expectations of older adults from different scientific disciplines (geriatrics, psychology/gerontology, mobility research, urban planning). This presentation emphasizes on the interplay of psychology and mobility research to disentangle out-of-home mobility from a person-environment interaction perspective. The aim is to analyze interdependence between constraining / promoting factors for mobility in the person (e.g., attitudes) and in the physical environment (e.g., barriers). Another aspect is to understand how they might affect health and well-being of community-dwelling older adults in the city of Stuttgart, Germany. We developed an instrument for the attitude of mobility-related behavioral flexibility as well as adapted existing instrument to comprehensively assess climate experience and related adaptation strategies in different climate conditions. With respect to mobility-related behavioral flexibility, data was drawn from N = 331 participants of an online pilot study (21 to 87 years old). Factor analyses revealed three main flexibility factors: (1) flexibility with regard to challenges in the environment (e.g., "If there are obstacles in my way, I can handle it") (2) flexibility with regard to challenges within the person (e.g., "If sometimes I don't have the ability to walk long distances, I divide it into several shorter pieces"), (3) preferences for routines and habits (e.g., "Routines are important for my everyday errands"). As climate experience (cognitive 11 items, affective 17 items) and related adaptation strategies (20 items) are concerned older participants (65+) perceived more stress and stated more adaptive behavior due to heat than younger participants. Whereas findings for low temperature show that younger participants perceived more stress than older persons. The optimized instrument will be assessed in the field study. We currently conduct a further survey in the city of Stuttgart. Based on a developed population and climate index two research settings representing geographically and climatically different urban areas have been identified and selected for the survey. Data will be reported from face-to-face interviews with community-dwelling elders aged 65 years and older at their homes. Preliminary data on out-of-home mobility (from a seven days trip diary) in relation to personal (e.g. perceived health, resources) and environmental factors (household composition, accessibility) will be presented. In general, the study will contribute to a better understanding of daily urban out-of-home mobility and its complex interaction with climate factors as well as personal mobility- and climate-related attitudes in late life. Ultimately, the findings will be used to

further investigate and ensure sustainable use and acceptance of urban planning measures.

2.2 Scientific evidences on the role of building design and interiors in ageing actively at home

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This communication presents a systematic research review examining the role of building design and interior of homes and residential environments in promoting or inhibiting older adults' sedentary behavior and active living. Using an adaptation of the Cochrane Review protocol, the search and screen for relevant, rigorous research studies resulted in 37 research articles. Scientific evidences are presented according to six built environment characteristics: (1) barriers, supports and features; (2) spatial organization and layout; (3) environmental cues; (4) ambient qualities; (5) assistive technologies; and (6) gardens and outdoor spaces. Accessibility-oriented features were found to dominate the studies and findings. Pathway and corridor design, and environmental cues that convey an instrumental function of a space also facilitated active living. Ambient features such as lighting quality and meaningful sounds and aromas were important facilitators to active living among residents with dementia. The presentation concludes on the need for future research to strengthen the knowledge base of the field and its application in design and improvements of residential environments, namely detailed measurement of built environment factors as well as of active living; increasing use of digital technologies for such measurements; multidisciplinary research teams; and policy-driven research questions that arise with housing the growing population of older adults in a healthy manner.

2.3 Environmental barriers and accessibility problems for senior citizens living in ordinary housing in Sweden

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Environmental barriers and accessibility problems for senior citizens living in ordinary housing in Sweden

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Housing environments that hinder performance of daily activities and impede participation in social life have negative health consequences particularly for the older segment of the population. From a public health perspective accessible housing that supports active and healthy ageing is therefore crucial. One set of aims of this study focused on potential effects of targeted elimination of environmental barriers (EB) in the ordinary housing stock in Sweden. Specific aims were to demonstrate the effects in terms of accessibility in relation to a) residents with different functional profiles, b) different types of dwellings and c) housing built during different periods. The second set of aims was based on an inventory of

environmental barriers in the ordinary housing stock followed by estimations of accessibility problems as related to the functional capacity of senior citizens. The aims were to study differences between housing types and building periods and identify the environmental barriers that generate the most accessibility problems for sub-groups of senior citizens. Data on dwellings from existing Swedish research databases (N=1021) were utilized. EB and accessibility were assessed by means of the Housing Enabler instrument. In simulations of EB removal, five items that corresponded to the most common housing adaptations (HA) were selected. The simulations were applied to four functional profiles of different complexity. Moreover, the functional profiles were used in analyses of the magnitude and severity of potential accessibility problems. Differences in terms of type of housing and building period were examined. The results show that EB known to be commonly removed by HA exist in large proportions of the existing ordinary housing stock in Sweden. Targeted elimination of selected barriers would have the largest accessibility effects for senior citizens with more complex functional profiles. The effects would be consistently larger for one-family houses, and for all types of dwellings built before 1960. Overall in the ordinary housing stock, high proportions of one-family houses as well as multi-dwellings had substantial numbers of environmental barriers, with significantly lower numbers in later building periods. Accessibility problems occurred already for senior citizens with few functional limitations, but more profound for those dependent on mobility devices. The most problematic housing sections were entrances in one-family houses and kitchens of multi-dwellings. In conclusion, this study shows that targeted elimination of EB in the ordinary housing stock has a considerable potential to decrease accessibility problems for senior citizens. Despite the high housing standard in Sweden the results display substantial accessibility problems for senior citizens with functional limitations. For society to solve the housing situation for the ageing population well-informed and efficient upgrading of the ordinary housing stock is imperative, in new construction as well as refurbishment projects.

Key words: accessibility simulations, housing adaptations, Housing Enabler instrument, housing provision

2.4 LApLACE: A transdisciplinary laboratory to produce and implement innovative decision support tools and training programs to help improve the housing and care offer of older adults and their caregivers in late life years

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The previous communications have convincingly shown that improving our understanding of the transaction between older adults and the built environment, as well as of what keeps them active and engaged in meaningful ways, is essential to any strategy aimed at fostering their wellbeing and quality of life. That being said, being able to translate these scientific evidences into decision support tools and training programs to help improve the housing and care offer to better fit older adults'needs and preferences, regardless of income or capacity, constitute another challenge. This communication is about the participatory

process put forward to set the foundation of LApLACE, a Canadian transdisciplinary laboratory whose purpose is set to undertake that challenge. LApLACE's team is made up of over 50 stakeholders involved in teaching and research, urban and neighborhood renewal and development, housing design and adaptations, care services and innovations, volunteering and community associations. It comprises professors teaching in various health, social services and built environment related disciplines, built environment workers and professionals (e.g. urban planners, architects, builders and developers), health and social care professionals, policy makers et different levels of governance and, most importantly, older adults and their caregivers. LApLACE's objectives and work plan were defined through two one-day workshops held in Quebec and Alberta in October 2015 where hand-on participatory and intersectorial activities specifically designed to stimulate exchange among the 60 participants. The final mission is threefold: 1) to establish an interdisciplinary team capable of joining forces to synthesize and translate existing knowledge on housing and care options for older adults in late life years and identify remaining gaps in knowledge; 2) to develop innovative strategies and methods to encourage collaboration among the diverse disciplines and professions involved in the housing and care offer, and train interdisciplinary teams on the needs and aspirations of potential knowledge users, including people in late life; 3) to develop effective decision support tools for older people and their families to help them make better informed choices about housing and care location alternatives, as well as for professionals and policy makers to inform innovative healthcare programs, urban renewal plans, and residential care facilities or developing policies on their potential to affect positively or negatively the quality of life in older people in late life.

Parallel Session 4o: Innovative design and layout of outdoor environments

Time: Thursday, June 30 2016: 10:30 - 12:30

Location: Room A:A, The A-building

Session chair: Anna-María Pálsdóttir

Presentations:

Colourful site-specific objects and their interaction in a public context.

Petra Thorpert¹

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Present-day landscape studies have revealed that artificial elements such as public art e.g. sculptures and fountains in an urban context influence positive preferences and have the possibility to change the behaviors in public spaces (Abdulkarim & Nasar 2014, Thompson 2013, Motoyama & Hanyu 2014). The experience that arise when art installations are placed in a public context are depending on factors such as, the artwork's appearance and degree of legibility and the visitors' attitude to the present park environment. Therefore studies have also showed that public art work not always are attractive to the visitors, art work can also be a congruent towards its context (Wohlwill 1976).

The aim has been to explore the interaction between colourful installations and public park greenery interpreted by visitors. The visitor's preferences, movements and emotional responses which mean people's interplay with a temporary colourful installation was studied and analyzed. The study was set up as a case study in a green urban park using two diverse scenes (a more naturalistic scene vs. a more urban scene). The project was using the methods; Semantic description of the setting, (SMB), (Küller 1975) for evaluating human perception of the environment and structured observations (Robson 2011) for exploring the activity. The study was conducted during late summer in a public park in the south of Sweden.

This study showed that art installations with a bright and visible colour have the possibility to contribute to a deeper understanding of how green spaces can be related to and adjusted to different moods, emotions and experiential aspects. More specific the results showed that colour installations in a specific context are able to contribute to an increased as well as a decreased sense of e.g. security, stimulation, pleasantness, openness and surprise.

The study raised important questions for additional research on the interactions between humans, colourful installations (art installations) and different sorts of greenery both in an urban and rural context.

Abdulkarim, D., Nasar, J. (2014). Do Seats, Food Vendors, and Sculptures improve Plaza Visitability? *Environment and Behavior*. Vol. 46 (7): 805-825.

Motoyama, Y., Kazunori, H. (2014). Does public art enrich landscapes? The effect of public art on visual properties and affective appraisals of landscapes. *Journal of Environment Psychology*, 40, 14-25.

Küller, R. (1975). *Semantisk miljöbeskrivning* [Semantic environmental description]. Stockholm: Psykologiförlaget.

Robson, C. (2011). *Real world research*. Padstow: John Wiley & Sons Ltd.

Thompson, C. W. (2013). Activity, exercise and the planning and design of outdoor spaces. *Journal of Environmental Psychology*, 3, 221-237.

Wohlwill, J. F. (1976). Environmental aesthetics: The environment as a source of affect. In I. Altman & J. f. Wohlwill (Eds). *Human behaviour and environment: Advances in theory and research*. Vol. 1: 37-86. New York: Plenum Press.

Analysis of the concept of 'kawaii-ness'

Masato Ujigawa¹

¹Tokyo Denki University

'Kawaii' is a traditional Japanese adjective which expresses a similar concept to 'cute' and 'lovable' in English. The word has been used for 1000 years or more in relation to the emotion for babies, small children and garments. In recent years, there have been many successful examples of kawaii in the design of living articles, electrical home appliances and automobiles. However, the concept has hardly been taken into consideration in the design of built environments. Until now, the psychological phenomenon, which people feel as kawaii, has not been an object of scientific research, so its effects have not yet been clarified. First, the author collected examples from structure design where the concept of 'kawaii-ness' was used. These are divided into two types: a structure or its component that gives a 'kawaii' feeling, and a structure wherein people can coexist with small children, animals or vegetables within a structure. Second, the author conducted a subject investigation about the cause and effect of kawaii. Three group interviews were conducted with 30 subjects. The laddering method devised by Hinkle was used for designing the questions; 15 stimuli were used for the investigation, and causes were classified into 'shape', 'behaviour or expression' and 'personality'. Effects were classified into Murray's system of needs and Ekman's emotional categories. 'Happiness' was the category in which most answers of effects were classified, followed by 'affiliation' and 'nurturance'. Moreover, the peculiar relationship of those causes and effects has been ascertained. The meaning of 'kawaii-ness' in the examples the author collected can also be classified according to the three categories mentioned above.

Series of impressions walking through interior spaces – Depending on internal (psychological) and external (spatial) context

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¹Ginkgo-Green Architects, Hungary; ²Eötvös Loránd University, Hungary

The focus of our study is about the perceptual processes taking place while walking through different types of interior spaces. In an earlier phase of this research (presented in IAPS23 Timisoara*) this process was examined from the aspect of cognitive visual perception. The question was what kind of visual perceptions and thoughts people have while moving along a certain built inner space. Changes in visual perceptions were examined by designing

various space patterns (e.g. lengthened parapet wall, eliminated back door etc.) As research material we used the photos of the gallery space of Pulitzer Foundation for the Arts designed by Tadao Ando, located in St. Louis, Missouri.

In our studies, we created a “perception matrix”^{*} of the perceiver’s experience of that gallery space as a systematized description of the cognitive process. In the presentation the matrix will be shown in a nutshell. The matrix is based both on experiences of everyday people, and architects. Our matrix had the shape of a table that presented various psychological concepts that were elicited by spatial elements in different contexts. In that table the columns showed the various psychological concepts that were associated with the several spatial elements, while the rows of the table referred to four different approaching routes (spatial context).

The aim of the present study is to expand our perception matrix. In the current research we focused on affective processes (emotions and moods), still adhering to visuality.

In our study some of the indoor semi-public spaces (hotel lounges open to public) of a few five-star hotels in Budapest and London were analysed. Participants were architects who were given a task to write intuitive texts about the series of impressions they gathered walking around. Observations about spaces (cognitive contents, and also emotions, moods) formed into texts were content analysed along similarities in ideas. When grouping the observations, we resorted to the psychological concepts that could be found in the matrix of the previous study. As for new observations we created new headings.

On the basis of the intuitive texts written about the hotels, as a result, 11 concepts were identified. Six of them can be found in the previous perception matrix: {categorization}, {localization}, {motivation}, {attention}, {self-space}, {emotion}. The new ones are as follows: {mood}, {evaluation}, {spatial relations}, {sensing space}, {associations}.

In the extended matrix new psychological concepts associated with emotions and moods were expected to appear but eventually perceptual descriptions in the original matrix have also been expanded, for instance, by subjective sensation of space and the subjective spatial relations.

Studying hotel lounges we learned more about the context of the cognitive processes of spatial perception as well. We distinguished internal (psychological) and external (environmental) context. The idea of “external context” includes the routes of the visit, the vantage points, as well as the changes in light (the colour, direction and quantity of light) and any physical properties that can have any objective influence on the impressions of space. “Internal context” refers to the viewer’s initial mood, initial emotions, initial motivation etc.

Designer architects’ intuition as a tool for scientific research

Anna Losonczy¹, Levente Gulyás¹, Klára Sarbak¹, Attila Kurucz¹, Andrea Düll²

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Our research focuses on the perception of built interior spaces. We aim to describe the way an observer experiences the specific characters of an interior. Our approach is dominantly architectural, simultaneously using intuitive approach and research methodology tools of experimental psychology. There are fundamental differences between the research and design based approaches. The aim of the architect is to create. During the design process the architect draws on a wide range of fields and creates a subjective language

used to reference to the design. On the other hand the aim of the researcher is to prove a hypothesis. The researcher uses systematic analysis to give a narrow but accurate answer to the same question.

Our research team consists of architects, or ‘design experts’. Our work is supervised by an environmental psychologist. It is not common however for researchers to derive hypothesis from the way designers think. Over the past years our research team has developed a research based approach. Varying these two different approaches is an important component of our methodology. It is a usable practice for architects to apply the results of research and incorporate them into their design.

Practically, all of architects have a kind of expertise in understanding place experience but – depending e. g., practice, talent – these skills are different in depth, in accuracy etc. Very few of designers do systematic research considering place perception. Research gives a kind of systematic way of scientific vision which can be contrasted^{*} with intuitive way of perception of a designer.

We are working with different types of professional groups, all are experts in architectural design, but have different level of research experiences. The first group consists of people have not engaged in the research of visual cognition before. The second group are those who are already familiar with the research topic but have not been deeply engaged in it yet. The third group consists of the experts of our research, these people have been deeply engaging with this topic for years. They are able to draw thoughts from a wider palette of knowledge.

In this presentation we aim to discuss the relationship between design and research. One answer is to think of the designers as consumers of research: thus researchers either generate empirical findings that designers can incorporate into their work in order to improve its functioning, or they generate interesting ideas from which designers can draw creative insights. Another common answer is to think of design itself as a form of research. We argue that the more interesting issue is not to produce small results that architects can use but rather to use designers’ intuitions to generate questions for researchers. For describing this idea we will present the process and the results of our design based research about visual perception of the interior space of the Pulitzer Foundation for the Arts (St. Louis, USA) designed by Tadao Ando.

^{*} Anna Losonczy: Constellations 2014
(doctoral dissertation, Doctoral School of Architecture, Budapest University of Technology)

Another way of dwelling is possible: Socially, economically and environmentally sustainable urban collective housing

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¹University of A Coruña, Spain

Due to the economic and financial crisis, the collapse of the housing bubble and the increase in social mobilization motivated by the 15M movement, in Spain there is a development and consolidation of architectonic housing designs from bottom-up participatory process. These projects want to be a real alternative to the dwelling politics which are only based

on the home ownership that is an intrinsic feature of Spanish society features which were promoted by the Franco regime from the sixties onwards. These new projects want to avoid property speculation because housing is understood as a citizen's right and not like a kind of merchandise in the capitalist market. Therefore, they are organized in housing cooperatives which grant you its use but not the property, which will be collective.

Three cases of study are analysed, with starting points and diverse characteristics, all of which they are currently at different stages of development: La Borda (Barcelona), Outra Forma de Vivenda (A Coruña) and Entrepatrios (Madrid). Unlike consolidated and successful precedents in a rural environment, and very different one from the other, like the self-built houses in Marinaleda (Sevilla) or the cooperative for older people called Trabensol, a "Social Center of community living for Senior" in Torremocha de Jarama (Madrid), these three projects are placed inside the city. There are flats for several family profiles, with communal spaces for different activities from work and leisure: co-working spaces, laundries, vegetable gardens, children's play room, etc.

These projects have as their principal goal to foster sustainable dwelling promoting and the participative process from the self-management of the future inhabitants. None of them have been built yet because have been created recently, between 2014 and 2015. It's a longer process than a conventional apartment building because, although the three examples are organized in several ways, the future dwellers have to be grouped together, consolidated, their needs defined, their participative design build also needs to be worked on, etc.

They are suggesting a new use of the space in the building, both indoor and outdoor, that creates a different model of living based on social, economic, architectural, and environmental sustainability. Besides, the central axis of the projects is the participation of the future inhabitants through democratic processes with assembly's decisions.

The objective is to make a comparative analysis of the development of the three cases of study up to today, in order to make evident their differences, strong points and weaknesses. Any of them could be considered as an effective response to the dwelling problem in this country. Perhaps this is the most probable future alternative to the conventional collective housing that is being developed from the social innovation at this moment.

Key words: collective housing, sustainable, bottom-up

Attractiveness of streets in a commercial district: Cognition of space components at a corner from pedestrians' view

Naoyuki Oi¹

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Outdoor spaces where everyone could enjoy walking around in everyday life are important to the well-being and health as well as social relationships between people. With globalisation follows the 24-7 society, profoundly changing the places where people of all age groups live, work and spend their leisure time. People have become more and more

busy, and it is difficult for the people living in urban areas to find time to go to suburban areas. From the perspective of global environment, enjoyable streets in urban commercial districts where public transportations are existed are beneficial, as they should encourage people to walk around regardless of shopping in everyday life or spending their leisure time. Therefore this study aims to find the knowledge on the attractiveness of a commercial district for pedestrians.

One of the factors of the attractiveness of a commercial district is the attractiveness of street corners. When strolling around without any specific destination, how do people choose their way to enjoy walking? This paper explores the relationship between the cognition of space components and the attractiveness of street corners.

Two experiments were conducted. The first experiment is choosing the most attractive street at the corners on site. The selected site is a street located at the central commercial district of Fukuoka City, Japan. This site has 7 corners (T-shaped intersection) leading to the other street. Subjects were instructed to walk and choose one of the streets which they felt as the most attractive to walk into at the street corner, and asked the reason and the components which draw their attention. As a result, most of the subjects note the components of shops such as facades of shops, shop windows and name boards as well as the components of streets such as electric wires. Subjects can be categorized into 2 groups: a) choosing the street after looking deep into it, b) choosing the street by looking at the corner only.

The second experiment is evaluating the attractiveness of the street corner from various sequential viewpoints with photographs on the high definition display. From the results, elements which could lead to attractiveness of streets at the corner and preferable placements of the elements are discussed.

These findings should be useful to improve the environmental design of the commercial districts, could contribute to the well-being of people and hopefully the global environment.

Keywords: attractiveness, streetscape, pedestrian

Design Issues and Social debate of Asian Cultural Complex as an Urban Regeneration Projects

Seungkwang Shon¹

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This study aims to understand and analyze the recognition shown during the progress of the ACC public project as well as the recognition of the environmental evaluation performed by local community members including experts in relation to controversial landmarks and the city's historical locations. A 30-question surveys based on a Likert scale was conducted with 150 experts including qualified architects, public officials working in the department of construction, university professors, and graduate students. Furthermore, frequency analysis and cross analysis were conducted by using SPSS PC+, a commercial statistical program.

The study showed that, first, despite controversies about landmarks and historical locations, the quality of the architects' first drafts was considered fairly high. However, lively landmarks were greatly desired. Furthermore, respondents reported conflicting recognitions for the same article, which were defined differently depending on the terms and concepts used by the architect in the article. Second, historical locations were

considered important. The architects' final design was modified based on its quality and in response to social pressure, resulting in the partial retention of the provincial government annex building. Although the first draft was considered to be of high quality, the modified plan was considered even better than the original design, revealing the two-fold characteristics regarding the environmental recognition of the identical phenomenon. Third, the recognitions of landmarks, originality, and locations dynamically changed as the project progressed. Because many groups showed intermediate opinions that were balanced between the architects' originality and the value of community-based recognition, the social inclination and evaluation of the project differed across the public.

Keywords : Landmark, Historical Place, Urban Regeneration, Spatial Cognition

A study on evaluation of building façade from the view point of emotional feeling

Jun Munakata¹

¹Chiba university, Japan

Developed technology of construction and environmental engineering has enabled us to build architecture of unique, diverse and interesting design today. A Japanese architecture critic named those type of building as "kawaii" style. Japanese term of "kawaii" is an emotional adjective and can be translated to English as lovable, cute, pretty and sweet comprehensively. This sense has become so popular in Japanese society today and is applied in various field such as pop culture, animation and product design. However it is still unclear whether modern and unique architectural design can be evaluated by this sense, because the definition of kawaii is originally used to describe those of white, little, pure, young and weak. Thus an experimental study was conducted. For this study, 95 architectures of modern and unique appearance were chosen from 296 architectures presented on Japanese architectural magazine published between February 2013 and July 2014. After classification, final set of 20 pictures with enough variety of design was decided for the experiment. 30 young men and women between 18 and 25 years old participated in this experiment. Most of them were students of university, however, none of them were major in architecture nor design. Two types of scale were used. Firstly participants measured preference of each picture on the supposition of the purpose of the architecture. There are 8 purposes such as their residence, office building to work or city hall. Secondly they evaluate impression of each picture using 15 semantic differential scales. The scales included usual scales such as interesting/boring and organized/disordered, as well as scales which might be related to the sense of kawaii. Pictures of architecture were printed on a sheet with the size of 20 by 30 cm and presented to the participants. As a result preference of 8 purposes of use was divided into 2 types: private use and public use. From the result of factor analysis using semantic scales, 3 factors were extracted. They were named as kawaii-ness, prominency and order. Kawaii-ness factor include scales of soft atmosphere, healing, soft texture, smiling, less-coercive, lightness and familiar. Then multi regression analysis was conducted to predict preference of each purpose of use using factor score of these three factors. For the every purpose of private use, factor score of kawaii-ness show significant influence on the preference with enough coefficient of determination, however, kawaii-ness factor show no significant influence for public type use. Thus feeling of kawaii-ness factor, that is, potential sense of "kawaii" in Japanese, is concluded to be important aspect when people

evaluate the design of architecture which relate to their private life much. It is required in the future research to study more practical and various effect of emotional feeling toward built environment.

Parallel Session 41: Urban walking and wayfinding

Time: Thursday, June 30 2016: 10:30 - 12:30

Location: Large lecture hall, IKDC

Session chair: Elizabeth Marcheschi

Presentations:

Measuring neighborhood walkable environments: A comparison of three approaches **Yen-Cheng Chiang¹, William Sullivan²**

¹National Chiayi University, Taiwan; ²University of Illinois at Urbana-Champaign, USA

Multiple studies have revealed the importance of walkable environments for physical activity and health, and people currently attach considerable importance to leisure and health-related walking activities. Recent studies have used Google Street View as an instrument to assess city streets and walkable environments. However, according to our research, no study has compared the validity of measures of the walkable environment attributes obtained via Google Street View with assessments made by local residents or from trained observers who make on-site measurements. Therefore, the present study incorporated area residents and (a) compared the three approaches (Google Street View, area residence, and field visits) for their agreement regarding walkable environment attributes and variables, and (b) determined the approach (area residence or field visit) that exhibited the highest agreement with Google Street View regarding the quality of walkable environments. One city with relatively high-quality walkable environments and one city with relatively low-quality walkable environments were selected. Subsequently, three neighborhoods from each city were selected for surveys. The participants in each neighborhood were divided into area residence, field visit, and Google Street View groups. Fifteen participants were recruited for each approach, yielding a total of 90 valid samples. The intraclass correlation coefficient (ICC) results indicate that the walkable environment attributes in the three approaches, beautiful views in the surroundings, attractive scenery, roadside trees, and sidewalk cleanness demonstrated almost perfect agreement (ICC > .8). Regarding the walkable environment variables, traffic safety, sidewalk quality, and physical barriers attained substantial agreement (ICC > .6–.8); however, aesthetics attained the highest agreement. Compared with field visits, area residence displayed relatively closer agreement with Google Street View. The Google Street View audit provided a more convenient, low-cost, efficient, and safe approach. The results of this study may facilitate future large-scale walkable environment surveys, effectively reduce expenses, save human resource costs, and improve survey efficiency.

Affective appraisals of walking in urban settings and restorative outcomes

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¹University of the West of England, UK

The field of environmental psychology has given extensive relevance to the study of affect and restoration during walking in natural spaces, suggesting that individuals recover from stress more effectively in green rather than in built settings. However, not many studies addressed the outcomes of walking in attractive urban settings, as current literatures focus on unattractive built settings such as commercial areas, urban outskirts and traffic-congested streets. In doing so, the potential for some urban environments also to offer restoration was downplayed, despite the fact that according to Attention Restoration Theory any environment that possesses one or more restorative properties can potentially promote restoration from stress. This paper hypothesises that the interaction with some urban settings while walking can promote positive affect. In particular, it is anticipated that environments rich in cultural heritage can be restorative, due to the aesthetic and relational qualities of heritage. This paper presents the results of an experiment with residents of Bristol (UK) (n=400). The study examined affective appraisals in urban settings with different setting type (heritage and non-heritage) and traffic levels (pedestrianised and non-pedestrianised), presented to participants as videos of recorded walks in such settings. Pedestrianised urban environments included in the analysis were: a) heritage, b) modern, c) heritage/green; two additional settings included: d) a commercial street with traffic and e) an urban park. Preliminary results showed that the heritage element and the absence of traffic both contribute to restoration, and are related to a positive environmental evaluation. Future phases of research include physiological measurement of affect (with a mobile EEG recorder) during actual walking, as well as a qualitative phase with interviews, which will enable a more comprehensive investigation of the holistic experience of place. This paper brings together research from environmental psychology, mobilities and heritage studies in order to inform literatures on the associations between built environments and human health and behaviours. It aims to give indications on what can make individuals more willing to walk in urban contexts, and has the overarching purpose of increasing levels of walking in cities, which is a priority in the urban sustainability agenda.

Keywords: affect, urban settings, walking

Noticeable aspects of central urban squares in densely-populated cities likely to have stress reducing effects on passers-by

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The promotion of walking has been on the public agenda as part of a larger strategy to promote healthier lifestyles. The theme has concerned the different fields of knowledge, including Public Health, Urban and Regional Planning, Architecture and Urbanism. However, walking in densely-populated cities frequently demands upon people to adapt to or cope with noise, malodour, vibration, unfavourable climatic conditions and other environmental stressors. Recently, the potential of different small urban open spaces in reducing stress has been recognised. More evidence and systematic research focused on how design of urban open spaces may influence psychological health of pedestrians are needed to inform policy

and urban design. The aim of this study is to investigate the perceived attributes of central squares in large cities likely to have stress reducing effects on passers-by.

Three central urban squares in Belo Horizonte, a Brazilian city with approximately 2,5 million of inhabitants, were chosen as case study sites: Liberdade Square, Estação Square and Raul Soares Square. The data collection included physical survey, non-systematic observation, face-to-face structured interviews applied in situ and individual centred mapping. The data were processed, summarized and analysed qualitatively and quantitatively in SPSS and Geographic Information System (GIS).

The results showed that walking through the three case study sites tend to trigger a sense of relaxation. The amplitude, the presence of water, the biodiversity and the climatic conditions were perceived as the main aspects of Liberdade Square, Estação Square and Raul Soares Square likely to enhance the quality of walking and sense of well-being of pedestrians. Despite the Brazilian government's national policy effort to encourage human-powered movement, the results suggest that the design guidelines defined in the National Plan of Urban Mobility 2015 are not sufficient to influence positively the sense of well-being of those people who choose to walk to arrive at their destination.

The results of this study do suggest that central urban squares in large cities can be designed to function as a type of respite likely to contribute to pedestrians' quality of life, well-being and health. Through the examination of connections between the design of built environment, walking and sense of well-being, this study has presented relevant findings for policy and urban design of people-friendly cities.

Public health through walks in neighboring green areas

Anne-Karine Halvorsen Thorén¹

¹Norwegian University of Life Sciences, Norway

This study is part of a larger research project «Public health through walks in neighboring green areas» in which we study social and spatial factors potentially affecting use and non-use of neighboring areas for everyday walks. Starting point of the project is the low activity levels in the Norwegian population. In age group 20-64 years, only 35% of women and 28% of men meet minimum of 150 minutes of moderate or 75 minutes of high intensity per week.

This raises questions about what hinder inactive people and what measures are necessary to increase the activity levels in the population. We have chosen to study neighborhood walks because it is a low- threshold- activity; it is free, can start at home and does not demand any special equipment. The project includes walking as leisure as well as everyday activity. Internationally, many studies have focused on environmental or neighborhood factors that motivate or hinder people from walking. We know far less about Norwegian conditions in this field for example how often, when and where people are walking, what prevents them from walking, what motivates them and which factors in the physical environment inhibit or promote walking in urban areas.

The study builds on case methodology and the case is Moss a town in the southeastern part of Norway by the Oslo fjord. The municipality has about 32 000 inhabitants. Seven postal zones in the municipality were strategically chosen for a survey in which only adults above 18 years participated. The sample represent different types of dwellings and a gradient from less access to nature in the center, to closer access in the north. It was conducted telephone

interviews with 780 respondents. We analyzed the responses with multivariate methods and spatial regression and we conducted spatial analysis with ESRI ArcGIS program. Distribution of the respondents was calculated by Point Density tool. The spatial analysis of informants' views on hindrances, preferences etc. were compared with analysis of the physical environment such as traffic conditions, lighting, access to green areas etc.

The analysis so far has shown that nine of ten informants prefer to walk in natural areas. Few of them express that they are experiencing barriers. Far more people call for improved measures like 1.) Clean, neat and orderly environment, 2.) Snow clearing of pathways / walkways winter, 3.) Gritting during winter. Social aspects has particular importance; People want someone to walk with and nice surroundings. Spatial regression analysis revealed that those who walk frequently are more likely to live in the central part of the town. Spatial analysis also showed that objectively measured traffic volumes have little impact on how much people walk. It appears that people's individual experience of traffic means far more than the actual traffic volume.

We will thank the Research Council of Norway for financing this research project and also Norstat and students for contributing to the data collection.

Key words: neighboring walks, hindrances, nature

Route Aware: Exploring walking routes using a touch table

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Objectives

Touch tables are large screen computers that react to touch in a similar way to hand-held tablet devices. Touch tables makes it possible for people to share, collaborate and explore visual material together.

Route Aware was a pilot project to investigate the utility of a touch table to explore and share knowledge about local walking routes in small groups.

Our objectives were:

- To gain an understanding of the practical issues around using a touch table in small group settings
- To gain an understanding of the process of communication and shared knowledge building about landscape use that is elicited through group discussion around this visual tool.

Methodological approach

22 participants downloaded a free Geographical Positioning System (GPS) app to their smartphones, and used this to record their route as they took a recreational walk of their choice. The GPS tracks were exported and uploaded onto Bing Maps running on a large touch table. Participants came together in small groups (3-5 people) to describe and discuss

their routes in a participant-led manner. Group sessions were voice and video-recorded, and transcribed for analysis purposes. Four to six weeks after their group session participants were interviewed individually to capture their reflections on the touch table experience and any indications of behaviour change.

Main findings

The methodological approach of using free smartphone apps was very cost effective both financially and in terms of researcher time. Displaying the routes on the touch table was straightforward and required no specialist software. The touch table was attractive to participants and intuitive to use, although subject to interference from overhead lighting and over-responsiveness to some types of touch.

The depth of the conversation around walking routes and landscape use was greatly facilitated by the satellite photography presented on the touch table. Participants commented on specific features and changes (since the satellite photograph was taken) that would not be captured on a topographical map. Group discussion around the touch table enabled participants to gain a rich understanding of what an area/route was like, and whether it would meet their particular likes and requirements. The unbounded nature of the aerial map meant that discussion was not confined to the routes that had been uploaded to the touch table, and participants were able to indicate and describe walking routes in varied locations, enriching the experience for the group.

From the post session interviews we found evidence for sessions around the touch table leading people to think more deeply about what makes a good walk, and thinking about how to 'sell' a walk to other people. Participants reported feeling more mindful of their environment while walking. Some participants expressed an intention to visit and walk in new areas as a result of their touch table experience.

Conclusions

We conclude that there is value in using a touch table in studies exploring and encouraging landscape use, and recommend further research to investigate its full potential as a visual method for use in social learning research.

Wayfinding and urban legibility: What makes a city recognized by users?

Adriana Portella¹, Moana Bellotti¹

¹Federal University of Pelotas, Brazil

This paper examines the role of wayfinding strategies to become a city more legible and imaginable for people. Legibility is related to the term wayfinding. Wayfinding is understood in the urban context as the user experience of orientation and choosing a path within a place, with regard to a set of architectural and design elements that may influence orientation. In other words, this term concerns the user's capacity to form cognitive maps and involves two abilities – cognitive and behavioural – applied to get to a destination. On the other hand, imageability is the quality in a physical object, which gives it a high

probability of evoking a strong image in any given observer. A highly imageable city would be well formed, contain very distinct parts, and be instantly recognizable by people.

The objective here is to identify factors that should be considered for an adequate operation of a wayfinding system, so that users have a positive experience when moving around the city. The focus is given to historical Brazilian cities with academic activity, as these are where there is concentration of students from elsewhere, many unfamiliar with the city, and tourists. For those not familiar with the place, the wayfinding system adopted by the city becomes even more important to ensure their location and satisfaction with the place. A case study approach was adopted having selected the city of Pelotas. The city is characterized by a significant amount of historic sites and has three universities with a student population of approximately 200,000. The investigation is focused on perception of students from the biggest university in the city, considering for that a sample of 300 students from different schools. The following data collection methods were adopted: physical survey of wayfinding elements in the city; mental maps and questionnaires with students; and interviews with university officers responsible for wayfinding projects. The data were analysed through qualitative and quantitative methods.

The results demonstrated that wayfinding in the city is very low due to the built environment being too monotonous; it creates difficulty due to too low visual stimulations and lack of interest. In addition, many users indicated that signage on building university facades are the most important elements that help their location; however, this signage does not exist in the majority of these buildings. The research suggests that this information can be part of user's mental image due to digital mechanisms, which are available on internet to help location. In this sense, the study found out that digital resources are replacing physical forms in the city, and users mental image of places are much influenced by those. At the same time, the majority of people indicated that monotony is decreasing visual quality, legibility and imageability making them evaluate the place as negative. In conclusion, this study indicates a series of aspects that should be part of a wayfinding strategy to increase user's evaluation of the city and make people have a positive experience when walk around urban environment.

Characteristics of salient trip hazards based on eye-tracking data

Jim Uttley¹, Steve Fotios¹, Hussain Qasem¹

¹University of Sheffield

Trips, slips and stumbles account for 23% of accidents outside the home that lead to a hospital visit in the UK, and roads, streets and pavements are the most frequent location for such accidents (DTI, 2003). A major cause of these accidents is failure to see the trip hazard (Bird, 2008) and this is more likely to occur after-dark than during the day. A key goal for pedestrian road lighting is therefore to increase the likelihood of seeing a trip hazard by providing sufficient light to allow detection.

Previous research has investigated the relationship between lighting and obstacle detection (Fotios and Cheal, 2009; 2013; Uttley et al, 2015). This data can be used to inform road lighting guidelines and ensure appropriate light is provided to aid obstacle detection. For

example, results suggested an illuminance of 0.2 lux is sufficient to detect an obstacle of 25 mm height at a distance of approximately 2.5 m. However, to better interpret this data it is useful to know the characteristics of obstacles that could potentially cause pedestrians to trip. For example, what type and size of obstacle do pedestrians perceive as a risk and at what distance are they observed?

Eye-tracking data was analysed to answer these questions. Pedestrians walked a short urban route outdoors whilst their eye movements were recorded. A concurrent secondary task was used to identify critical instances when pedestrians' attention was directed towards a potential trip-hazard. This involved pressing a button in response to a frequent audible stimulus, with significantly slower-than-average reaction times indicating diversion of attention towards something salient in the visual environment. The eye-tracking data was used to identify when pedestrians looked at a potential trip hazard during these critical times. These trip hazards can be defined as having particular significance or perceived risk to the pedestrians, and data about the type, height and distance of the obstacle were recorded.

This data showed that kerbs were the most frequent type of trip hazard fixated by pedestrians at critical times, accounting for 57% of trip hazards observed. Uneven path was the next most frequent trip hazard type, accounting for 19% of observations. The median distance a salient trip hazard was first fixated was 3 m, with 84% of first fixations being 5 m or less. The median height of a salient trip hazard was 100 mm, although 32% of hazards were smaller than 25 mm.

These findings confirm that obstacles are generally looked for at a close distance. They also suggest that relatively large and conspicuous hazards such as kerbs are likely to be perceived as potential risks by pedestrians. However almost a third of hazards identified that attracted pedestrians' attention were less than 25 mm, suggesting it may be important for road lighting to allow detection of obstacles below this height. Previous data about detection rates for different obstacle heights under different lighting conditions can be used to determine what lighting would be appropriate to allow detection of most hazard sizes that present a perceived risk.

Keywords: Pedestrians; Eye-tracking; Trip-hazards

A micro-scale assessment model of walkability for more sustainable cities

Müge Akkar Ercan¹, Züleyha Sara Belge²

¹Middle East Technical University, Turkey; ²Mersin University, Turkey

One of the ways to transform to smarter cities is to switch to more sustainable patterns of travel and energy usage. Mobility, in this sense, is one of the top topics of smart city models. Walkability, with its rising importance in cities, has been recognized as an important planning and design strategy for helping to reduce carbon impact in specific systems or across the city as a whole, for creating healthy societies or improving health and well-being of urbanites, regenerating declining city partitions, and ultimately for generating smarter, sustainable and liveable cities. Walkability has been seen as a means of increasing the accessibility of disabled groups to the urban space in the early-2000s

and a way of combatting obesity and promoting healthy life since 2013 in Turkey. Yet, it is still questionable how far Turkish cities have been planned and designed in consideration of walkability. This research, focusing on this question, aims to develop a micro-scale assessment model for examining the walkability capacity of urban space. After investigating the notion of walkability as a component of liveability and sustainability, it describes the measures of the micro-scale 'walkability' assessment model, and explains in depth the research methodology. Then, using the historic city centre of Mersin as a pilot study area, it examines the walkability capacity of Ataturk and Uray Streets in detail. In the final section, it discusses the major planning and design strategies that will improve not only walkability capacity of the historic city centre, but also its liveability and sustainability. Further, with reference to a rule-based planning and design approach, it underlines the contributions of the model to the current planning practice and makes a debate on how the model can be used and developed in the future not only for assessing the walkability capacity of urban space, but also for modeling and investigating the alternative urban scenarios to improve liveability and walkability of cities.

Parallel Session 42: Creating healthy school environments

Time: Thursday, June 30 2016: 10:30 - 12:30

Location: Small lecture hall, IKDC

Session chair: Nancy Wells

Presentations:

School gardens and children's health

Nancy Wells¹, Beth Myers¹, Charles Henderson²

¹Cornell University, USA

Nancy Wells will describe a randomized controlled trial examining the effects of school gardens on children's physical activity and movement. Schools were randomly assigned to receive school gardens. Physical activity was measured using accelerometry, direct observation, and by survey. Findings suggest how gardens might serve as an effective intervention strategy to boost physical activity and combat obesity.

Cafeteria Assessment for Elementary Schools (CAFES): Measuring environmental features that influence children's diet

Kimberly Rollings¹, Nancy Wells²

¹Notre Dame University, USA; ²Cornell University, USA

Kim Rollings will discuss development of a valid, reliable objective assessment tool: CAFES (Cafeteria Assessment for Elementary Schools). CAFES quantifies attributes of elementary school cafeteria environments linked to purchase and consumption of fruits and vegetables during school meals. CAFES data from more than 35 low-income elementary schools in four U.S. states, measured elements at the scale of object, container, furniture, and room, respectively, within school cafeterias.

Using behavior mapping to explore links between childcare center outdoor learning environment form and content and physical activity

Nilda Cosco¹

¹North Carolina State University, USA

Nilda Cosco will describe the use of behavior mapping to examine childcare outdoor learning environment (OLE) behavior setting correlates with physical activity of young children. Based on an analysis across 30 North Carolina childcare centers, results indicate the importance of adjacency and centrality (form) and setting types (content), relevant to design, and suggest opportunities for state childcare OLE policies to promote physical activity.

Modifying childcare center built environments to engage preschool children in fruit and vegetable gardening: Multi-method evaluation strategies

Robin Moore¹

¹North Carolina State University, USA

Robin Moore will present an intervention study of preschool fruit and vegetable gardening in eight childcare centers serving low resource, urban communities in Wake County, North Carolina, U.S. Evaluation data were gathered over three years through center director interviews, parental surveys, classroom gardening process scores, and direct observation by a garden/permaculture/design/management team. Results demonstrate how OLE modifications can engage young children in hands-on gardening activities (e.g., planting, caring, harvesting, cooking, preserving, eating), which may help children learn healthy eating habits early in life, influence healthy eating at home, and support long-term change in healthy food culture.

Parallel Session 43

Invited symposium: National environmental psychology organizations in Europe: Histories, practices, and a common future

Time: Friday, July 1 2016: 09:00 - 10:30

Location: Room A:B, The A-building

Session chair: Cecilia Bergstad Jakobsson

Co-chairs: Terry Hartig & Cecilia Bergstad Jakobsson

Terry Hartig¹, Cecilia Bergstad Jakobsson²

¹Uppsala University, Sweden, ²University of Gothenburg, Sweden

Environmental psychologists contribute expertise on many issues of concern within the interdisciplinary collaboration that is people-environment studies. Whether the interior design of rooms, the architecture of buildings, the landscape architecture of urban parks, the layout of residential areas and cities, or interventions to reduce human impacts on the natural environment, action can benefit from careful consideration of how and why people think, feel, and act in particular ways.

Although a young discipline by some standards, environmental psychology nonetheless has made notable scholarly and practical contributions over the several decades of its existence. The character of the contributions made, like the history of the discipline itself, varies across countries, reflecting cross-national differences in, for example, living conditions, geophysical circumstances, and scientific traditions and practices. This variation has made for a wealth of ideas, perspectives and understandings with regard to psychological aspects of human-environment relations. Sharing these intellectual riches is however not a straightforward matter, with differences in language a significant challenge.

In the present symposium, we have asked leading European environmental psychologists to present briefly on the history of the discipline in their respective countries, with a view to some of the significant milestones and contributions, both scholarly and practical. We have also asked each one of them to comment on how the environmental psychologists active in their country have worked to create a sense of community, as through the formation of a national organization, with periodic meetings, or by other means. We have also asked them to share their views on how the community of environmental psychologists in their country is addressing the challenge of language differences while engaging with an international scientific community. The symposium will wind up with observations and open discussion regarding the European context and the role of organizations such as IAPS in advancing environmental psychology internationally.

The symposium is organized in cooperation with the Swedish Area Group in Environmental Psychology, an organization that held its first annual meeting in 1985. The Area Group meetings typically bring together researchers from around Sweden, with invited guests from abroad. Many of its more senior members first presented their work in the group while

still doing their doctoral research. Members of the Area Group believe that its informal organization and the deliberate simplicity of its practices are important reasons for its longevity. Suitable models for other European countries could be a topic for discussion in this symposium, important insofar as national organizations can facilitate cooperation among communities of environmental psychologists in different countries and so support the organization of future international conferences in which environmental psychology has a prominent position, whether they are conferences of IAPS or of some other international organization, existing or yet to be formed.

Participants in the symposium:

Terry Hartig¹, Ricardo Garcia Mira², Linda Steg³, Marino Bonaiuto⁴, Gundula Huebner⁵, Karine Weiss⁶

¹Uppsala universitet, Sweden; ²Universidad de A Coruña, Spain; ³Rijksuniversiteit Groningen, Netherlands; ⁴Universita di Roma, "La Sapienza", Italy; ⁵Martin-Luther-Universität Halle-Wittenberg, Germany; ⁶Université de Nimes, France

Parallel Session 44

Symposium: cultural ecosystem services and people-environment studies

Time: Friday, July 1 2016: 09:00 - 10:30

Location: Room A:C, The A-building

Symposium chair: Eja Pedersen

Eja Pedersen¹, Åsa Ode Sang², Sanna Stålhammar¹

¹Lund University, Sweden; ²Swedish University of Agricultural Sciences, Sweden

Ecosystem service (ES) is a concept that has been introduced as a basis for assessment and valuation of nature (MEA, 2005). It comprises benefits that people receive from ecosystems and the perspective is thus anthropocentric, rather than bio-centric, but originates from a natural science perspective. The term ecosystem is used in a broad sense and the concept ES has been applied on different geographical levels. One type of ecosystem services is classified as cultural (CES). These are those direct, immaterial and intangible services that people experience by nature in a wide sense, in contrast to other forms of ES such as food, clean water and biomass for heating. Although CES originally was launched as a management or policy instrument, research has quickly adopted the concept, though mainly within biology and ecology (Milcu et al., 2013), and the literature is becoming extensive. Who's (which groups of people) needs that are satisfied by CES, or on what level CES are validated (individual or societal) is not always defined. The concept CES advantageously acts as a boundary concept for discussions between disciplines, as well as between research and management. However, the novelty of the concept and its controversial nature requires further scrutinization by, and theoretical anchoring within, existing social and behavioural sciences.

We will in this symposium highlight the concept Cultural Ecosystem Services and studies that deal with the interaction between local ecosystems (rather than regional and national) and the individual (rather than society). We will test (i) if the concept CES is useful in developing new multidisciplinary theoretical perspectives that can enrich People-Environment studies (as proposed by the invitation to IAPS 2016), and (ii) if People-Environment studies with its long-term developed theoretical framework and methods could contribute to the development of CES research. The symposium comprises papers that explores how different groups of people benefit from ecosystems (e.g. locals, children, women), show how different theoretical frameworks are linked to CES (e.g. perceptual attributes, socio-ecological memory), and present methods useful for CES studies.

Presentations:

The pedagogical benefits that people obtain by engaging in social-ecological relations Stephan Barthel¹

¹Stockholm Resilience Centre, Sweden

The talk revolves about the pedagogical benefits, as a subset of cultural ecosystem services, that individuals and groups obtain by engaging actively in urban garden practices and by engaging in ecological conservation projects in urban landscapes. It will shortly reflect on the utility of the 'ecosystem services' perspective for research (Norgaard 2010), and focus the talk on complex social-ecological interactions from which human benefits emerge. I view such social-ecological relations as co-evolutionary (or dialectical) between the human and the environment (including the 'social'), in a dynamic interactive system where both parties in the interactive relation are stressed (Barthel et al. 2005). Inspired by insights in anthropology (Crumley 1994; McIntosh et al. 2000) and sociology (Wenger 1998; Misztal 2003) and in communication with findings from empirical case studies, I will talk about the concept of "social-ecological memory" as a source for sharing in situ knowledge and experiences and for the continuous co-creation of meaning (Barthel et al. 2010). Social-ecological memory also is about 'linking in to' competence about management practices. It enables people to 'link in to' slow underlying and often hidden ecosystem processes and meanings of many resources, and thus determines success or failure of navigating away from complex tipping points of undesirable trajectories. In allotment gardens I found that social-ecological memory is the means, by which place specific social practice, experiences and knowledge about local ecosystem dynamics, is transferred between people and groups. Local ecological knowledge and practices are captured by individuals and transmitted between them through participation processes such as mimicking of practices, daily talk and routines, and such knowledge and practices reside in reification processes such as jargon, metaphors, and artifacts as well as in self-organized rules (Barthel et al. 2010). I will also ignite a discussion if such direct on the ground engagement may instill a connection with nature in participants (Cheng and Monroe 2012; Giusti et al. 2014), or if such deep-seated environmental attitudes only are developed during the childhood years (Kaiser et al. 2014).

Childhood collecting in nature: Quality experience in important places

Thomas Beery¹, Kristi Lekies², Jed Brensinger²

¹Kristianstad University, Sweden; ²Ohio State University, USA

There is growing concern for both the decline of direct experience people have with nature, and the quality of that experience. This diminished experience has negative consequences for public awareness and concern for biodiversity and ecosystem health (Miller, 2005). At the same time, a diminished experience of nature appears to have a substantial negative impact on child development (Kahn & Friedman, 1995; Kahn, 2002; Matteo, Barthel, & Lars, 2014; Pyle, 1993; Thomashow, 2002). These concerns are heightened in the urban context where increased urbanization shows a relationship with a reduction in biodiversity and ecosystem health (MA, 2005; Sala et al., 2000). Additional concern comes from studies showing decreasing ecological knowledge among growing urban populations (McDaniel

& Alley, 2005; McKinney, 2002). In an attempt to address these concerns and contribute toward a better understanding of the importance of childhood experience of nature, this study investigates one specific example, collecting in nature. Studies show that childhood collecting in nature (the gathering of rocks, shells, feathers, etc. as part of play and free exploration) is a widespread phenomenon (Lekies & Beery, 2013), and yet, very little is understood about this behavior. This study explored the details of childhood collecting in nature with an emphasis on the places of this experience. Participants consisted of a random sample of undergraduate students at a Swedish university (N = 380) participating in a survey focused upon early life outdoor experiences. Responses included multiple choice and Likert scale items, along with data from open-ended questions. In addition, participants were invited to discuss their experience of childhood collecting in greater detail via a semi-structured interview. Fourteen interviews were conducted as follow-up to the survey. Data review considered descriptive statistics, correlations, and regression analysis triangulated with the qualitative data from the open-ended responses and interviews. Results highlight the importance of specific places in the childhood experience of nature, the importance of nearby nature, and further, provide preliminary support for a model for environmental concern (Wolf-Watz, 2015). Ultimately, the study illuminates the idea of childhood development as a cultural ecosystem service and provides implications for nature-based solutions, such as green infrastructure, to support childhood nature experience.

Valuating cultural ecosystem services based on perceived environmental qualities and contribution to users' quality of life

Eja Pedersen¹, Maria Johansson¹

¹Lund University, Sweden

Cultural Ecosystem Services (CES) are immaterial and reflect the direct benefits people receive from ecosystems (MA, 2005). CES occurs only if they satisfy human needs and demands (Daniel et al., 2012). Today there is no consensus on how CES should be valued. This study explores (i) if peri-urban created wetlands could be valued by how well they meet local residents' need for Quality of Life (QoL), and (ii) if validated instruments developed to capture human-nature interaction could be used to distinguish between places with different functions within the ecosystem.

Three study areas were visited on-site by the participants (total n = 111, m = 59 years old, 59% female). Area A (n = 40) was the largest, situated on the edge of a spatially well-defined city surrounded by woods. Area B (n = 36) was in adjunction to a suburb in a large urban area, surrounded by infrastructure and open fields. Area C (n = 35) was a newly built suburb in which treatment of run-off water was integrated with greenery. At arrival, participants rated the importance of 22 aspects of QoL (Poortinga et al., 2004), which was compared to ratings of how well the area contributed to QoL, assessed after the visit. Within each site, participants also assessed three different places, characterized as Pond, Wetland or Reed bed based on ecosystem function, with regard to their affective experience of the place (e.g. valence and activation: Johansson et al., 2012), the overarching visual impression (SED; Küller, 1975), perceived restoration (PRS; Lindal & Hartig, 2013), and perceived biodiversity (BEI; Gyllin, 2004).

When the importance ratings of the 22 aspects of QoL was compared with perception of how the visited areas contributed to QoL, aesthetic beauty, nature/biodiversity, material beauty, change/variation, privacy, leisure, and challenge/excitement were aspects that were matched by the environment in all three areas. In Area A, the participants perceived the three places significant different on almost all measured variables, with Pond as the most preferred, followed by Wetland and Reed bed. The affective experiences valence and arousal, SMB dimension pleasantness, perceived restoratives being away and fascination, and visually perceived biodiversity followed the same pattern. In Area B, the differences between places were less distinct, though Wetland evoked higher valence, and was perceived higher in pleasantness, fascination, and biodiversity than the other two places. In Area C, Pond was the most preferred and rated highest in biodiversity.

It is concluded that wetland ecosystems may support the fulfilment of certain definable aspects of QoL. Moreover there seems to be a correlation between the needs and the supply of CES. In the case the ecosystem was embedded in natural surroundings, and people considered access to nature important, the perception of places with different function within the area differed. When the wetlands were embedded in a residential area these differences became overruled by the overall environmental impressions. Instruments to capture CES needs to be further developed, taking this aspect into account.

Key words: Quality of Life, Ecosystem services, Nature perception

Cultural ecosystem services delivered from urban green space

Åsa Ode Sang¹, Igor Knez²

¹Swedish University of Agricultural Sciences, Sweden; ²University of Gävle, Sweden

The presentation will be focused on the results from a postal survey of people in Gothenburg, Sweden, and their relationship and use of local green space. The result showed that high compared to low perceived naturalness generated more activities, higher aesthetic values and well-being for residents living nearby urban greenery. Independently of type of naturalness, the results also indicated that women were more active in urban greenery than men. Women also perceived higher aesthetical values and felt better (higher well-being) than men in urban greenery. Finally, older residents were shown to have more nature-related activities than did younger in urban greenery. Older also perceived higher aesthetical values and felt better than did younger in urban greenery. The result was in line with previous research on the positive relations between nature and health and well-being (Bowler et al, 2010; Abraham et al, 2010; Hartig et al, 2011; Sandifer et al, 2015) and the MEA (2005) prognostication of a positive link between urban ecosystem services and well-being, as well as demographic differences in urban ecosystem use (Kaczynski et al. 2009; Schipperijn et al. 2010).

The concept of ecosystem services was launched as a concept to evaluate the services ecosystem provides towards human well-being (MEA, 2005), with the type classified as cultural (CES) focusing on the direct, immaterial and intangible services that people experience by nature in a wide sense. We will in this presentation explore how perceptual attributes could be linked to cultural ecosystem service evaluations. As a baseline we propose that a cultural ecosystem service based on experience might be viewed as a

component of a person's favorite places (places of mine; Knez, 2014) and by that affect person's well-being in a self-regulating way (Korpela, 1992; Korpela & Hartig, 1996; Knez, 2006) but is also affected by environmental attributes of the ecosystem (Lachowycz & Jones, 2013). The concept of ecosystem services could act as a boundary concept for bringing inter- and transdisciplinary evaluations of urban green space together, and in the longer term contribute towards planning and management of urban green spaces.

The impact of urban sprawl on Cultural Ecosystem Services

Samantha Scholte¹, Boris van Zanten², Peter Verburg¹, Astrid van Teeffelen¹

¹Vrije Universiteit Amsterdam, Netherlands

Urbanization is a key driver of land use change. In Europe, the conversion of non-built-up areas has come predominantly at the expense of agricultural land, particularly as cities increasingly expand in a dispersed rather than compact manner. The dispersion of urban settlements has led to significant environmental impacts as a consequence of land take and an increased demand for transport and energy.

To mitigate environmental impacts of urban sprawl, offset policies are increasingly forwarded. Offset policies, commonly referred to as biodiversity offsets or environmental compensation, aim to ensure that unavoidable adverse environmental impacts of development are counterbalanced by environmental gains to achieve a net neutral or beneficial outcome. Such policies have predominantly focused on restoring ecological habitats for biodiversity, thereby neglecting development impacts on the landscape qualities local people appreciate and rely on, i.e. ecosystem services. Under the EU biodiversity strategy, the European Commission aims to address this discrepancy by the means of a forthcoming No Net Loss initiative, ensuring that development must ensure a no net loss of both biodiversity and ecosystem services (BBOP 2012). Little research has been done however, on the extent to which ecosystem services, as perceived by the public, can actually be compensated for.

In this study we explore the potential of environmental compensation as a tool to mitigate the impact of urban sprawl on cultural ecosystem services provided by agricultural landscapes. We investigate how well a No Net Loss scheme resonates with local (urban and rural) residents living in the rapidly urbanizing area of East Lothian, Scotland. We specifically assess (i) what aspects of the rural countryside are most important for local residents, (ii) how local residents experience impacts from urban sprawl on the countryside, and (iii) whether local residents would be willing to offset impacts from urban sprawl through environmental compensation. By using a choice experiment with photo-realistic landscape visualizations, we investigate whether and how people are willing to trade-off between increasing levels of housing and the addition of woodlands to the agricultural landscape. We employ a latent class model to investigate heterogeneity in the sample and identify four classes of residents, each with different attitudes against additional housing and preferences for environmental compensation.

Results of our study reveal significant differences between urban and rural residents. In addition we show that residents who felt most affected by additional housing,

predominantly rural residents with long residence times, were least willing to accept environmental compensation to mitigate impacts from urban development. These results indicate the problematic nature of using a no net loss logic, which assumes that landscapes and the cultural ecosystem services they provide are substitutable and can be compensated for, within environmental research and practice. Based on these results we therefore emphasize the importance of the so-called mitigation hierarchy, i.e. to avoid, reduce and only as a last resort offset residual impacts of development. Overall, however, almost all residents felt that when impact from development on the landscape cannot be avoided, compensation should be made obligatory.

Is environmental citizenship a function of values and people's appreciation of ecosystem services?

Kayleigh Wyles^{1,2,3}, Caroline Hattam¹, Mathew White², Sabine Pahl³, Melanie Austen¹

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Background – The marine environment provides a range of ecosystem services (the direct and indirect contributions of natural environments to human well-being). These include providing seafood, regulating the climate, and providing recreational settings for people to visit. To preserve this environment and to maintain the provision of these services, it is necessary to build a level of ocean citizenship—encouraging individuals to engage in pro-environmental behaviours that help preserve this ecosystem. Many studies have tried to identify individual factors that influence environmentally responsible behaviour. For instance, in terms of value orientations, people are more likely to perform pro-environmental acts if they have strong biospheric values. Whilst some work has demonstrated that generic environmental knowledge can have a positive role on these behaviours, little is known about individuals' appreciation of ecosystem services specifically. Consequently, this study examined a) people's perceptions of marine ecosystem services in the UK, b) whether this translates to pro-environmental behaviour intentions, and c) how this relates to other predictors of behaviour (especially values, as the ecosystem services framework has rather egoistic focus).

Methods – An experimental design was adopted to examine and manipulate perceived ecosystem services via an online survey on a national English sample. A between-subject design was used, where one third of participants (n = 1,062) received information on the ecosystem services marine environments provide, one third (n = 1,076) received more generic information about the marine environment, and one third (the control group, n = 1,037) did not receive any information. We then measured 1) perceived ecosystem services, with participants rating the extent to which they thought nine different marine-related ecosystem services are provided in the UK; 2) other known predictors of behaviour (including value orientations); and 3) pro-environmental behaviour intentions.

Findings – For the control group, participants on average only gave a “don't know” response to 1/9 of the ecosystem services. Some individual services were seen as more difficult to rate than others (e.g., the provision of medical ingredients and regulating air quality). Overall, this sample believed that the UK marine environment provided a wealth of ecosystem services (especially in terms of seafood, attractive scenery, and climate regulation). The

experimental manipulations were found to strengthen these perceptions, with individuals in the generic information condition providing fewer “don’t know” responses and giving higher ratings, and those in the ecosystem service specific condition even more so. Regression analyses showed that these ecosystem service perceptions were associated with pro-environmental behaviour intentions, whereby individuals who perceived a greater wealth of ecosystem services intended to perform more pro-environmental acts. However, the experimental manipulation did not increase pro-environmental intentions.

Conclusions – This study is the first to examine the public’s perceptions using the framework of ecosystem services and highlight its relevance for ocean citizenship. Whilst perceived ecosystem services have been shown to play a role on behavioural intention, providing a simple message did boost these perceptions, but the interventions were not seen to encourage behavioural intentions further. This study therefore discusses the underlying mechanisms more fully, integrating other predictors.

Parallel session 45: On place attachment and identity

Time: Friday, July 1 2016: 09:00 - 10:30

Location: Full scale lab, The A-building

Session chair: Elizabeth Marcheschi

Presentations:

Exploring contents of place identity

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The contents of identity comprise the meaning of a collective identity, i.e., the physical and social characteristics of a place that determine the perceived uniqueness of their residents and of observers, such as tourists. Despite the fact that social identities with their specific contents and meanings underpin group identification and intergroup relationships (Livingstone & Haslam, 2008), research has eventually downplayed the importance of identity contents (Turner, 1999). However, understanding the identity contents is crucial to realize the extent to which changes in places can affect the identity of residents (e.g., Twigger-Ross & Uzzell, 1996, Gu & Ryan, 2008, Ellemers et al., 2002; Dixon & Durrheim, 2004), or to understand the intergroup relationships intergrupal (Livingstone & Haslam, 2008).

Nonetheless, when a person identifies with a place, this is accompanied with a self-stereotype that includes values and norms associated with this category, and the behaviour is consistent with the contents of the category (e.g., Brown, 2000). In the same way, when an observer identifies a place with a specific identity, this identity is based on the meaningful contents that are used to make the place unique, i.e., distinct from other places. The process of identifying uses elements that are perceptually salient and elements that facilitate the process of a positive distinctiveness from other places. This means that place qualities influence people’s relationship through social practices and, simultaneously, those features are used as symbols of the identity of the community (Loupa-Ramos, Bernardo, Ribeiro & Eetvelde, in press).

From the analysis of the literature, a questionnaire was constructed which was applied to a group of 422 subjects. This study identified eight categories of identity contents to the place, organized around four major dimensions. Besides allowing the construction of an instrument to identify the content of place identity, the data were explored according to the intensity of identity, place size, and sociodemographic variables. A second study was conducted to evaluate the instrument’s ability to distinguish the contents of place identity in different places. This was applied in 5 different parishes in the metropolitan area of Lisbon, with different physical, environmental, demographic, and economic characteristics. The results showed that the way the contents were mobilized to characterize the place identity were influenced by the place characteristics (e.g., place size, architecture, ...), and by socio-demographic factors (e.g., age, and birthplace). The results also showed the instrument’s ability to distinguish the elements used in each context to characterize the identity to the place, revealing an important tool for urban planning, particularly in urban

regeneration contexts.

Exploring how place attachment evolves across the life-span: Insights from affordance and place scholarships

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Empirical research into place attachment has grown exponentially in recent years, but theoretical progress has been slow, particularly with respect to temporal aspects. In this perspective, we highlight how affordance theory can be brought together with place concepts to enhance our understanding of how place attachment evolves across the lifespan. We argue that progress in place attachment theory has been hindered by a reluctance to consider place as both a percept (including immediate perceptual experience) and concept (including the social construction of physical, social and personal place meanings). We present a framework for understanding how place attachment evolves across the lifespan by drawing upon both affordance and place theory. We propose that: 1) a diverse set of perceived and socially constructed meanings can be assigned to place-based experiences; 2) only some of the diverse array of affordances are assigned important personal, social and physical meanings; 3) meanings associated with the perceived and conceptual domains interact with one another and are in a state of dynamic co-evolution. Hence, place attachment can be seen to evolve over time. We highlight the salience of this framework through everyday examples and then discuss its implications for future place attachment research.

Formal and informal public spaces: Use, appropriation and place attachment

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Urbanization in Colombia has not been developed on a single model accepted collectively, on the contrary, urban areas have been developed based on the superposition of two different models (Torres Tovar 2009: 20), one formal with a top – down approach following rules and procedures, and one informal with a bottom – up strategy ignoring rules and based on people’s initiatives and possibilities (Hernández-García 2013). In this sense, public spaces begin life in a formal or an informal way. The aim of this presentation is to explore if the origin of the public space, formal or informal, affects the way it is used, appropriated, and if it generates different levels of place attachment.

Uses of public space can be seen in terms of people’s interactions within the space. There is a variety of everyday and functional interactions (Hernández-García 2013). Everyday uses are related to social and cultural practices, mainly represented by people sociability in the space, social and traditional events, religious expressions and political activities and demonstrations. While functional uses are about recreation and commerce interactions that are held in the public space, including sports and games on the one hand, and commercial activities within or around the space on the other hand. Public space can be also understood in terms of appropriation. Appropriation as a dialectical process, in which people and

places relate each other; affecting the individual, the community and the society (Moranta & Urrútia 2005). Use and appropriation can create place attachment, “an affective bond that people establish with specific areas where they prefer to remain and where they are comfortable and safe” (Hernandez & Hidalgo, 2008).

This research used a combination of qualitative and quantitative approaches with two comparable case studies. Data collection methods were: observation, mapping, surveys and interviews. Within this framework, this presentation explores and compares the dynamics of use, appropriation and attachment of two parks in Bogotá with different origins; one informal, Villa de la Torre Park, and one formal, Cayetano Cañizares Park (Guerrero Arias 2015). It is argued how conflict and solidarity are found in both parks no matter the origin; and appropriation and attachment, which intuitively could be greater in the informal park because of a larger people involvement in the creation and transformation of the space, is similar in both parks and referred to multiple aspects.

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Parallel session 46: Users' perspective on urban planning

Time: Friday, July 1 2016: 09:00 - 10:30

Location: Black Box, The A-building

Session chair: Johan Rahm

Presentations:

Servicescapes of shopping malls' and on-street's boutiques in employees' experiences: Sense of place, place satisfaction and place attachment

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In 2014 there were over nine thousand shopping centers in 34 European countries alone, totaling almost 190 million square meters in gross leasable area. There were about 4.2 million people working in such environments, or – more precisely – servicescapes: rich in stimuli, multidimensional sceneries, where the trade and service exchange occurs. How many people visit these environments one can only imagine: tens of millions daily, applying conservative estimates. However, there has been no scientific approach hitherto to study how these environments are experienced by people who spent there up to ten hours daily, coping not only with the specific physical setting, but also massive social interactions – the employees.

Addressing this research gap existing both in industrial-organizational and environmental psychology existing at the intersection of sub-disciplines, we qualitatively studied employees' experiences of shopping mall as well as traditional boutiques. We conducted sixty structured in-depth interviews (30 males and 30 females; purposive and snowball sample which ensured theoretical saturation) to obtain employees insights into sense of place and place satisfaction within their work environments as well as their place attachment. In addition, we treated abovementioned terms as 'sensitizing concepts' rather than fixed-definitive, so we've performed axial coding in order to identify possible interrelations between concepts.

As long argued, the people-environment relationships impact psychological health and more broadly – well-being of people. People-environment relations seen as employee-servicescape relations are a particularly interesting area of research also for strictly practical reasons; the world as it is experienced by employees not only affects their own behaviors and well-being, but consequently: their behaviors affect experiences (maybe even well-being) of other people visiting the particular servicescape. This "experiential chain" may seriously affect the place image, profitability, as well as brand equity of the tenant mix within the servicescape. Finally, once the possible antecedents and consequences of experiences are discovered, they can be managed, thus increasing the well-being of all the people visiting and working in shopping malls.

Residential architecture and atmosphere: What is the impact on wellbeing and health?

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Research within healthcare architecture has shown that how our built environment is designed affects our healing capacities (Sternberg 2009, Ulrich 1984). However, we still need to develop a detailed knowledge about how residential architecture influence our wellbeing, in light of the growing knowledge of how spaces influence our emotions and physical reactions, eventually acting on our abilities to heal and our health (Sternberg 2009). This case study recognizes this need, and investigates the architecture of the home and how it affects the residents' sense of wellbeing and health.

To understand the interplay between human being and the built environment, we use the concept of atmosphere, which has been proposed as a way to describe architectural quality (Zumthor 2006). In a previous study, this concept was adopted to perform a semantic concept analysis in a residential architecture context, and the results from that analysis will form the theoretical basis for parts of this investigation.

The aim of this case study is to illuminate the connections between residential architecture, atmosphere, well-being and health in a small residential area located in a rural community in western Sweden. This area has been selected for its high quality residential architecture and sustainable material construction. All the adult residents of the eighteen housing units will be invited to participate to semi-structured interviews, possibly combined with follow up in-depth interviews, to generate rich data for the analysis of quality of architecture and health. Perceived quality of architecture will be investigated through the semantic concept analysis of atmosphere, as described above. Health and wellbeing as perceived by the participants will be investigated by using the WHO (1948) definition of health and Antonovsky's (1991) theory of salutogenesis, which will inform both the interview questions and the analysis of the data.

The residential area which is the focus of this study was selected because it was developed with the clear ambition to build high quality residential architecture, using only natural and sustainable building materials. The architecture is marked by a careful detailing, generic rooms for multifunction purpose and room sequencing, creating effects such as sightlines and different routes for moving and circulation. The houses also offer different levels of privacy in relation to the surroundings. Great effort has been put in handling the use of daylight in a beautiful way. The project was conceived departing from the assumption that high quality architecture might contribute to the decrease of the ongoing population decline, attracting people to stay or even move to the community. The project also had the ambition to embrace existing knowledge about the importance of high quality environments for people's sense of wellbeing and health. Thus, this area seemed ideal for the aims of this study.

The results from the study will contribute to a better understanding of the connections between residential architecture, wellbeing and health. This knowledge can be applied in future residential architecture design processes.

The implications of urbanization for people's relationship to their residential environment, their civil participation and their leisure mobility

Matthias Buchecker¹

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In the last decades, economically prosperous regions in Europe have experienced a tremendous urbanization. Spatial planning faces the challenge to make sure that these urbanization processes do not have negative implications on the sustainable development of residential outdoor spaces, and, more generally, on people's relationship to their residential environment. In spite of considerable research efforts in the last decades, the psychological implications of urbanization are still not very well understood. This paper aims at systematically determining a) the influence of urbanization on people's relationship to their residential environment and b) its implications on civic participation and leisure mobility. In order to achieving these goals, in four study areas in Switzerland representing different stages of urbanization – a rural, a peri-urban, a suburban and an urban one - standardized cross-sectional questionnaires were administered to random samples (N=1200 each) of the residential population. In the questionnaire, scales were included measuring a wide range of concepts such as perceived living quality, need satisfaction, importance of needs, perceived environmental changes, place attachment, social integration, spatial appropriation, civic participation and leisure mobility. The return rate achieved around 30% and the realized sample was found to correspond quite well with the demographic characteristics.

The statistical analysis of the data revealed that perceived living quality was not directly influenced by the degree of urbanization of the setting, but mainly by perceived spatial changes and place attachment. A SEM could show in more detail that the degree of urbanization of the setting primarily has a direct negative influence on place attachment; place attachment appeared at the same time to be a key moderator variable: as a main driver for perceived living quality, civic participation, and leisure mobility. Negative effects of urbanization on people's relationship to their residential environment can therefore be most effectively eliminated, if ways to compensate the loss of place attachment can be found. Further data suggest that this might be achieved by offering opportunities to appropriate and shape the places.

Keywords: urbanization, spatial planning, living quality, place attachment, civic participation, leisure mobility

Managing uncertainty and flexibility for sustainability in the built environment

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The purpose of the paper is to present real options concepts, outline decision valuation methods that Cambridge Architectural Research has developed, how they can be used to make better decisions, and to point to research directions to explore how different individuals and groups may integrate the factors behind real options into their behaviour and decision-making. The techniques developed can be used to efficiently increase the

flexibility of buildings and urban structure, thereby creating more sustainable spaces.

Sustainable use of space implies the capability of it lasting for protracted periods of time, thereby maximising the value obtained from human and natural resources. Ongoing shifts in societal and economic structure, consumer expectations and the way we use buildings have accelerated so virtually all buildings will experience pressures for change during what might otherwise be considered their normal physical life expectancies.

The session will briefly present the results of research projects Cambridge Architectural Research has participated in for government and private sector organisations, including a European Seventh Framework project, in which real options theory has been applied to address uncertainty in the built environment. In these projects, work done in finance, management and economics was examined and applied to decision-making with respect to buildings, infrastructure and urban structures, and adapted to the specifics of built environment-related decisions. Ultimately software was created to provide information to support human decision-making. In the presentation, short examples will be provided to illustrate some of the situations.

While mathematical techniques will, in many cases, allow computation of how much it is worth spending to achieve flexibility, the characteristics of buildings including long lives, multiple attributes and unobtainable information frequently make quantification difficult. Decisions still have to be made, so the beliefs and behaviour of individuals and groups of people becomes important. It has been observed, in research undertaken by both Cambridge Architectural Research and others, that the presence of real options and levels of volatility - one of the key factors behind the creation of option value, does influence human-made decisions. However, relatively little is known about how the nature of the information available to the subject, how it is assessed, and how such factors as the age, education and cultural background of an individual, as well as decision context, may affect the decisions made. Exploration focusing on this specific area is needed in order to gain more insights into how decisions are made, and as to their relative optimality in an uncertain world.

Key words

- flexibility
- options
- decision-making

Public Participation GIS as a methodology for transactional person-environment research and as a tool for public participation

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Public participation GIS (PPGIS) methods aim to bring the academic practices of geographic information systems and mapping to the local level in order to promote knowledge production, enhance participation, and ultimately improve the quality of land-use decisions. The softGIS methodology developed in Aalto University in Finland is an advanced example of an Internet-based PPGIS methodology that allows residents to produce localized

experiential knowledge that can be analyzed together with the register-based data included in GISs. This approach has been used to perform place-based, transactional person-environmental research concerning a variety of themes like active living of children and the elderly, perceived urban safety, ecosystem service accessibility or social acceptance of urban densification. Also a number of real life public participation projects have been promoted including the master plans of the cities of Helsinki and Lahti. Lately, the place-based knowledge production of users has covered also indoor spaces in addition to outdoor places. In this paper, these 10 year experiences will be critically reflected, current pitfalls identified and future directions and challenges discussed.

Universal Design and Inclusive City: How people understand these concepts as part of urban development

Adriana Portella¹, Livia Fernandes¹

¹Federal University of Pelotas, Brazil

This research seeks to understand how public space is prepared to be a place of inclusion, where people with disabilities or reduced mobility can enjoy the city without feeling discouraged due to urban barriers. Universal design refers to concepts meant to project environments that are inherently accessible to all kind of users. This approach emerged first in Europe after the Industrial Revolution. In 1961, in Sweden, there was an international conference bringing together countries such as Japan and United States to find solutions that reduce urban barriers. However, in practice, the majority of countries have cities not prepared to attend people with disabilities or reduced mobility, and Brazil is not an exception.

The main objective of this research is to identify which factors should be considered by urban planners to promote universal urban areas, so that all users can access and enjoy parks and public squares without limitation. A case study approach is adopted and the city of Pelotas, in the south of Brazil, has been selected. This is because this city has been receiving a significant amount of funds from Brazilian government to realize urban requalification projects; however, none of them takes into account the concept of universal design. The park case study – Park Antonio Zattera, is an example of this reality that is extending to many Brazilian cities.

A focus group discussion was realized with visual impairment users to analyse how they felt when using the public park, as their school is one plot away from this place. Interviews were applied to elderly people who live in a social care housing in front of the park; the objective was to understand whether they feel comfortable in having that park as a front garden and whether they use the park with frequency. A drawing exercise was done with children with 4-5 years old who study in a school located inside the park to understand how they perceive and evaluate the park. In addition, questionnaires were applied to users with disabilities, reduced mobility and no disabilities that were using the park, as the questionnaires were applied in loco. The data were analysed through qualitative and quantitative methods.

The results indicated that the majority of visual impairment users, elderly people and users with disabilities feel excluded from the place, and complain about the fact that the

City Council does not contact them to promote a participatory design project for the park. Children do not feel comfortable in the park as they complained about insects and dirt. However, users with no disabilities perceive the place as good and do not realize the limitations that this space create for others. The results indicated that there is a lack of recognition of the importance of the concept of universal design by users with no mobility limitations. As a conclusion, the research stated out guidelines to help the design of public space based on universal design concept, including issues related to population education, and project practical codes.

Parallel session 47: Innovative design and layout of indoor environments

Time: Friday, July 1 2016: 09:00 - 10:30

Location: Room A:A, The A-building

Session chair: Kiran Maini Gerhardsson

Presentations:

Mind the Room! - Does interior design influence social action?

Nicole Conrad¹, Frank Wieber¹

¹University of Constance, Germany

"If a room can change how we feel, if our happiness can depend on a wall color, the appearance of a door, how should we tolerate the many places we must perform view and inhabit?"

Alain de Botton

Mind the Room! - Does interior design influence social action?

An interdisciplinary research project at the interface of psychology and architecture

Key Words: architecture, psychology, influence of the room on psychological processes, interior design, cognition, behavior, research and practice

Rooms create and delimit possibilities, embody structures, symbolize situations, are living environment. But how does the built environment concretely affect relevant aspects of everyday life?

People nowadays spend a large part of their professional and personal time indoors. So there is a growing interest in the effects of the environment on humans and a need for empirical studies on the influence of design features such as room dimensions, light, colors, but also more complex concepts such as territoriality and Behavior Setting, on social interactions and on cognitive performance. Little systematic research can be found on how the environment affects social interactions. For example, can interior design, based on findings from social and motivational psychology, promote trust between people and improve the handling of negative feedback? The aim of our research project was to explore these issues systematically and lay the foundations for empirically supported planning decisions.

Psychologists and architects of Constance universities work together on an interdisciplinary research project. As a basis for a systematic identification of space-based influences, two rooms were designed according to architecture-psychological principles such as material, territoriality, affordance, and embodiment. These rooms are diametrically opposed in their expected effect on psychological processes. The influence of the room and its design principles on intra-individual cognitive and motivational processes (cognitive performance, motivational persistence, creativity), and on interpersonal relationships (trust, feedback processing) was studied empirically.

Studying the influences on trust we found significant differences between the two rooms measuring actual behavior as well as the perceived interpersonal trust using a standardized

trustgame decision paradigm. In another study, we investigated the influence of the room on dealing with negative feedback by using two feedback conditions and three rooms (including a neutral one) and found significant differences in defensive behavior in response to negative feedback.

Our results indicate an influence of the room, of which the user is mostly not aware. To be able to correctly assess and plan the magnitude and direction of such influences, empirical foundations are needed in practice. In terms of the wellbeing of the users (efficiency, health, motivation...), but also with respect to the costs of bad planning (reconstruction measures, depreciation, etc.) social relevance is obvious.

In further studies these influences are to be tested and analyzed in order to understand the processes, to define the user's needs of built environments and to identify correlations.

Our project explicitly aims at expanding the interface between research and practice, and linking the different areas in order to strengthen the interdisciplinary communication and to make findings available for practice.

Evaluating apartments: How floor plan presentation style influences entertainment and sustainability perceptions

Jacqueline Baker¹, Harmen Oppewal¹, Jan Brace-Govan¹

¹Monash University, Australia

This paper deals with representations of spatial information about housing and how these affect preferences and decision-making of housing consumers. Nowadays many property buyers choose to purchase homes off-the-plan, prior to construction. Although there are benefits, buying property "on paper" without having viewed it, is a significant risk, a risk which could have expensive consequences. When signing the contract, buyers do not know exactly how their property will look, a problem that is compounded when they have limited understanding of how to read floor plan information. Floor plans however, are an essential tool used to assess how housing options stack-up against household spatial needs. Floor plans convey spatial information that other mediums cannot accurately capture.

Floor plans are typically used by experts in the construction industry however little is known about how lay people interpret them. The question arises: how do verbal information (text) and technical styles of visual information (floor plans) about apartments influence consumer judgements and choice? This paper proposes that floor plan representations of apartments will have a greater impact on consumer judgements of spatial features of housing options than text information because of their ability to convey spatial information, and that they consequently will enhance the influence of spatial features on housing choices.

A 2x2x4 mixed experimental design varied mode of floor plan presentation and needs focus and was administered to 265 undergraduate students in a behavioural lab. Participants received either spatial or content-equivalent textual information about four apartments and either assumed that their household's spatial needs were focussed on apartment size or on its orientation to the sun. They then evaluated each apartment on its ability to provide entertainment and sustainability-related benefits. For example, when appraising the sustainability-related benefits, respondents were asked (amongst other questions): "how well does this apartment accommodate being naturally warm in winter?". Respondents also indicated their overall preference for each apartment. Further, the study measured the individual's preferred processing style (visual or verbal) and experience (expert or lay) as

potential moderating factors.

Findings firstly reveal that apartments represented by floor-plans are rated more positively than those represented by content-equivalent textual information. This is indicative of an aesthetic effect. Further, as expected, there are effects for apartment size and apartment orientation. Most relevant however are various interaction effects including apartment orientation with mode of presentation such that apartments represented by floor plans were rated highly regardless of orientation, whilst for those represented by text, there was a significantly lower rating when the apartment did not face the sun, which implied a higher energy use due to heating in winter. These findings indicate that housing consumers like the presence of floor plans however they don't necessarily understand them. The study has implications not only for how real estate products are communicated to prospective buyers or users but also more widely how technical styles of visual representations influence preferences and decision-making.

The office design's association to emotional health & psychosocial factors at work

Christina Bodin Danielsson¹, Töres Theorell²

¹School of Architecture, KTH, Sweden; ²The Stress Research Institute, SU, Sweden

Aim: This explorative study aims to investigate the relationship between the employees' office type and their satisfaction with workspace and psychosocial environment at work, as well as its relationship to employees' emotional exhaustion.

Sample and method: 4352 office employees working in seven different office designs from a national representative survey on work environment and health among the Swedish workforce. Due to their potential influence on the outcomes in focus – satisfaction with workspace, psychosocial work environment and emotional exhaustion – initial, descriptive analyses of access to supportive facilities in different office types are performed. Thereafter both multivariate linear and logistic regression analyses were performed with adjustment for age and educational level. In all analyses a gender perspective was applied.

Findings: Preliminary findings show that for all outcomes - emotional health, psychosocial work environment and satisfaction with workspace contribution results differed between various office types as well as between men and women. Emotional exhaustion scores are among men the highest in hot-desking offices whereas among women the scores are found in small open plan offices and combi-offices. Men report most problem with psychosocial work environment in hot-desking offices, while women this is found in combi-offices followed by small open plan offices. For both genders least satisfaction with contribution of workspace is found in hot-desking offices, while next worst satisfaction among women is found in combi-offices and among men in small open plan offices. Discontent with access to supportive facilities followed the same pattern.

Conclusion: In our preliminary results almost independent of outcome studied, the same office designs – hot-desking office, combi-office and small open plan office – standing out negatively. This indicates that the defining features of these office designs are of less satisfying for employees and potentially also with negative influences on employees. Negative influences that possibly could explain why we find higher emotional exhaustion and poorer psychosocial environment at work among employees in these office designs.

A case study: Office design's influence on physical activity & meetings

Mette Harder¹, Christina Bodin Danielsson²

¹Umeå School of Architecture, Sweden; ²School of Architecture, KTH, Sweden

Aim: This case study investigates the relationship between office design and employees' use of workspace in terms of physical activity and degree of meetings/ interactions with colleagues in the office. It aims to see which factors in office buildings determine the degree of physical activity as well as meetings and interactions that take place.

Sample and method: This case study follows the move of 372 municipality employees over time, where 36 % employees move back into cell-offices after building renovation and 58 % move to a newly renovated flex-office. At the time of the survey 6 % did not know which office they would move to. In order to see what influence different office designs and choices of office type have on physical activity and degree of meetings/ interactions the respondents are followed over time. Outcomes are measured with questionnaires, observations and walk-through interviews with respondents at baseline (i.e. before move), and 6 and 18 months afterwards. Here are only preliminary results on employees moving to flex-office presented based on baseline measurement and the second measurement since the project recently started. Both statistical and qualitative analyses are theoretically based on Zimring et al.'s model (2005) for architecture's influence on use of space in terms of physical activity and meetings/interactions. In the study a gender perspective is applied.

Findings: Preliminary findings among employees in the new flex-office indicate that after the move physical activity as well as interaction overall has increased independent of method used to measure this. This is especially the case for use of staircase, standing during breaks and spontaneous meetings in stand up position. Before the move respondents' main source of physical activity was related to transport between home and work, meetings outside the office building, use of staircases and walks during lunch break and standing at the desk. Spontaneous standing meeting, walking meetings and standing during breaks seem to have been added as physical activity in the new flex-office, and the use of staircase and standing at desk has increased. Probably enhanced by the architecture- plan layout, furniture and office type. Something which is further reinforced by habits, motivations from others and personal choice. The use of treadmills seems to be directly influenced by their position in office. Certain desks appear to be used standing more often compared with others, probably because of their location in the office as well as the people commonly using the area. With regard to gender differences we found only some with women being somewhat more physical active than men.

Conclusion: Our preliminary results based on office design's influence on physical activity and interaction among employees after move a flex-office employees fits well into the Zimring et al.'s model that explains physical activity to be a result of personal and social/ organizational factors in combination with the physical environmental factors, i.e. how much the architecture allows use of space. In order to increase physical activity as well as meetings/interaction all three factors needs to be in place, not only the physical environmental factors

Work environment design

Amelia Fraga¹

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In Spain, a 22,2% of workers work in shifts and a 8,9% work in the night shift or in rotating schedules (INSHT, 2011). Shift work is a special schedule organization, in which the worker must do his work in 3 different rotating time periods: morning (from 6 a.m. to 2 p.m.), evening (from 2 p.m. to 10 p.m.) and night (from 10 p.m. to 6 a.m.). Shift work has negative consequences and influence, but it is necessary in some institutions, so arguments in favor are related to productivity and maximizing costs.

In this context, it seems to be important to study the Quality of Life (QoL) of employees to promote healthy organizations (Wilson, 2004). Moreover, stress becomes the key concept to understand the workers' every day practices and their study will be the beginning to propose interventions to eliminate, reduce, avoid it or to lessen its impact, as we will demonstrate.

This study aims to explore workers' perception of characteristics on the work environment that affect their QoL the most and the main objective is to locate and analyze the typical organizational stressors. We collected data in two different moments, thanks to the collaboration of the most representative trade unions in A Coruña (CCOO, CIG and UGT). First of all, we started the study arranged focus group (N=19) to develop a specific questionnaire from the focus group data collected and analyzed. Secondly, we applied the questionnaire to shift workers in a factory of the same province (N=79).

The results obtained show relevant dimensions to take into account because they could characterise a healthy organization promoting healthy workers. As we have previously pointed out (Fraga, 2014), 15 dimensions were derived from our analysis. Hence, in light of the results, we can conclude that workers perceive their work environment as a strange environment, unconnected with their necessities and preferences. This point of view is probably under the influence of some dimensions that we obtained, focused in a two different ways, the circumstances that occur inside the work environment and the circumstances that occur outside. And under the participant's perspective these two environments engaged are disconnected, so they are in conflict. According to previous research about work to family conflict (Gee, Polzer-Debruyne, Chen & Fernandes, 2007), our results clearly support the notion that family, shift worker and work place constitute an interdependent unit. In summary, listening to the shift-workers and considering their perspective is a way to construct an integrative approach in the general work planning and in the healthy workplace design to promote an optimal adaptation between employee and organization.

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Improving school buildings and the agents of change

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The architectural design process is becoming more complex, as new technical, social, environmental and economical requirements are imposed. For school buildings this scenario applies. The quality of a school building depends on known design criteria, professional knowledge and feedback from building performance assessments. To attain high performance school buildings a design process should add a multidisciplinary team, through an integrated process, contributing at an early stage to design solutions and guide user expectations. This article presents a discussion on the ways school building design can be supported by a structured briefing process. A participatory architectural programming phase is advocated and tested through a focus group, supported by a game. Different stakeholders with interests in improving schools participated in this event. The multidisciplinary team should consist in specialists in education, design professionals and consultants in various fields as well as administrators, public officials and neighbourhood representatives. Users, or potential users (teachers, parents, students, school officials and staff), should be involved. In this paper the role of different stakeholders are discussed in relation to their specific contributions and a tool in the form of a card game is described to structure design debates and ensure a comprehensive decision making process. The briefing game was developed for the specific context of state schools in São Paulo, Brazil. The focus group simulated a briefing session. The game was tested to measure the impact of both content and application procedures on a focus group debates to produce a quality architectural programme. A facilitator conducted the event and applied the game and an architect was the professional in charge of this briefing session. Potentials users and a civil engineer involved in school building construction also participated. An observer recorded the simulated session. Different stakeholders participated in different ways. The architect, although very much interested in focusing the discussion on important design issues such as the site, flexibility, etc., at time let education specialists dominate the debate when the topic was on pedagogy, but returned later with more technical input on design issues. The parent and the engineer were less active participants, due, in part, to the fact that the focus group was a simulation, not an actual briefing session. One of the observations gained is that real engagement of stakeholders is related to real interests. Also, moments when some participants dominated the session needed the intervention of the facilitator to move forward in the decision making process. However, the overall result of this focus group showed that the method (focus group + game) is efficient as a stimulator of structured school design discussions, focusing stakeholders' attention on the topic at hand. The set of cards worked as a checklist and the method supported the elaboration of a rich architectural programme as a basis for the creative design. Although this method was specifically based on Brazilian school design situation it shows potential for other contexts, because the content and the application procedure are based on known facts, needs and global concepts of an architectural design process.

Parallel session 48: New approaches to sustainable transport

Time: Friday, July 1 2016: 09:00 - 10:30

Location: Large lecture hall, The A-building

Session chair: Inês Ferreira

Presentations:

Ebikes and transport habits – Using naturalistic- and quasi-experimental data to explore the psychological effects of testing vs. buying a new mode of transport

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The electric bicycle (e-bike) is a promising tool for achieving political goals of a shift towards more sustainable transport. Several studies have showed quite substantial changes (more than 100% increase) in cycling mode share for individuals who acquire an ebike [1].

From a psychological perspective, the e-bike thus gives opportunities for exploring relationships between known motivational variables and behaviour. A number of studies have shown varying degrees of cross sectional relationships between motivational variables such as attitudes, social norms and value beliefs towards behaviour in the transport domain. However, few studies have successfully predicted behaviour change with the use of prospective data based on these variables.

Habits are more than just repeated (past) behaviour and habit strength implies the delegation of control over the behaviour to the environment [2]. Habit strength has proven to be an important moderator of norm-attitude-behaviour associations in the travel domain[3], and changing people's habit strength can potentially contribute to alter behaviour in more pro-environmental directions. Given that substantial time and magnitude of influence is needed, few studies have been able to look at changes in motivational variables in general, and habit strength in particular, as a result of interventions.

In the e-bike business, the smile-on-the-face effect of someone trying an e-bike for the first time is well known. This effect points to experiential as well as pragmatic properties of the ebike, and alludes to quite potent psychological mechanisms associated with its use.

In the current study, two data sets are exploited in order to test psychological changes related to testing and acquiring ebikes. The first dataset is a quasi-experiment in which randomly selected participants (N=66) were given an e-bike to use for a limited time (2 or 4 weeks). A second questionnaire captured the same perceptions post-intervention. Results were compared with a control group (N=160). The second dataset is a natural experiment where a sample of 340 people responded to a questionnaire prior to buying an e-bike, and a follow-up four weeks later (45 had then bought an e-bike). In addition, a sample of 30 people (physical inactive) were recruited through a Norwegian NGO. The results were compared to a control group (N=760).

The results show that habit strength for cycling and car use change substantially following from acquiring an ebike, but not from merely testing one for a short period. In order to explore how values, subjective norms, attitudes and intentions for cycling interact with behaviour and habit changes we use moderation and mediation analysis.

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Assessing the impact of electric vehicles on residents near national roads: A laboratory study

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Traffic noise has known health and wellbeing impacts on people who live near major roads. We face a likely shift to electric vehicles (EVs) but the environmental and human consequences of this are not yet well understood. Simulated auditory traffic scenes were synthesized from recordings of real conventional and EVs. These sounded similar to what might be heard by a person near a major national road. Versions of the simulation had 0%, 20%, 40%, 60%, 80% and 100% EVs. Participants heard the auditory scenes in random order, rating each on five perceptual dimensions such as pleasant-unpleasant and relaxing-stressful. Ratings of traffic noise were, overall, towards the negative end of these scales, but improved significantly when there were high proportions of EVs in the traffic mix, particularly when there were 80% or 100% EVs. This suggests a shift towards a high proportion of EVs is likely to improve the subjective experiences of people exposed to traffic noise from major roads. The effects were not a simple result of EVs being quieter: ratings of bandpass-filtered versions of the recordings suggested that people's perceptions of traffic noise were specifically influenced by energy in the 500-2000 Hz band. Engineering countermeasures to reduce noise in this band might be effective for improving the subjective experience of people living or working near major roads, even for conventional vehicles; energy in the 0-100 Hz band was particularly associated with people identifying sound as 'quiet' and, again, this might feed into engineering to reduce the impact of traffic noise on people.

„Saddle up, get set, go!“ – Supporting sustainable mobility through a bicycling competition

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In times of an increasingly motorized mobility the decision to use certain means of transport is often based on economic and rational aspects as well as on pragmatic and habitual motives. Studies support the assumption that time, habits, comfort, and convenience are important factors influencing the predisposition to choose e. g. the car as a mode of

travel (Limtanakool, Dijst & Schwanen, 2006). Using sustainable means of transport (e. g. public transport or bicycles) is predominantly not considered an option for many traffic participants.

In the context of a comprehensive project aimed at reducing carbon-emissions in an Eastern German medium sized city a longitudinal study at the University and the University Hospital was conducted. The study aimed to increase the sustainable mobility by inviting the employees of the two institutions to switch from using the car to riding by bicycle during the two months of the bicycle competition runtime in 2014 and 2015 respectively. Out of the group of Participants (32 in 2014 and 42 in 2015), 9 people took part in both surveys. Participants were encouraged to use the bicycle to cover as far distances as possible for work and leisure activities for two weeks. The longest distance in 2014 was 389.2km and in 2015 it was 723 km. As supportive measures the cyclists got bicycle computers and various bicycle utensils (such as bottles and bicycle tour flyers). The study was designed as a competition between the participating anonymised employees: individually starting from a chosen date, distances covered for 14 days were measured by a bicycle computer continually. In order to encourage the target behaviour more additional psychological interventions were implemented (Mosler & Tobias, 2007): factual and practical knowledge was increased through information (e. g. concerning bicycle routes) and a bicycle campaign day at each institution. Individual and comparative feedbacks via weekly E-Mails as well as monetary incentives were offered as part of closing presentation. The competition was evaluated using in-house developed standardized questionnaires. In both years participants were asked to fill out the questionnaires directly before and after the competition and in 2015 additionally four weeks after the end of the action. By means of a personal code the questionnaires of the two years were assigned to the respective persons. The online questionnaires included aspects concerning mobility behavior, evaluation of work-related bicycle use, intention to use the bicycle, motives and reasons for using the bicycle. Underlying reasons and motives influencing travel mode choices in favour of bicycles instead of cars were examined.

Within the institutions a sustainable mobility management was instigated which will continue to organise bicycle campaign days on a yearly basis. The results of the evaluation of the competitions of 2014 and 2015 indicate central tendencies explaining how people can be motivated to switch from car use to bicycle use when covering work and leisure related distances. Changes of behaviour concerning mobility and travel mode choices during and after the implementation (e. g. increase of bicycle usage) will be evaluated.

Collaboration and consumption: A study about bike-sharing system in Fortaleza – Ceará – Brazil

Renata Rola Monteiro Da Cruz¹, Sylvia Cavalcante¹, Airton Baquit¹

¹Universidade de Fortaleza

Consuming is an activity present in any society. Although, shared or collaborative consumption is still not widespread and can be understood as different ways to use products and services, through rent, loan, exchange or donation. In this type of service, the access is more relevant than the property, and the relationship needs to be established by trust and personalization. Although this practice is ancient, the use of technology has brought a global dimension to share and cooperate as the exchanges also take place in virtual form

between unknown individuals anywhere in the world.

However, it is in the cities where consumption takes place primarily, and it is also where people come together to exchange ideas and goods, circulate, live and play. In this context, mobility - the act of getting yourself to meet needs and goals - has become a challenge, especially with the growth of the cities. At first, the car and the transportation represented the solution for mobility. However, high energy consumption, carbon emissions and pollution showed the loss of quality of life and called for the need to apply the idea of sustainability to the cities.

In this way, encourage consumption, bike-sharing and pedestrian traffic is a part of a policy of encouraging healthy cities, as the pollutant energy is reduced or ceases to exist, affecting less the environment.

In this perspective, bike-sharing programs have represented concrete and efficient alternative for urban mobility, reducing environmental impacts and improving the quality of life, besides having lower cost and shorter time to be deployed. This was the case of the bike-sharing program implemented in the city of Fortaleza.

Located in the northeast area of Brazil, this capital has faced numerous problems caused by mobility difficulties. In the last decade, the number of cars increased dramatically, reaching the milestone of one million vehicles in late 2015. The solution presented was the bike-sharing program – Bicletar – developed by the City Hall in partnership with private companies, implemented in December 2014.

The program delivered a fast and cheap solution. Since then, cycling has attracted new users, becoming a widespread practice in the context of the city, not only for transportation but also as a practice of leisure and physical activity, giving the city a dynamic and healthy face.

With only one year old, the program already has eighty stations and exceeds 420,000 trips. Nationally, leads the ranking of bike-sharing programs, highlighting the adoption and acceptance of the system by inhabitants of Fortaleza, who perform daily on average 6.7 bicycle trips.

Keywords: bike-sharing, collaborative consumption, urban mobility.

Parallel session 49: Human aspects on forest management

Time: Friday, July 1 2016: 09:00 - 10:30

Location: Small lecture hall, IKDC

Session chair: Clare Twigger-Ross

Presentations:

Institutional challenges for landscape based stormwater management in Dar es Salaam city

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In light of increasing climate change impacts such as flooding, many low income settlements in the developing world cities are facing increasing threats associated with flooding. The threats to life, infrastructure and building structures are particularly serious to the population living in informal settlements. Most of the traditional or conventional approaches adopted to cope with the problems associated with flooding such as the construction of large storm water drains have not been effective in responding to or significantly reducing the problem.

At the same time, many poor living in informal settlements face even more hardships related to storm water run-off and flooding; furthermore lack of basic urban services means that they also face water stresses and pay more in order to access clean water. Studies on sustainable storm water management have reported on the inadequacies of conventional methods of managing increased run-off and the need for sustainable water management in cities (Bettini et al, 2012).

Landscape based stormwater management (LSM) is increasingly being adopted but such a technological shift presents serious challenges because storm water management covers a wide range of stakeholders, spatial scales and institutional arrangements. Studies on climate change highlight the role of institutions at the local level when it comes to coping with climate change impacts such as drought and flooding (Agrawal, 2008). This is even more so for developing countries which face weak governance institutions relating to urban services delivery and the regulation of urban land development.

Using data and information collected through documentary reviews, key informant interviews and focus group discussions in an area in Dar es Salaam; the objective of this paper is to specifically discuss the institutional setting within the framework of adopting landscape based storm water management in the study area. The paper observes that many local communities have experiences (individual and collective) that seem to adopt LSM approaches. These include use of local plants to reduce the impact of run-off and the collection of water in small dams for gardening and household use. However the actions and interventions are disjointed most importantly they lack institutional support both in terms of structures for coordinated action. This paper calls for institutional reforms and capacity building on the LSM principals and a redefinition of mandates and roles of key actors. Above all, it acknowledges and argues that the adoption of LSM in Dar es Salaam should build

upon local practices.

Key words: Climate change, Storm water management, Local practices

Learning and competence on climate adaptation - Too many guidelines

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Introduction: The Fifth and last IPCC report from UN is more clear than ever that most of the global warming observed the last 50 years relates to human activity, and that climate change will last for several decades. Thus, the society will have to deal with negative impacts of climate change in the future. The main strategies are 1) reduction of greenhouse gasses and 2) climate change adaptation, to strengthen the society's robustness against climate exposure. Both strategies are important, but this paper focuses on the latter.

Norway experience 20 % more precipitation than a hundred years ago. In the end of this decade, the precipitation will increase an additional 20 %. Scenarios for climate change in Norway indicate an increase in extreme weather events. The climate will be warmer, and the intense precipitation in coastal parts of Norway will increase. Such amounts of precipitation will lead to severely increased strain to sewer systems, more water related defects on buildings, more landslides and, more flood damages. This will affect the built environment and different infrastructures. The main focus in this study is buildings and water and sewage infrastructure, and the collaboration between public authorities' planning, insurance sector and professional participants of the building process.

Objectives: The objective of this study is to describe barriers for obtaining climate adaptation related to knowledge, competence and guidelines in municipalities and governmental organizations. The findings will form the framework for later case studies on climate adaptation in municipalities.

Methods: The findings are based on 10 qualitative interviews of experts in public organizations, some of them with responsibility for promoting climate adaptation in the municipalities.

The main findings are preliminary, and indicate a handful of groups of barriers towards succeeding with competence building on climate adaptation through guidelines and web sites. One of the groups of barriers that seem to have a major influence for obtaining climate adaptation, we have aligned as existing tools and guidelines. The major reasons for constituting barriers seem to be:

- a. Abundance;
The multitude of tools and guidelines causes over-complexity and unnecessary decision processes.
- b. Too academic;
The high academic level of language, terms, and configuration, is difficult to understand and

employ for all users.

c. Not practically aligned;
Poor user interface and functionality/practicability (linked to the preceding);

d. Not accessible;
Difficult to localize and access on the most relevant/used websites and/or networks.

Further, our findings of barriers point to well-functioning insurance systems as a pretext for doing nothing, and reveals deficient cooperation between insurance companies and local authorities. The cooperation between ministries, municipalities, and other organizations seems to be confined or lacking. The paper illuminates the barriers both empirically and theoretically, and discusses the results in a societal context.

Conclusions: The expert interviews reveal that the guidelines are too many, too academic, and not practical enough. This becomes a barrier to climate adaptation and may lead to confusion and frustration among the users. This will be further studied in user case studies.

Challenges and potentials of the current urban planning systems and practices to address emerging climate change induced hazards: the case of Dar es Salaam City
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Experience has repeatedly shown that urban growth will not produce a functional and environmentally sound urban structure if left to the market forces only. Intervention and regulation of urban land development particularly through urban land use planning is necessary and required to balance private or individual interests with environmental imperatives. Trends in urban land use development in most cities in Sub-Saharan Africa however, clearly show that current land use planning systems and practices are ineffective in regulating urban land development leading to widespread informality.

Rapid urbanization in poverty and weak governance institutions amidst increasing climate change induced hazards such as flooding have further compounded the problems of urban land use planning and management.

This paper aims to analyze and discuss the challenges and potentials for urban land use planning and management to address the emerging climate change induced hazards especially flooding. It briefly reviews the trends in urbanization in poverty and analyzes the current urban planning system and practices in Dar es Salaam. The focus is on the case of the Dar es Salaam Master Plan (2015); which was prepared recently. Apart from the Master Plan document, empirical data and information are collected from the local planners who worked with the foreign consultants in the preparation of the plan. Also, one settlement which significantly comprises environmentally sensitive areas such as wetlands, river valleys, flood plains and steep (erodible) slopes was also analyzed. In this settlement, focus group discussions and interviews were conducted with community leaders and selected residents. The aim was to explore the existing land rights and land uses, roles played by various actors in the proposed land use plan and the institutional framework for the enforcement of the plan.

The major findings include disregard of the existing land use rights, non-participation of the grassroots institutions and actors in planning, inappropriate institutional frameworks and most importantly weak conceptualization and considerations on climate change imperatives in the generation of the plan. In short, current urban planning system and practices is seen as part of the problems not a solution.

The paper calls for adoption of climate change sensitive urban land use planning and management; capacity building of planners and professionals involved in urban planning, adoption of interdisciplinary approaches that includes natural scientists in planning teams and institutional reform of urban planning systems and governance practices so as to espouse community-lead urban land use planning and management and enhance adaptive capacities to climate change at the local and city level.

Key words: Planning, institutional framework, climate change

Reviewing crucial factors affecting sustainable city structure: The influence of self-concept on residential location choice

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City restructuring is becoming of greater importance, and one restructuring strategy that has recently received increased attention as a sustainable city form is to make a city smaller. The compact form of a city has the potential to reduce environmental burdens and to encourage lower energy consumption.

Another important cause of the increased focus on city restructuring is depopulation: 896 (52%) municipalities in Japan are estimated to disappear in the next 50 years due to both interregional/intraregional migrations to big cities, and low birth rate. If this becomes a reality, public services and standard of living could decline in most municipalities.

In order to avoid such a future, it is necessary to consider a way that makes cities more sustainable and comfortable. The compact city is a viable option, but would, as a consequence, require denizens to change their residential preference. Hence, Residential Location Choice (RLC), the focus of this study, could be a key to successfully redistributing population and effectively creating the form of the compact city.

Although there is abundant literature on RLC, most previous studies employ a mathematical model focusing on physical aspects of residential districts. However, recent studies pointed out that a psychological factor like self-selection could have an impact on RLC. Hence analyses including both physical and psychological factors could contribute to a deeper understanding of RLC. For that purpose, we focus on self-concept in RLC, because self-concept can prescribe one's preference in choice behavior (Niedenthal, 1985) and has never been analyzed in an RLC context. Hence, this study aims to clarify the impact of self-concept on RLC following a proto-type matching theory. This theory assumes that people would choose the option that is closest to their own self-concept.

A questionnaire survey targeting inhabitants living in detached housing was conducted in four residential districts in Sendai city, Japan. 150 questionnaires were distributed to each district, 600 in total. The number of valid responses was 220 (36.67 percent), and 113 were male and 103 were female (4 unknown). The mean age of the respondents was 51.6 years old.

The respondents were asked to rate their lifestyle on an original lifestyle scale. They were also asked to rate the physical features of the four districts and the lifestyle of the inhabitants living in those districts. In each of these districts, A Proto-type Matching Index (PMI), which means the distance between the respondents' lifestyle rating and the imagined lifestyle of the inhabitants in each district, was calculated and ANOVA was applied. ANOVA revealed that the PMI for the district where the respondents live was significantly smaller than the other three PMIs. This means that people would use their self-concept in deciding their residential location. In addition, the result suggests that the distance between self-concept and area image could have an impact on satisfaction toward living environment as well. Based on these findings, it can be concluded that the image strategy of a city is a key to create a sustainable city.

Social representations of governance for societal transitions towards sustainability

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There is a substantial body of literature that investigates public perceptions and understandings of 'environmental' phenomena such as climate change, biodiversity loss and resource degradation and, related to this, on attitudes towards specific policies that address these issues. These studies usually reveal a sense of urgency: Change is seen as necessary, but perceptions of the usefulness of concrete policy tools diverge. Interestingly, there has been very little research into people's understandings of the governance of phenomena such as climate change, and into the ways in which people make sense of the political and societal structures in which these are located.

Here, we investigate people's ideas of governance for societal change towards greater sustainability. Such societal 'transitions' as a way to address resource overuse and mitigate climate change in industrialised countries have recently received a lot of attention, not least by the European Commission as a funding agency. However, we know very little about how people think that such large-scale change should come about, and how it should be governed. We understand governance here as the sum of the many ways in which individuals and organisations manage their common affairs, including both formal (e.g., regulations) and informal (e.g., social norms) approaches.

We use a social representations approach to examine data from qualitative interviews with people in seven European countries (n=101), two-thirds of which was sampled through local initiatives addressing sustainability issues. Social representations (sensu Moscovici) can be described as the collective elaboration of an object by a community for the purpose of behaving and communicating, which ultimately affects (discursive and non-discursive) practices towards this object. Social representations thus develop through social interaction, ranging from informal communication – for example, conversations with friends – to the media.

In our interviews, participants expressed strong and diverse views on the relation between governance arrangements and sustainable lifestyles. These could refer to current as well as to future, or 'ideal', governance mechanisms. We found that among the members of the different initiatives that we interviewed, there were shared representations of governance for societal change that differed between initiatives, but tended to concur within each initiative. In addition, across the different representations, we could identify recurrent

elements (or building bricks) that together would form a group's understanding of the governance of societal change towards sustainability.

We could discern several 'prototypes' of governance representations that tended to be shared by the members of an initiative, although there was always a degree of diversity and variation in individuals' versions of the prototype. Our findings therefore reflect the dual nature of social representations as simultaneously individual and social.

Our findings are relevant for two reasons. First, our study is one of the very few that empirically examines understandings of governance, and thus adds a psychological perspective to governance research. Second, insights into the ways in which people make sense of the political and social systems that surround major contemporary societal challenges can help to design better policies as well as bottom-up activities.

Poster session:

Theme 1: Basic issues in theory and research

Location: Foyer, The A-building

Interactions between seasons, weather, landscape, and urban outdoor recreation: A conceptual model

Elise Gatti^a

^aUniversity of Utah

Tall buildings are becoming more and more common in modern cities around the world, especially in Asia (e.g., China) and the Middle-East, according to the Council on Tall Buildings and Urban Habitat (<http://www.ctbuh.org>). The driving forces behind this trend include rapid rise in urban population, economic growth, and the costs of urban sprawl resulting in a call for more-compact cities and sustainable use of resources and infrastructure, and the race among nations to build the tallest and the most iconic building. Tall buildings will continue to flourish globally and the "city in the air" will be the urban habitat of the 21st century, predicted Ali and Al-Kodmany (2012).

Extensive research has focused on the engineering and structural aspects of erecting tall buildings and more recently, environmental sustainability (Lee, 2014). Yet few recent studies have been conducted to examine occupants' satisfaction, and physical and psychological well-being, even though it is the real people who live and work in these buildings. There was a splatter of research studies conducted by social scientists back in the 1960-70's, when cities started building taller buildings of about 20-stories high. The most recent review by Gifford (2007) of available empirical studies conducted mostly outside Asia and the Middle East concluded that there were methodological problems with many of the studies but overall, there appeared to be negative consequences of living in high-rise buildings for their occupants.

In 2014, The Council on Tall Buildings and Urban Habitat (CTBUH) published a report Roadmap on the Future Research Needs of Tall Buildings (edited by Oldfield, Trabucco, & Wood, www.ctbuh.org/roadmap) based on their survey of "those involved in the ownership, development, design, planning, construction, consultancy, operation, maintenance and research of tall buildings" (p. 9). Despite the exclusion of occupants or ordinary citizens in their survey, the report identified that "research to improve the social impact of tall buildings on both surrounding communities, and on those who live and work at height, is a significant research priority" (p. 9).

This presentation will clarify the terminology for various tall building types, outline the history of development of tall buildings, and provide a synopsis of the research priority areas outlined in the Roadmap report that should be of interest to environmental psychology researchers, together with additional social and psychological issues. Each of these areas will be illustrated with a research study or two from the research literature. Topics might include sustainability, density, view, skyline, perception of height, perceived safety, and social contact.

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Convergent exploration and analysis of EEG concentration according to areas of preference in spatial cognition

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To determine "how humans move in space, what they want, and through which visual information they act and choose," this study aims to define in which sense space is preferred in gaze. The ultimate goal is to extract data of human visual awareness and preference in space. Visual awareness and preference are information perception factors in space such as walls, floors, ceilings, furniture, colors, lighting, materials and graphics (texts) of spatial design elements. Factors perceived by humans in space can be analyzed by convergent exploration of vision, theory of concentration, and brainwave activation area as physiological experiment. For quantitative measurement of eye tracking and brainwave experiment, visual data are measured by classifying the characteristics of the subjects in detail. In other words, the goal is to explore the cognitive process inside the humans as it is possible to obtain data with emotional interference instead of memory regeneration.

This study is an exploratory research to present a scientific and quantitative research methodology on concentration of space users. The objective is to simultaneously measure the electroencephalogram (EEG) and eye movements of subjects gazing at images of a café, which is a typical space of consumption, and to analyze the integrated concentration trend. The research methods are as follows. First, the areas of preference in café space gazed by visual concentration are classified into counter & menu, signs, partitions, image walls, stairs, movable furniture, and custom-built furniture. Second, brainwave concentration in conscious gaze is analyzed to examine which correlation it has. To determine the brain activation changes, this study examines the activation change of each brain area of SMR wave manifested when maintaining awakening and concentration in a suitably stable state. Brainwave of concentration can be measured in Fp1 and Fp2 areas of prefrontal lobe and F3 and F4 areas of frontal lobe. Third, this study analyzes the reaction to each area of space image when maintaining awakening and concentration as well as the activation change of each brain area of SMR wave.

In conclusion, this study is to determine the correlation of human concentration gazing at space images. It is an exploratory research on research methodologies, and aims to develop methodologies and provide basic data to plan attractive spaces in light of the subconscious of consumers in the future by interpreting gaze data and brainwave data related to concentration.

Application of multiple criteria decision analysis geographic information systems for building safe communities

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When in a community development process, the promotion of a safe community is a priority. The World Health Organization (WHO) has recognized 20 communities in Taiwan as WHO certified safe communities since 2005. Based on the emphasis of co-operation between private and public sectors, the concepts of the safe community are trying to develop bottom-up safety promotion programs by collation of public opinion and the collection of empirical data on accidents and injuries. Since most of the research carried out at the neighborhood scale, this study presents a set of methods on the city scale and then verifies the feasibility of these methods.

This study conducted multiple criteria decision analysis using geographic information systems (GIS) and analytical hierarchy process (AHP) methods, with 117 neighborhoods in Hsinchu City as the test region. AHP questionnaires about safety issues requiring improvement projects were issued to key figures in each area. Using the GIS analysis method, the data from 75 submitted questionnaires and empirical data regarding safety issues in each area were collated and drawn into a Hsinchu City map for promoting community safety.

The result showed that the most concerning safety issues in Hsinchu City are fire safety, road safety, theft, and safety near school campuses. It also showed that two neighborhoods, Yuhing and Wenya, require the most promotion to build community safety, starting with reducing the failure rate for fire safety checks, reducing incidents of theft, and improving security around campuses.

As a further qualitative analysis, private and public sector members, who have received community safety certification, were asked to assess the feasibility of this analytical method. This showed that the method used in this study is a viable community safety research methodology. Understanding the map of promoting community safety, not only promotes public participation in the building of a safe community, but it also allows closer partnerships between the private and public sectors.

Internal processes of psychological restoration: Development of a conceptual framework and common research agenda

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During the last decades, many significant achievements have been made in the research on the restorative qualities of nature. Based on concepts like Attention Restoration Theory (ART, Kaplan, Kaplan & Ryan, 1998) and Stress Recovery Theory (SRT, Ulrich, 1993), a distinct line of research within environmental psychology has emerged, focusing on the benefits from contact to nature. In research drawing from ART, a common cognitive resource is assumed to be essential for directed attention and impulse control. It gets depleted during use and must be replenished recurrently, e.g., during contact to nature: The visual characteristics of nature are assumed to feature certain fascinating qualities allowing

for this kind of replenishment by triggering so-called effortless attention. Complementary, SRT states that natural environments are more likely to feature certain characteristics, which, because they appeared to be beneficial during evolution, are affectively evaluated more positively which consequently leads to a reduction of stress. This line of research has seen numerous theoretical advances, its assumptions have seen strong empirical support, and numerous practical conclusions for the design of restorative and healthy environments could be drawn (for reviews see: Haluza, Schönbauer, & Cervinka, 2014; Hartig, Mitchell, Vries, & Frumkin, 2014).

Nonetheless, there still are distinct gaps in the understanding of the involved internal processes. Different research areas have brought their own sets of theories, terminology, and approaches to studying different parts of the internal processes and the links between the different elements. Knowledge exists for many specific aspects, e.g., regarding the representation of visual input in retinal and brain structures (Atick & Redlich, 1992; Milner & Goodale, 1995), the perceptual fluency in the perception of natural stimuli (Joye, 2015), the involvement of the reward system during perception of aesthetically pleasing natural stimuli (Yue, Vessel & Biederman, 2007), the ontogenetic development of impulse control and the underlying brain functions (Steinbeis, Bernhardt & Singer, 2012) or the different attentional networks in the brain structures responsible for the corresponding processes (Posner, 2012).

We suggest the need for a conceptual framework which ties together the currently only loosely-connected concepts, methods, and evidence from cognitive psychology, neuroscience, environmental psychology, and related areas of research. We will put forward a proposal for such an integrative framework and a corresponding research agenda. Our contribution shall initiate the discussion about the value of such a coherent theoretical model for future research and about possible changes or alternatives to the model. Consequently, this shall lead to a joint advancement of the model with other interested researchers.

Is technological dependency the fifth dimension of social space?

Erincik Edgü¹, Dilara Gökçen Yumurtacı¹, Büşra Berber¹

¹Düzce University, Turkey

Environmental Stimulus ultimately influences the human behavior through sensory and cognitive processes. Among the various design factors such as colors, materials, and forms, color perception is the leading sense. Colors are also important for spatial recognition, wayfinding and entire environmental image. The experience in color is established on the basis of physiological and psychological responses to the light. Lights produce all the colors we figure out, and also make colors vary their image according to their physical properties. Brightness is sensed with adaptation luminance of the eyes to surrounding environment, reflectance of surfaces and observer's sensitivity to visual information, in all. However, precedent studies on the relationship between colors and lighting conditions have not proved how brightness impacts to the subtle changes of environmental color images. In these respects, this study aims to examine the relationship between color images and the changes of illuminance in a unit space with different color schemes by evaluating subjects' responses. The experimental design is derived from the literature review which includes color images, lighting conditions and human response to colors. The simulation model is

built by the computer graphic (CG) Programs which presents a Living Room with the Wall-Floor-Ceiling as the interior design factors. Cool and Warm color schemes of IRI 120 Hue& Tones and two types of the illuminances (200lx, 500lx) are applied to the simulation model. The subjects' psychological responses are measured by Semantic Differential (SD) scales and compared through the statistical process using SPSS WIN18.0. As a result, it will be proved that the illuminance variation will lead the delicate change of the environmental color images. This finding undertakes an important role to build up the color design criteria for the various conditions in the lightings so that contributes to the sustainable home design.

Poster session:

Theme 2. Environmental factors: light and noise

Location: Foyer, The A-building

A study on the emotional images with cool and warm color schemes under the illuminance changes for the sustainable living room design

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¹Pusan National University, South Korea

Environmental Stimulus ultimately influences the human behavior through sensory and cognitive processes. Among the various design factors such as colors, materials, and forms, color perception is the leading sense. Colors are also important for spatial recognition, wayfinding and entire environmental image. The experience in color is established on the basis of physiological and psychological responses to the light. Lights produce all the colors we figure out, and also make colors vary their image according to their physical properties. Brightness is sensed with adaptation luminance of the eyes to surrounding environment, reflectance of surfaces and observer's sensitivity to visual information, in all. However, precedent studies on the relationship between colors and lighting conditions have not proved how brightness impacts to the subtle changes of environmental color images. In these respects, this study aims to examine the relationship between color images and the changes of illuminance in a unit space with different color schemes by evaluating subjects' responses. The experimental design is derived from the literature review which includes color images, lighting conditions and human response to colors. The simulation model is built by the computer graphic (CG) Programs which presents a Living Room with the Wall-Floor-Ceiling as the interior design factors. Cool and Warm color schemes of IRI 120 Hue& Tones and two types of the illuminances (200lx, 500lx) are applied to the simulation model. The subjects' psychological responses are measured by Semantic Differential (SD) scales and compared through the statistical process using SPSS WIN18.0. As a result, it will be proved that the illuminance variation will lead the delicate change of the environmental color images. This finding undertakes an important role to build up the color design criteria for the various conditions in the lightings so that contributes to the sustainable home design.

Examination on the evaluation structure of views from windows with daylighting and solar-shading devices

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Up to the present one of the important aims of daylight use has been to decrease electric power consumption of artificial lightings and to promote energy savings. However, some people say that in future it would be better to close openings completely and use only LEDs for energy savings, because luminous efficiency of LEDs has been much improved recently. On the other hand, it can be expected that the buildings without openings might cause some serious problems on visual, psychological and physiological environments.

It is now necessary to grasp the quantitative value of openings in addition to the energy savings, and one of these values would be the psychological and physiological effects of views from the openings. The final purpose of this study is to make clear the quantitative effect of the physical property of the openings with daylighting and solar-shading devices on the psychological effects of views from buildings. This report focuses on the relationship between psychological evaluations and the physical conditions of the openings by sorting out all the evaluation factors of views from windows. Evaluation grid method was used to grasp the evaluation structure of views from windows. Interviews were conducted using the photographs of openings taken in 13 different office rooms in 7 buildings. The subjects were 21 students aged around 20s. The hierarchical structure on view evaluation was found out through evaluation grid method. The external factors such as climate, greenery and some building conditions, e.g. opening size and viewpoints, related to the psychological factors such as relaxation and spaciousness. Specifically, the evaluation structure was composed of three phases where building physical conditions were ranked low, the concrete effects acquired by these conditions were in the middle and the psychological values of views were ranked high. For example, it can be expected that the physical properties of blinds at the lower ranks relate to the clear-view factor in the middle ranks, and this factor leads to the comfortableness through secureness and spaciousness at the higher ranks. In this paper, the psychological evaluation structure as to views from windows with daylighting and solar-shading devices was made clear using the evaluation grid method. In future works the causal relationship among the factors will be examined quantitatively by using covariance structure analysis, and physical index as to "clearly-visible" will also be proposed by using digital image processing, then the relationship between the psychological evaluation and the physical properties as to openings with daylight and solar-shading devices will be examined.

Public lighting and urban configuration: A framework for the definition of the urban parameters influencing the sense of security

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Public lighting is a basic service for city users and it is a diffuse grid all over the territory. But lighting is a significant consumer of energy and the maintenance cost of the street lighting system is a challenging energy and financial burden for governments. Retrofitting and monitoring the lighting systems with remote control and equipping the poles with the same Smart services (touristic, mobility, environmental) is nowadays a common practice. It is often considered as the easiest way to create a Smart City. But this is a big misunderstanding for at least two reasons. The First one is that cities are different from each other and the various social, economical and structural features must be taken into account in developing the project. The Second reason is that the physiological, psychological and comfort issues, which are basic aspects of a complete and Smart lighting project, are not often considered as they should. Many researches demonstrate that the level and quality of lighting can affect the sense of security and the issue of safety is complex and related to a big number of different influencing parameters. The European Standard (UNI EN 13201:2004 and CEN/TR 13201-1:2004) provide recommendations for lighting in streets, footways and pedestrian areas and define some influencing parameters relevant to lighting. But

researches confirmed that the prescribed lighting levels are often inadequate to meet visual needs and guarantee the perceived social safety. Furthermore some parameters related to the sense of security are too general, others are totally missing. In this framework, the aim of this project is to identify the relationships between the various factors that affect the sense of security and the electrical lighting in streets, footways, and pedestrian areas in order to provide a series of influencing parameters relevant to lighting. Two categories of factors affecting the sense of security were identified: the individual factors and the environmental factors. Examples of individual factors are: age, gender, habits, sensibility, personality, state of mind and past experiences. Some environmental factors are the urban configuration, the crowding indices and pedestrians traffic flow, the functional characterization of the area, the criminal rate, the location of the neighborhood within the city, the level of disorder and the time slot (daily and seasonal). In this work, we focused only on the environmental factors. The Space Syntax analysis was used for studying the urban configuration of a case study. The indices obtained through the Axial Analysis and Visual Graph Analysis were related to the perceived social safety and to the lighting performance requirements. These analysis were validated with field campaigns for measuring the lighting conditions in various scenarios and Italian locations. The characterization of the area was defined on the base of the presence/absence of attractive points and on the prevalent use. Similarly, quantitative indices/ranges were developed for indicating the other factors. The results of this study is a methodological framework: the list the environmental parameters can be used for selecting the correct lighting class and applying the lighting performance requirements requested.

Investigation on the effects of LED lighting on vigilance

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¹Sapienza University, Italy; ²L'Aquila University, Italy

Thanks to the technological development and the consequent marketing circulation, LED lamps are replacing the traditional artificial sources in lighting of many working places, as offices and shops; the elevated luminous efficiency, the service life, the easy regulation, various forms, dimensions and junctions are characteristics that make LED preferable in many applications respect to both halogen and fluorescent lamps. Even if, from a technological point of view, is advisable a complete substitution of the traditional sources with LED, till now nothing can be said about the consequences on health of LED lighting: the effects of these new sources on human physiology and psychology are not fully known, as a limited number of studies have till now investigated the non-visual effects of LED luminous radiation. The literature showed the capacity of blue light in setting circadian rhythms, in stimulating or inhibiting the production of hormones, in affecting the quantity and the quality of sleep, in improving mood and facilitating alert, and also in enhancing life quality of SAD and Alzheimer's diseases. Moreover, several studies reported a direct effect of the light stimulation on the brain activity, showing a positive impact on some cognitive functions linked with attention. As the spectrum of white LED commonly used is characterized by peaks of emission, one of those in the blue region, is important to investigate if and how the use of these light sources produces positive or negative effects on human health, behavior and cognitive capabilities. This work is aimed to investigate if the LED spectral power distribution influences human performances, confronting the effect of

two different white LED lighting scenarios on the human vigilance. A previous study showed that a neutral LED light (4000 K) is able to increment the vigilance level of participants performing a visual task, while with the warm halogen light (2800 K) a natural decrement of vigilance was recorded. In this work, a cross-modal vigilance tests, consisting in visual tasks and auditory tasks, has been performed by 40 participants within an experimental box, with two LED scenarios of different correlated color temperature (CCT); in the experimental light condition a white cold LED (6800 K) was used, while the control light condition consisted in a warm LED (3000 K). Results showed different effects of the two light sources on participants' vigilance performances: a natural decrement of vigilance passing time, as in acoustic as in visual tasks, has been recorded in the control condition, instead the cold LED light positively affected subjects' performance, reducing response time in the visual task.

Human perception towards to the color integrated with light and materials: Exploratory study based on Kobayashi's color theory

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Issue In indoor environment, color is the significant factor to affect emotional and psychological reactions to humans. Color is also important as a visual component to represent designers' intention related to interior ambiance. Despite its significance, deciding color scheme to represent the design intention is still challenging for practical application for the real environment. The problem is started to the transition from two dimensional color scheme chosen to three dimensional color scheme applied. Without the consideration of integration of color, light and materials covered to the objects in a space, three dimensional rather than two dimensional, it is hard to explain the emotional effects of colors to humans and a designer's desired intention in the space (Poldman, 2009). In order to understand human's emotion to the color integrated with light and materials covered to the objects in three-dimensional spaces, Shigenobu Kobayashi's color image scale is utilized. Therefore, this study provides the practical framework for empirical research on relationship between human emotion and the integration of three for future application. Purpose The purposes of study are 1) to understand transition process and differences between two –dimensional color scheme chosen and three – dimensional color scheme applied 2) to address human perception toward to the color integrated with light and materials covered to objects in three-dimensional space 3) provide the practical framework for empirical research on the relationship between human emotion and the integration of three for future application. Method Kobayashi (1981, 1992) of Nippon Color & Design Research Institute has developed the "Color Image Scale" to describe meanings of the similar and contrasting images of colors for understanding human emotion to the color with 180 adjectives relevant to feelings and psychological emotions. It is frequently used for four applications, which are fashion, interior design, product design, and visual media in Asia and Europe. In this study, controlled empirical experiments will be conducted. 6 color schemes of Color Image Scale are selected to examine the certain settings by different choses of integrated surroundings such as the comparison of two different materials covered with two different setting of lights; warm vs. cool based on one color image scale. Implication Through this study, the significance of understanding transition process from two-dimensional color scheme to three –dimensional color applied is addressed for designing

of indoor environment. Human perception toward to the color integrated with light and materials covered to objects in three-dimensional spaces is demonstrated so that it will be beneficial to consider human emotional reactions to the integration of three. Finally this study provides the practical framework for empirical research on relationship between human emotion and the integration of three for future application. It will be adapted to design processes of color selection for three –dimensional design related disciplines such as fashion, interior design, product design and architecture etc. Key words: human perception, the integration of color, light and materials, and exploratory study

Higher task difficulty shields against the effects of road traffic noise and air traffic noise on recall for written text

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The aim of the present study was to investigate the effects of road traffic noise and air traffic noise on memory for written text and to examine the role increased task difficulty plays in shielding against the effects of these types of noises. This issue was addressed in an experiment where 56 students read shorter texts about different classes of fictitious creatures (i.e., animals, fishes, birds, and dinosaurs) against a background of silence, road traffic noise (~60 dB(A) Leq) and air traffic noise (~60 dB(A) Leq). Half of the participants read texts written in an easy-to-read font (i.e., Times New Roman) and the other half in a hard-to-read font (i.e., Haettenschweiler). After finishing reading about a class of creatures participants were asked to answer multiple-choice questions on what they just read. Participants performance in the easy-to-read group were significantly impaired by road traffic noise ($p = .012$), as well as by air traffic noise ($p = .048$) compared to silence. In contrast, there were no effects of the background sound conditions in the hard-to-read group and no significant differences between the two groups. These results suggest that an increase in task difficulty can shield against the detrimental effects of road traffic noise and air traffic noise by promoting a more steadfast locus-of-attention.

Poster session:

Theme 3. Environmental factors: Light and noise

Location: Foyer, The A-building

Relationships between the meaning of urban environment and active behavior from the perspective of cognitive linguistics

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Introduction

People's active behaviors reacting to environments are influenced by transactions between man and environment. In such transactions making sense of the behavior is important. But few studies have been done to verify what "meaning" the environment holds from this viewpoint. Meanings are studied mostly from a linguistic prospective, and especially in cognitive linguistics, meanings are considered a cognitive phenomenon. Cognitive linguistics basically sees meanings as things that do not distinguish between meaning and conceptualization. Conceptualization is considered as active behavior which selects meanings from experience to carry out sense-making. So to grasp the meaning of an environment, which is yet to be defined, through active behavior of people, looking at it from a cognitive linguistics perspective is an effective method.

Purpose

The purpose of this study is to clarify relationships between active behavior and the meaning of urban environment from a cognitive linguistics perspective, by studying people's wayfinding behaviors in urban areas. Method Wayfinding behaviors of subjects in a relatively quiet residential area were studied. The subjects were divided into 3 groups based on the given "sense-making" instructions and behaviors. Group A: Subjects were initially told that the proving ground is an urban area where they might live in the future, giving a meaning to their behavior. In the appraisal, the subjects behaved actively and found their way following their thoughts. Group B: Subjects were told the same as Group A. But the tester took Group B along the route that Group A took. In the appraisal, Group B's wayfinding behavior was passive. Group C: Subjects were not given initial instructions. And like Group B, the tester took them along the route Group A took, and they followed passively. Results and Discussion

1) Recalling experimental memory based on the cognitive map created The correctness ratio of the recalled experimental memory a week after the test was in the following order: Group C < Group B < Group A. This shows that a memory of an urban environment attached with a meaning tends to be more easily placed in long-term memory.

2) Conceptualization of urban environment based on Grounded Theory Approach Conceptualization of urban environment becomes structurally richer in the following order: Group C < Group B < Group A. Group C conceptualized only the observed facts in the urban environment, but Group A and B conceptualized the urban environment not only on objective facts but on a construal that the place may be where they will live in the future, projecting themselves in the area.

Conclusion

Active behavior in urban environments functions to enrich the structure of memory and

concept in an urban environment. Passive behavior also creates meaning to the urban environment but the richness of the meaning does not surpass the meaning created by active behaviors. That is to say, the elemental meaning of an urban environment is shaped by active behaviors of people. Keywords meaning, active behavior, transactionalism

Different selves: Sustainable behaviour at home and work

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The human being can be a very different person at home, work and leisure. There are often inconsistencies in the way people behave in different settings. In relation to sustainable actions, people are often more environmentally engaged in a home setting compared with a leisure setting, and this negative spillover between contexts is often greatest for individuals who are moderately pro-environmental, often the majority of people in a sample (Dolnicar & Grun, 2009; Barr, Gilg & Shaw, 2011). The negative spillover between home and leisure contexts might be intentional because of behavioural inversions; people often go on holiday to intentionally take a break from daily routines, within which pro-environmental behaviours situate (Currie, 1997; Shaw & Williams, 2004). It is, perhaps, unsurprising that pro-environmental behaviours performed at home do not spillover to a holiday setting. People want to be a different self when on vacation.

Due to greater similarity in frequency and routinization, we might expect people to have more similar selves in home and work settings. Indeed, in relation to pro-environmental behaviour, the direction of spillover between home and work settings is less distinct; both positive and negative spillover has been observed and appears to differ according to behaviour type. People tend to display a home bias when performing recycling behaviours (Tudor, Barr & Gilg, 2007; McDonald, 2011) whereas for energy consumption, the direction of the difference is less distinct and both positive and negative spillover from a home environment has been found (Littleford, Ryley & Firth, 2014). Overall, it seems that a change in context from home to work can disrupt significantly pro-environmental behaviour and prevent spillover across contexts. Put differently, the human being can also be a very different person at home compared with at work.

In light of these empirical findings, the research reported in this paper explores further behavioural fluidity across home and work contexts by exploring the spillover in pro-environmental behaviour between home and work settings across a greater range of pro-environmental behaviours. To progress existing research, it also explores the perceived influence of intrinsic and extrinsic factors on people's ability to save energy in these settings. The data were collected by questionnaire and self-reported.

The results indicated a degree of spillover in the performance of pro-environmental behaviours with explained variance ranging from 7%-42% depending on the behaviour type. Concerning the factors that are perceived to influence energy saving at home and work, there was a large degree of similarity; personal beliefs and responsibility consistently had a strong influence in both contexts however, some differences also emerged. Respondents thought that social and physical factors in the context had a stronger influence on their workplace behaviour. These results suggest that individuals do not take their whole self to work or perhaps that factors in the workplace prevent people from being their true self. Future research should consider how workplaces can encourage positive spillover from

home and enable people to act pro-environmentally consistently across locational settings and different sites of practice. pro-environmental behaviour; spillover

Embedding health in sustainable policy: Healthy Australian universities for work, education and research

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Background:

Health promoting Universities have the potential to reach thousands of people directly and indirectly. In Australia there are 39 universities who employ 120,000 staff and educate over 1.3 million students annually. Universities as a setting have the capacity to embed health in their core business and values. There is strong evidence that links healthy environments with positive health outcomes and lifestyle choices. Universities are a place of work, education and research, they have a large impact on the local community as well as serving the larger community in research and practice. Universities are often considered leaders in our society with resources to champion the demand for healthy environments in Australia. This thesis aims to understand the motivators for universities in Australia to increase healthy campuses through sustainable health promoting interventions and policies. Smoke-free campuses as a case study is applied to understand the complexities within the university setting. This example looks to explain the motivators and uptake of smoke-free, and the implementation approaches. Smoke-free environments in Australia represent a significant public health effort in tobacco control and the most prevalent of health initiatives across Australian universities.

Methods:

First phase: Policy document analysis of all 39 Australia universities smoking policies.

Policy analysis has been undertaken to understand the current smoke-free climate across all universities. The analysis tool used was based on four existing models, informing the development of a comprehensive analysis tool for policy documents and interviewing.

Second phase: Semi structured interviews with up to 70 key stakeholders in a range of roles across a sample of Australian universities. These interviews are currently being undertaken to understand the motivators for moving to some-free campuses and the implementation and engagement approaches to sustain change. Organisational change theory is guiding the collection and constant comparative analysis of the data.

Results:

The analysis highlights significant variation across the universities' policies and processes. There is a limited sense of cultural change and progression to embed health within the current documents across the universities. This will be explored further through the interviews with key stakeholders to highlight the enablers and barriers experienced within and across universities.

Conclusions:

The links between research, policy and practice will be highlighted through this study and reveal the nature of health promotion within the University setting. This research has the capacity to guide universities into health promoting environments and enrich the lives of those staff and students directly affected as well as those family, friends and community indirectly affected.

Café user's behavior as the type of "Third Place" in Japan through user's behavior and location conditions

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This research explores the influence on cafe user's behavior by conditions of location in Japan. The way of analysis for the cafe user as "The Third Place" can be understood by observation research. The Third Place proposed by Ray Oldenburg firstly, means originally the social surroundings separate from the two usual social environments of home and the workplace, Oldenburg calls that "First place" is the home and those, one lives with. The "Second place" is the workplace where people spend most of their time. Third place is "anchors" of community life and facilitate and foster broader, more creative interaction. Oldenburg suggests the following hallmarks of a true The "Third place", but some cafes in Japan advertise as third place meaning private working spots. By grasping the influence on user's behavior in the cafe through not only the Third Place was mainly conversation proposed by Oldenburg, but private working in the cafe, it was cleared that the conditions of location and the ratio of property have effect on actions of use as the Third Place. Various kinds of cafe exists in Japan, for example, old style cafe, net-cafe, "maid cafe" and so on. The way of exploration was observation research in the cafe. Investigators were sent cafes in the same group company, six shops and ten floors. Recording was conducted in one time per one hour in the forenoon and the afternoon on august 2011. As the result, this recording could get 5486 person's data in ten days on weekdays. Research fields were decided with complex area, mainly node point of large-scale stations, because of observing various users and taking notice of location conditions, and three fields in Japan were area of Ikebukuro and Mejiro where were mainly department stores, high schools and universities, areall of Yurakucho, Ginza and Shinbashi where were department stores, commercial stores and business districts and areall of Akihabara, Kanda and Ochanomizu where were stores of electrical appliance, universities and business districts. All areas contain large-scale station.

Conclusion

1. Men make mainly use of private working and women are mainly of conversation, eating and drinking.
2. Private working is in solo utilization, and conversation, eating and drinking are in other utilizations, are more than two persons.
3. The ratio of the property of user in the cafe is different from location conditions.
4. The number of behavior can be estimated by the ratio of the property of user in the cafe that is not affect on location conditions.
5. The difference of behavior in the café for each location conditions, could be showed by using the ratio of the behavior with each user from locations. In consequence, it can provide with facilities matching user's needs corresponded location conditions because the number of action can be estimated through measuring users in the cafe.
6. It was cleared the ratio of the property of user in the café in Japan and actions that are based on the location conditions, and the use-conditions of a type of private working and type of relaxation and exchange could be cased by location conditions

Individuals with high working memory capacity are less susceptible to mind-wandering: Evidence from cross-modal oddball tasks

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Mind-wandering is a common phenomenon and is likely to happen when people perform some routine task where the consequences thereof are of little to no importance. However, when mind-wandering occurs during an effortful task, such as an attention heavy task, it can have dire consequences and may result in poor performance. Working memory capacity holds some predictive value for executive functions and a vast amount of studies show that individuals with high working memory are more resilient to external distraction than their low-capacity counterparts. By analyzing the correlation between WMC and the standard deviations during three different cross-modal oddball experiments, the current study shows that individuals with low WMC display higher variation in their response times than individuals with high WMC. As all external stimulus is held constant during the task the found difference in variation may be interpreted as susceptibility to mind-wandering. That is, WMC does not only predict resilience towards external stimuli but also towards internal stimuli. Interestingly however, this link is only apparent when the standard sound is held constant as opposed to changing with each occurrence.

Poster session:

Theme 4. Environmental factors: The role of green

Location: Foyer, The A-building

Social representations of pesticides and related risks vs. farming practices in 3 different French geoclimatic contexts

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policy makers and to consumers. In this context, this research deals with the eminently social characteristics of pesticides. Instead of issues related to pesticide use in urban areas, our research deals specifically with pesticide use among farmers in rural areas. Hence, the programme's goals were: 1. To study the social representation of pesticides among farmers in Southern France, Brittany and Martinique; 2. To study the social representation of pesticides among students in agriculture, future users of phytosanitary products; 3. To lay down the groundwork for a communication strategy based on the organisational structure of the social representations of pesticides according to each location. To conduct this research, we used three different protocols on the overall population: (1) a hierarchical evocation questionnaire; (2) a Context Independence Test, and (3) semi-directive interviews. The main results led us to postulate the existence of different social representations of pesticides according to the subjects' location (i.e. Southern France, Brittany or Martinique) and their status (i.e. farmers vs. students in agriculture). Indeed, among farmers in Southern France, the social representation is organised around norms of and protection during pesticide use. This is the case of students in Southern France, whose social representation is also organised around protection and environmental risks. For farmers and students in Martinique, the representation is organised around terms referring to norms of pesticide use, as well as sanitary and environmental risks. Lastly, among farmers in Brittany, the social representation is organised around terms referring to sanitary and environmental risks, similarly to the other samples. The term "stigmatisation" also appeared to structure the social representation of pesticides. Similar structural elements were found among students in Brittany. The results of the lexicometric analysis of the semi-structured interviews confirm the differences in speeches according to the sample design: the discourse of the students focuses on their future professional identity while the farmers' speech is mainly focused on the productivity, and on farming methods' performances. This research confirmed the importance of considering psychosocial aspects when attempting to reduce pesticide use among farmers. Presently, it is necessary to grasp non expert knowledge when it comes to pesticides in order to proceed with effective and pertinent commitment communication strategies. It would hence be interesting for various players (MSA, Chamber of Agriculture, Agricultural Cooperatives, Dephy farm network) to participate in training courses that deal with the structuring aspects of their social representations of pesticides, in turn providing insight into precisely which elements to put forward through communication. Our knowledge of psychosocial processes that underline discourse and actions regarding the reduction of pesticide use will allow for better communication among scientists, policy makers and the public. *This project was supported by the research program "Assessing and reducing environmental risks from plant protection products" funded by the French Ministry

in charge of Ecology and Agriculture.

Mapping urban ecosystem services - A public participatory GIS tools for community building and environmental education

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The natural and built environment presents a geographical space that connects and binds the community, and plays an important role in determining its identity. This geographic space also provides a diversity of ecosystem services (ES). However the connection between the two, community identity and ecosystem services, is not always straightforward. In this research we ask community members to identify ES of their community and their location? Communities create their own maps and participated in identify and locate ES in the natural and built environment near home. This process strengthening the connection between communities and its natural and built environment and can play a crucial role in community building and place-based learning. In this research, we present results and insights derived from an ongoing pedagogical, PPGIS-based process in which the students identify and map ES in their neighborhood and share their maps as part of a community dialogue regarding the meaning and importance of their natural and built environment. During a GIS seminar, teams of graduate students mapped ES in their towns and neighborhoods. The digital maps enriched with qualitative and quantitative surveys regarding the attributes of the ES. ES maps were created on the open platform of Google Maps and were available electronically to all community members, who responded and rated the ES regarding their importance to community members' quality of life, sense of security and their frequency of usage. These ES were classified by the students for their potential use in environmental education instruction and for community building. A visualization and geo-information analysis of the ES is providing a spatial context to the relationship between the community and the environment. Our findings suggest that the community members identified ES which are important to their place identity and for their quality of life. In most cases, frequency of visit of the ES was low. We also found that most of the ES which were identified and the ones which were most important are culture ES. Provisioning ES were much more uncommon and supporting and regulating services were not identified at all

A study on processing cashew nuts risk in the rural community Carrilho-se / Brazil

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This research is part of a study that aims to investigate the risks to which the rural community Carrilho-SE is exposed. We aimed to identify the complaints of Carrilho villagers in relation to health and their work. Initially, a descriptive exploratory research was done to help understand the relationship of the processing of cashew nuts and health problem. For this, the direct observation of processing stages was performed. It was made interviews with two community health workers and eleven elderly to identify the most common

diseases in the village. Also questionnaires were given about the health complaints for 44 residents, most of them female (86.4%). Of this total, 77.5% work in the processing of cashew nuts and only 22.7% have other activities. The complaints were "back pain" (84.1%) and "headache" (75%). In both the participants specified that the pain is maintained even after the work period. Regular use of drugs for the treatment of chronic diseases was exposed for 22 subjects, the most cited illness was High Pressure (31.8%), followed by chronic respiratory diseases (29.5%). It was concluded that the cashew nut processing activity, as it is held in the village Carrilho, may expose the community to an environmental risk, since it seems to be held in an unhealthy and unfit environment for the well-being of its workers on the other hand it is not clear its relation to the reported health affections. The next steps of the research will be a georeference of the health affections including all 200 community families, a risk assessment including all processing of waste, even the smoke in the cashew nut processing activity and the a risk perception research of residents about their work with psychometric measurements and simulations of choices to identify errors of judgment. Key words: risk assessment, environmental risk, health affection

The environmental affordances of an urban park: The relationships between design and older adults' use of green

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Parks are important urban green space facilities which help older adults keep a healthy and active aging life by promoting their physical activities and social interactions. However, such spaces may not be utilized and may not contribute to wellbeing, if they fail to meet the needs of older adults. To investigate the relationships between design and older adults' use of green spaces, we look at the concept of environmental affordance, i.e. the properties of the environment taken with reference to an individual. This study draws on a combination of 23 interviews and behavior mapping of three sites in an urban park in Xi'an, China. The interviews were interpreted to explore the interconnection between park affordance and green space design. Interview data were supplemented by behavior mapping data which focused on the common patterns of older adults' behavior that appear to be related to particular green space design. By developing a functional taxonomy of older visitors' park environment, we identify the design features of the park which are facilitating or constraining park use. Finally, recommendations and guidelines are provided for green space planners and designers to create more livable green spaces for older residents in urban green areas.

The effect of supportive environment in nature-based post stroke fatigue rehabilitation - A randomized controlled prospective trial

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This study examines potential effects of ten weeks nature-based rehabilitation on post stroke fatigue (primary end points); physical and mental function, workability and depression (secondary outcomes) compared to a control group (treatment as usual/TAU). The hypothesis is that post stroke fatigue may benefit from supportive environment and sensory stimulation as offered in the current nature-based rehabilitation trial. Inclusion criteria were stroke survivors, at 50-80 years, independent in ADL, and reporting fatigue at 3 months (sub-acute subgroup) or > one year (chronic sub-group) after the index stroke. The patients were randomized to TAU and TAU + nature-based intervention at Alnarp Rehabilitation Garden, Sweden. The especially designed garden was built for horticulture activities as well as rest and contemplation (doing and being). The ten weeks nature-based rehabilitation was carried out as a group rehabilitation including up to eight individuals at the time. the rehabilitation was supported by a multimodal rehabilitation team. The study was performed as a single blinded two-armed randomized controlled prospective trial (clinical trial.gov. identifier: NCT02435043). A blinded evaluation was performed before the intervention with two follows-ups at eight and 14 months after randomization. Totally, 101 patients enrolled (50 TAU and 51 TAU+ nature-based intervention). A parallel study, a qualitative in-depth interviews with patients, who were randomized to the intervention group, as well as the staff, was also included. This in order to gain a understanding of the role of supportive environment in post stroke fatigue rehabilitation. The study was completed in November 2015 and the trial results will be presented in spring 2016. This trial was a joint work between healthcare experts on stroke and stroke rehabilitation; experts on nature-based rehabilitation and experts on epidemiological studies. Health care authorities in Region Skåne and the Crafoordska research fund, fund the study.

The marine environment, human well-being and environmental valuation

Rebecca Shellock¹, Caroline Hattam¹, Mathew White², Tobias Börger¹

¹Plymouth Marine Laboratory, UK; ²University of Exeter, UK

Evidence suggests that coastal experiences are extremely important for peoples' feelings of well-being but also their physical health. We are only beginning to understand how to assess and value these experiences, but it is vital if we are to persuade policy-makers to protect these vulnerable environments. Environmental valuation (e.g. hedonic pricing and contingent valuation) is commonly promoted as a method for capturing the environment's effects on well-being in support of decision-making. Such approaches assume well-being can be inferred from peoples' choices (actual or hypothetical) and the extent to which their preferences are satisfied. However, evidence indicates a disconnect between what people think will promote their well-being (their preferences) and what actually makes them happier (their experienced well-being). Consequently, a novel method based on experiences, i.e. subjective well-being (SWB) has emerged as an alternative to infer such monetary values. The method compares gains to SWB, from say, living near or visiting the coast, with the amount of income needed to produce similar gains in SWB. Its application, however, has been limited and there are no marine examples. This research will explore how different aspects of the marine environment (e.g. biodiversity, tidal patterns, vistas) contribute to well-being. Changes in selected benefits obtained from the marine environment will be valued by a sample of the public using a SWB approach and Environmental Valuation approach (e.g. contingent valuation). The values obtained will

be compared, and the advantages and disadvantages of each method assessed. Overall, the research aims to significantly advance our understanding of the importance and value of coasts for human health and well-being, and to make steps towards turning this understanding into metrics policy-makers can use to ensure the benefits are available for current and future generations to enjoy.

Poster session:
Theme 5. Energy challenges

Location: Foyer, The A-building

Framing choices towards the active acceptance of local energy hubs - An empirical case study from Switzerland

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Key to the everyday lives in many societies is the provision of energy, mainly in form of electricity and heat. In order to establish more sustainable forms of energy provision, such as decentralized micro-cogeneration, are put forth as promising way to leverage renewable energy production. Such multi-energy hub systems (MEHS) integrate various sorts of renewable sources, small-scale combined heat and power production, and comprise methods for energy storage and active demand side management for balancing intermittence. However, particularly the implementation of MEHS within existing neighbourhood contexts represents a technological innovation with potential for contestation between different social actors going beyond the single energy technologies. With only few actual implementations of MEHS realized, profound knowledge about their social acceptance and citizens' risk perception is lacking. Literature on the acceptance of deploying single renewable technologies is available, yet, local acceptance of the combined technologies by various actors is essential for promoting MEHS and thus contributing effectively contributing to energy transitions in many countries. In addition, new ownership and operating schemes of these hubs are assumed to affect social cohesion and local identity. Accordingly, this study explores the potential acceptability, risk perception and social consequences for three multi-energy hub case studies in Switzerland.

Following a series of qualitative expert interviews, the study draws data from an experimental online survey among Swiss households, aiming to elicit attitudes and framing conditions for the active deployment of energy hub technologies on neighbourhood scale. First, we present results from an experiment that contrasts different implementation frames for MEHS. Secondly, the results from a choice experiment reveal lay-people's preferences for particular characteristics of sustainable energy solutions in their neighbourhood. Our findings enhance the empirical understanding of citizens' active acceptance by further elaborating on the roles of framing (e.g. local vs. global) and the individuals' attachment to places. The perceived benefits and risks illustrate relevant criteria for the implementation of MEHS and have implications for the feasibility and organisation of decentralized energy generation beyond the existing socio-technical paradigm.

Energy-saving in private households: A quantitative survey

Emily Bauske¹, Fabian Küstner¹, Jacqueline Franke¹, Irina Rau¹, Petra Schweizer-Ries¹

¹Forschungsgruppe Umweltpsychologie, Germany

As part of a state-funded project concerning energy-efficient model cities for renewable energies the Forschungsgruppe Umweltpsychologie conducted two surveys in 2012 (N=609) and 2015 (N=431 up to now) in an Eastern German medium sized city (approx. 230,000 inhabitants). The surveys cover three subtopics examining energy-saving behaviours in private households, participative development of a sustainability concept for the city (public relations), and sustainable mobility.

Although covering a wide range of topics the survey's overall main purpose was the examination of various factors influencing sustainable thinking and behaviour underlying the three subtopics. As such we used several theoretical concepts to identify and structure these factors according to Kaufmann-Hayoz (2006), Mosler & Tobias (2007), and Schweizer-Ries (2008). Examined influence factors included: energy consciousness, energy saving attitude, knowledge of and perceptions of relevance of energy behaviours in the household, interest in energy saving counselling and refurbishments, energy poverty, climate justice, perceptions of accountability, acceptance of sustainable change, willingness to participate, place identity, perception of sustainable mobility, and socio-demographic characteristics. Accordingly to the broad objective of the study to consult the city council in order to support energy efficiency the items were chosen from a wide range of established instrument as well as specifically developed. The questionnaires included mainly closed-ended as well as a few open-ended questions. To ensure comparability only a few items were refined after the first survey in 2012. In 2012 as well as in 2015 3,050 paper-pencil-questionnaires were distributed within about four weeks in the same locations in six predominantly socially deprived town quarters. In 2015 60% of the questionnaires were handed out personally on the doorstep; the remaining questionnaires were attached to the doors of the tenants with a non-monetary incentive. Participants could either have the questionnaires picked up within three weeks or mail them free of charge. The data analysis included item and factor analyses. Correlational and causal methods will be used on a theoretical basis and the data of the two surveys will be compared.

The item and factor analyses on the data of 2012 showed a mixed quality of items and scales. While some constructs could be clearly measured (e. g. climate justice, Cronbach's alpha = .71) others could not. Further results are currently prepared and will be shown on the poster. Also a short summary of the underlying theories as well as our methodological approach will be displayed and a summarising conclusion will be drawn.

Literature:

Kaufmann-Hayoz, R. (2006). Human action in context: A model framework for interdisciplinary studies in view of sustainable development. *Umweltpsychologie*, 10(1), 154-177.

Mosler, H.-J. & Tobias, R. (2007). Umweltpsychologische Interventionsformen neu gedacht. *Umweltpsychologie*, 11(1), 35-54.

Schweizer-Ries, P. (2008). Energy Sustainable Communities: Environmental psychological investigations. *Journal of Energy Policy*, 36(11), 4126-4135.

The role of emotions, sources, and arguments in predicting sustainable travel choice: A survey study.

Sara Manca¹, Ferdinando Fornara²

¹Sapienza University of Rome, Italy; ²University of Cagliari, Italy

Introduction.

The field of sustainable mobility has recently received great attention in the European Union agenda, through the promotion and support of actions aimed to an efficient urban development. In the last decades, persuasive communication campaigns have been often used to promote these pro-environmental actions. The Elaboration Likelihood Model (ELM, Petty & Cacioppo, 1981) is one of the most appropriate frameworks for understanding attitude formation and behavioural change. The model suggests two routes of persuasion, i.e. the central route and the peripheral route, hypothesizing that when persuasive messages are relevant for receivers, argument quality will have an influence on attitudes. On the contrary, when persuasive messages have a low personal relevance, the source's expertise will be more relevant in changing attitudes. A further factor influencing the route to persuasion is represented by the emotional state. It has been shown that, during the communication process, the central route is activated by the negative mood while the peripheral route is activated by the positive mood. Objectives. Consistently with the ELM, the main purpose of the study is to test the persuasive role of communication dimensions such as source and arguments on the intention to use sustainable transport. In addition, the model includes the anticipated emotions, which are expected to play a significant role in elaborating the messages through the central or the peripheral route. Method. Participants (N=380) were residents in the broad area of Cagliari (Italy). They filled in a self-report questionnaire including the measures of anticipated emotions (positive and negative), attitudes toward the use of public transport, intention to use public transport, different arguments (economics, security, comfort) trust in different sources (significant others, institutional bodies). Results. The tested SEM (Structural Equation Modeling) model reveals the effect of emotions on the efficacy of sources and arguments, which directly affect attitude polarization. In particular, arguments about security and economic issues showed their significant influence on attitudes, while perceived comfort emerged as linked to security issues. Attitude toward the use of sustainable transport emerged as a significant predictor of the related intention as expected.

Conclusions. Outcomes provide evidence of the goodness of this model in predicting attitude and intention toward a sustainable travel choice. Practical suggestions for future communication campaigns aiming to increase the use of public transport will be addressed. In particular, the focus will be put on the potential impact of the interaction among emotions, arguments, and sources in driving the elaboration of the message

Persuasion game for promoting energy-saving behaviors

Junkichi Sugiura¹

²Keio University, Japan

In this study, we developed an educational program based on the persuasion game (Sugiura, 2003) to encourage energy-saving behaviors in participants' households. Furthermore, this study clarified the effects of playing the roles of the persuader and, consequently, the one being persuaded by others about energy-saving behaviors. A total of 130 Japanese university students participated in this game. A week before the game, the participants learned the theory and techniques of persuasion in the context of social psychology. Initially, the university students distributed one of 48 kinds of behavior cards that could be encouraged to conserve energy in individual households, evaluated the difficulty of practicing these behaviors, and developed their ideas of persuasion about a specific issue for saving energy. In this game, the players assigned either role of the "Persuader" or "Persuaded". The persuader attempts to persuade the other players (the persuaded), and the roles are then reversed. This game has been originally designed in terms of commitment to the content of persuasion and being persuaded. The relation between the persuasion technique used by the players and its effects were analyzed. One of the techniques that were effective in common with some contents of persuasion was the application of the door-in-the-face technique (Cialdini et al., 1975). From the results of the game, it was considered that compromise of the contents of persuasion between the persuader and persuaded functions as a group decision (Lewin, 1947). Furthermore, relationships between the performance of persuasion and consistency with real world experiences were discussed.

Poster session:

Theme 6. Global challenges

Location: Foyer, The A-building

Exploring and understanding environmental risks and risk management

Charlotta Thodelius¹, Jörgen Lundälv²

¹Chalmers University of Technology, Sweden; ²Gothenburg University, Sweden

The aim is to understand the everyday risks for physical disabled individuals and the risk management strategies used by them. We will conduct an inclusive multidisciplinary research built on participation, focusing on the "inside perspective" regarding risks and risk management. By conducting a research circle, where the participations not only are having the role of being interviewed or as a passive part in the research project, we will have a more active participation, by engaging them in every research step. We will use a grounded theory approach in the analysis of the data and will present the result in different way both in the research society but also in the participating disability organizations. Data and method: The study will be conducted in the following steps: 1) Research question: discussing the theme regarding environmental risks and risks management with the participants, constructing the research question together from a joint perspective. 2) Data collection: the participants will collect the data, by documenting places connected to risks indoors and outdoors in their residential area during two days. They will use a disposable camera to document the places/situations connected with "risks". 3) First analysis: we will discuss with the participants about their pictures and used strategies to avoid the risks we will also discuss if it is an internal or external risk. This conversation will be recorded and used in the next analysis stage. This step can be seen as the initial coding. 4) Second analysis: we (the researchers) will in this stage make a focused and axial coding on the data. After that we will summarize the main result and add a theoretical sampling leading to categorizing the result in a larger context but also to find variation in empirical findings and previous theory. 5) Results/discussion: The results of the analysis will be discussed with the participants, and their opinion will be integrated in the discussion chapter. The results will also be displayed in different arenas, there the participants also will be invited to write an article presenting the results. Results: The study will take place from November 2015 to April 2016, and we would like to present the results in the upcoming conference. Keywords: environmental risk, risk management, disability organizations

Understanding climate relevant actions: Contributions from social representations and social practices theories

Susana Batel¹, Paula Castro¹, Patrick Devine-Wright², Caroline Howarth³

¹Lisbon University Institute (ISCTE-IUL), Portugal; ²University of Exeter, UK; ³London School of Economics and Political Sciences, UK

Debates over the value and compatibility of different approaches to understanding and changing environmental-relevant actions proliferated across the social sciences. This work reviews and discusses some of the (socio-)psychological and sociological approaches in

those debates. We will start by critically reviewing the (socio-)psychological perspectives and highlight two of their main shortcomings. First, they are often partial in their focus - on the consumption side of climate relevant actions and, relatedly in changing these actions at the individual level. They tend to assume that individual change equates social change and, with that, fail to contextualise 'anti'-environmental actions in current neo-liberal, capitalist societies. Second, they usually present the mainstream (socio-)psychological approaches, which are ontologically more individualistic and cognitive, as the only existent ones, therefore neglecting other key perspectives within Social Psychology which might actually be (more) compatible with sociological perspectives. We then suggest that Social Representations Theory (SRT), as an ontologically social-psychological approach and a theory of social change, might be reconciled with more sociological approaches, such as Social Practices Theory (SPT), in contrast to the more individualistic (socio-)psychological perspectives. After reviewing the main tenets of SRT, its discrepancies and potential synergies with SPT, we will discuss how they can be articulated to understand different stages of the social change process towards more environmentally sustainable societies. While SPT might be more suitable to understand stability or how some actions become habitual, SRT might be better equipped to understand how those change, or how individuals and groups negotiate new actions with old ones.

Energy-saving in private households: A quantitative survey

Emily Bauske¹, Fabian Küstner¹, Jacqueline Franke¹, Irina Rau¹, Petra Schweizer-Ries¹

¹Otto-von-Guericke-Universität Magdeburg, Germany

Key words: energy-saving; private households; quantitative standardised questionnaire
As part of a state-funded project concerning energy-efficient model cities for renewable energies the Forschungsgruppe Umweltpsychologie conducted two surveys in 2012 (N=609) and 2015 (N=431 up to now) in an Eastern German medium sized city (approx. 230,000 inhabitants). The surveys cover three subtopics examining energy-saving behaviours in private households, participative development of a sustainability concept for the city (public relations), and sustainable mobility. Although covering a wide range of topics the survey's overall main purpose was the examination of various factors influencing sustainable thinking and behaviour underlying the three subtopics. As such we used several theoretical concepts to identify and structure these factors according to Kaufmann-Hayoz (2006), Mosler & Tobias (2007), and Schweizer-Ries (2008). Examined influence factors included: energy consciousness, energy saving attitude, knowledge of and perceptions of relevance of energy behaviours in the household, interest in energy saving counselling and refurbishments, energy poverty, climate justice, perceptions of accountability, acceptance of sustainable change, willingness to participate, place identity, perception of sustainable mobility, and socio-demographic characteristics. Accordingly to the broad objective of the study to consult the city council in order to support energy efficiency the items were chosen from a wide range of established instrument as well as specifically developed. The questionnaires included mainly closed-ended as well as a few open-ended questions. To ensure comparability only a few items were refined after the first survey in 2012. In 2012 as well as in 2015 3,050 paper-pencil-questionnaires were distributed within about four weeks in the same locations in six predominantly socially deprived town quarters. In 2015 60% of the questionnaires were handed out personally on the doorstep; the remaining

questionnaires were attached to the doors of the tenants with a non-monetary incentive. Participants could either have the questionnaires picked up within three weeks or mail them free of charge. The data analysis included item and factor analyses. Correlational and causal methods will be used on a theoretical basis and the data of the two surveys will be compared. The item and factor analyses on the data of 2012 showed a mixed quality of items and scales. While some constructs could be clearly measured (e. g. climate justice, Cronbach's alpha = .71) others could not. Further results are currently prepared and will be shown on the poster. Also a short summary of the underlying theories as well as our methodological approach will be displayed and a summarising conclusion will be drawn. Literature: Kaufmann-Hayoz, R. (2006). Human action in context: A model framework for interdisciplinary studies in view of sustainable development. *Umweltpsychologie*, 10(1), 154-177. Mosler, H.-J. & Tobias, R. (2007). Umweltpsychologische Interventionsformen neu gedacht. *Umweltpsychologie*, 11(1), 35-54. Schweizer-Ries, P. (2008). Energy Sustainable Communities: Environmental psychological investigations. *Journal of Energy Policy*, 36(11), 4126-4135.

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The role of emotions, sources, and arguments in predicting sustainable travel choice: A survey study

Ferdinando Fornara¹, **Sara Manca**²

¹University of Cagliari, Italy; ²Sapienza University of Rome, Italy

Introduction. The field of sustainable mobility has recently received great attention in the European Union agenda, through the promotion and support of actions aimed to an efficient urban development. In the last decades, persuasive communication campaigns have been often used to promote these pro-environmental actions. The Elaboration Likelihood Model (ELM, Petty & Cacioppo, 1981) is one of the most appropriate frameworks for understanding attitude formation and behavioural change. The model suggests two routes of persuasion, i.e. the central route and the peripheral route, hypothesizing that when persuasive messages are relevant for receivers, argument quality will have an influence on attitudes. On the contrary, when persuasive messages have a low personal relevance, the source's expertise will be more relevant in changing attitudes. A further factor influencing the route to persuasion is represented by the emotional state. It has been shown that, during the communication process, the central route is activated by the negative mood while the peripheral route is activated by the positive mood. Objectives. Consistently with the ELM, the main purpose of the study is to test the persuasive role of communication dimensions such as source and arguments on the intention to use sustainable transport. In addition, the model includes the anticipated emotions, which are expected to play a significant role in elaborating the messages through the central or the peripheral route. Method. Participants (N=380) were residents in the broad area of Cagliari (Italy). They filled in a self-report questionnaire including the measures of anticipated emotions (positive and negative), attitudes toward the use of public transport, intention to use public transport, different arguments (economics, security, comfort) trust in different sources (significant others, institutional bodies). Results. The tested SEM (Structural Equation Modeling) model reveals the effect of emotions on the efficacy of sources and arguments, which directly affect attitude polarization. In particular, arguments about security and economic issues showed their significant influence on attitudes, while perceived comfort emerged as linked to security issues. Attitude toward the use of sustainable transport emerged as a significant predictor of the related intention as expected. Conclusions. Outcomes provide evidence of the goodness of this model in predicting attitude and intention toward a sustainable travel choice. Practical suggestions for future communication campaigns aiming to increase the use of public transport will be addressed. In particular, the focus will be put on the potential impact of the interaction among emotions, arguments, and sources in driving the elaboration of the message.

Framing choices towards the active acceptance of local energy hubs - An empirical case study from Switzerland

Roman Seidl¹, **Timo von Wirth**¹

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Key to the everyday lives in many societies is the provision of energy, mainly in form of electricity and heat. In order to establish more sustainable forms of energy provision,

such as decentralized micro-cogeneration, are put forth as promising way to leverage renewable energy production. Such multi-energy hub systems (MEHS) integrate various sorts of renewable sources, small-scale combined heat and power production, and comprise methods for energy storage and active demand side management for balancing intermittence. However, particularly the implementation of MEHS within existing neighbourhood contexts represents a technological innovation with potential for contestation between different social actors going beyond the single energy technologies. With only few actual implementations of MEHS realized, profound knowledge about their social acceptance and citizens' risk perception is lacking. Literature on the acceptance of deploying single renewable technologies is available, yet, local acceptance of the combined technologies by various actors is essential for promoting MEHS and thus contributing effectively contributing to energy transitions in many countries. In addition, new ownership and operating schemes of these hubs are assumed to affect social cohesion and local identity. Accordingly, this study explores the potential acceptability, risk perception and social consequences for three multi-energy hub case studies in Switzerland. Following a series of qualitative expert interviews, the study draws data from an experimental online survey among Swiss households, aiming to elicit attitudes and framing conditions for the active deployment of energy hub technologies on neighbourhood scale. First, we present results from an experiment that contrasts different implementation frames for MEHS. Secondly, the results from a choice experiment reveal lay-people's preferences for particular characteristics of sustainable energy solutions in their neighbourhood. Our findings enhance the empirical understanding of citizens' active acceptance by further elaborating on the roles of framing (e.g. local vs. global) and the individuals' attachment to places. The perceived benefits and risks illustrate relevant criteria for the implementation of MEHS and have implications for the feasibility and organisation of decentralized energy generation beyond the existing socio-technical paradigm.

A study on the environment planning of language development classes in the multicultural family support center

Jae Soon Choi¹

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This paper was studied on the environment planning of language development classes in the Multicultural Family Support Center(MFSC) which has the role of improving health and social integration of multicultural families in South Korea. Since it was founded in 2004, MFSC has been operated and sponsored by the Ministry of Gender Equality and Family(MoGEF). And MFSC mostly support research projects for multicultural families. Recently, as the population of multi-cultural family is increased in South Korea, their language requirement for communication has been also issued. So, the MFSC supports language development projects for multicultural families which are especially very important for children of multicultural families. The purpose of projects is 1) checking Korean language level of multicultural children and 2) providing education program to improve their language skills for multicultural children. Language development project should be well-prepared because language learning-delay of the multicultural children generates poor school performance and difficulties in relationship of their friends. Well-planned language program can let students achieve more performances in addition to

just learning language itself. LSC(Language development classroom) is service space for language level test, education and parent counseling of the multicultural family and their children. The physical environment of the classroom gives an impact on thinking, emotions and achievements to promote learning for both teacher and learner. Therefore, the physical environment of the classroom needs to be carefully provided and structured to learners. The physical factors of interior environment; space scale, spatial composition, material, light, noise, ventilation, temperature, humidity and color have significant meanings for concentration of learning. In this paper, it was investigated on the interior environment of language development classroom in MFSC. The basic data and direction of suitable environment for language development classroom was provided. This paper is consisted of a literature review, survey data collection, included with visiting observation, and its analysis. We surveyed 50 language development instructors working for 47 MFSCs that control 16 cities and provinces and also visited three language development classrooms of Seoul, Incheon and Gwangju cities for observation survey. The result showed that even each center has its regulation but it's not enough to appropriate environmental standards for the classroom. Every MFSC have the language development classes but most centers have only one classroom which has wide variation in size from 6 m² to 65.6 m². 17 classrooms (32%) have problem in light and ventilation. 35 classrooms (92%) have problem with noise. Most of all, there are no supported spaces: waiting room, parents counseling space, management space of teaching material or textbook and different classrooms for children's language level. Also there was no one-way mirror for parents to observe their children's learning.

Place attachment & the refugee crises: New approaches to mitigating loss and isolation

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Key Words: Refugee, place, attachment
ABSTRACT: A sense of belonging and attachment is integral to any healthy and vibrant community (Tucker Cross, 2004; Fullilove, 1996; Gehl et al, 2006.) The rise of displaced people and the global migrant crises has put community health in peril (Fullilove, 1996.) Global conflict has incurred a surge of migrants and has displaced people in numbers not seen since World War II, with one in every 122 people on the globe now categorized as displaced, refugee, or seeking asylum (United Nations High Commissioner on Refugees, 2015.) As such, European countries have seen an influx of persons seeking asylum, but have also witnessed the destabilizing of their own communities, especially in light of the recent attacks on Paris, France and subsequent terror threats in Belgium. Sentiments of alienation and mutual resistance of assimilation in new, foreign communities have been noted to exacerbate refugee's sense of isolation where there is little to no connectivity to the local culture (Temple-Raston, 2015; Newton-Small, 2015; Sorgen, 2015), and where the sense of familiarity, attachment, and identity to and with a place has been ruptured (Fullilove, 1996.) Hence, the question of providing attachment and place-making strategies to these increasingly large migrant communities is of utmost importance. How can countries that are attractive to asylum-seekers maintain their sense of sovereignty and stability while simultaneously encouraging participation for those refugees they welcome? Is it possible to support place-making for those persons whose own sense of place is destroyed or lost? Are there successful existing models that can be exported to other communities? Most importantly, how can place attachment to a new

community be made attractive to refugees, who may be unwilling or unable to assimilate? There appears to be no shortage of information confirming that an integration problem exists for refugees in their adoptive country; however, what is lacking are proven, viable solutions to adequately integrate refugees and displaced persons and increase their place attachment to their new community (Sorgen, 2015.) We propose a long-term, more in-depth analysis of these emerging communities and trends, and recommend further, in-depth and on-site research that can better articulate positive place attachment approaches for future socially- and culturally sensitive migrant communities

Exploring landscape perception among newly arrived refugees in the context of Alnarp Rehabilitation Garden

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Exploring landscape perception among newly arrived refugees in the context of Alnarp Rehabilitation Garden Pálsdóttir, A.M., Shahrad, A., & Zachrison, M. Swedish University of Agricultural Sciences, Department of Work Science, Business Economics and Environmental Psychology. Box 88; SE-230 53 Alnarp, Sweden Key words: landscape, horticultural therapy, mental health Introduction To provide a sustainable multicultural society it is essential to understand how individuals perceive their environments and how they use it. By consideration of recent global refugee crisis, there is a big demand of understanding of landscape preferences and perception and the use pattern of green spaces of these groups of population. At the same time refugees are facing stressful experiences during the pre-migration, migration and post-migration period which might cause physical and mental health problem such as post trauma stress diseases. Therefore, health-related interventions could be taken into consideration in terms of treatment and prevention. Aim The aim of this pilot study is to investigate how newly arrived refugees perceived and use Alnarp Rehabilitation Garden. Further it tries to understand if nature based rehabilitation can contribute for socially and mentally well-being. Method This one year pilot study is conducted as a phenomenological approach to evaluate a 10-week nature-Based-Rehabilitation program at Alnarp Rehabilitation garden with clients who are newly arrived refugees in Sweden. The participants were selected for this study by the Swedish Public Employment Service in county of Scania that is responsible for 2 years integration program. The aim of this intervention is enhance a salutogenic process to strengthen individual's power with support from natural environment. The program is carried out in group of five to ten individuals and is managed by an occupational therapist, a physiotherapist and two horticulturists which is scheduled for three days per week and each day lasting for four hours. A qualitative research design is employed including semi-structured face-to-face interviews as data collection method. To analyze the data Interpretative phenomenological analysis method will be used. The project will run until the March 2016 and is approved by regional ethic committee in Lund.

Poster session: Theme 7. Urban challenges

Location: Foyer, The A-building

Maintaining inhabitants' mind to preserve an eave which forms Japanese traditional colonnade at Takada

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Key words:

1.colonnade 2.ownership 3.changing process

Introduction

The town of Takada is famous for its heavy snow. The town house is built along the street. In front of the house, there is a deep eave which forms a protective colonnade during winter. The eave is within the private land. Inhabitants build it at their own will. About 14km traditional colonnade remains. The continuity of these deep eaves from house to house is one of the remarkable features of the townscape.

Oobjective

We conducted the survey to grasp the relation among a room layout, scale of eaves and settings on colonnade form a viewpoint of changing process.

Methodological approach

In Takada, there are about 2,000 town houses which were assumed to have been constructed before 1945. Those are distributed throughout 20 neighborhoods. We visited the sites and measured the scale of eaves and asked inhabitants the construction period. We investigated the plans, age and contours of 158 houses. There are 87 houses which had their eaves refurbished by subsidy program of the local authority. We chose 19 houses.

Main findings

1. A room which occupied the street front was earthen-floor and was open to the colonnade. Earthen-floor passage from the front to the backyard continued. Neighboring people came to sip tea at a living room. The lifespan of the eave was shorter than that of the dwelling house. When inhabitants repaired the eave, they put it on the neighboring one. The eave height had stayed low compared with the ridge height during 20th century. Inhabitants put a bench under the eave to see the portable shrine passing at the festival. They sit on the bench to enjoy the evening cool at summer evening.
2. Increase in motorized traffic in 1960' made the colonnade as a sidewalks. Inhabitants' own things, such as a bench and a bicycle, are cleared out of the colonnade. The main role of colonnade became protecting pupils on their way to school. Widening of road took place at the city center in 1980. 1.4km of colonnade was rebuilt into public arcade. The boundary between the arcade and buildings became thin wall. Private things are not allowed to be put on the arcade.
3. In 2003, the local authority began subsidy program to refurbish eaves for inhabitants who concluded an agreement to maintain colonnade at their neighboring area. In all cases, disrupted colonnade was repaired. In a neighborhood a craftsman of a wood processing plant made a bench under his refurbished eave. Twelve benches are put along the colonnade

for the elderly passerby now.

Conclusions:

1. Before 20th century, combination of house plan and colonnade had formed. This house plan continued to be built up until 1960'.
2. Meaning of colonnade changed after 1960'.
3. Agreement at each neighborhood is effective for private eaves to maintain

Physiological effects of art museums on well-being and emotions

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Several studies focused on the attention on natural characteristics inside built settings, and their ability to promote restoration: for example, small green areas in the city can supply for the needs of people's restoration (van den Berg, Hartig, & Staats, 2007). This study explores if also a totally built and artificial environment can have a restorative potential. An interesting built setting that attracts many people for its peculiarity and specificity are art museums. Are art museums settings capable to promote the recovery of psychological well-being, identified through stress reduction, increase in positive emotions, and renewal of cognitive resources? Moreover, are there any differences between different art style museums? Only few works dealt with the experience of art museums in relation to stress, psychological restoration and well-being. Clow and Fredhoi (2006) found a decrease in self-reported stress and the level of cortisol for a group of participants before and after the visit of an art gallery. Mastandrea et. al (2009) found that the level of self report anxiety experienced by a group of participants during a visit of a museum of modern art was higher compared to another group of participants who visited a museum of ancient art. A previous study (Mastandrea & Maricchiolo, 2014), using a virtual slide artwork presentation (figurative vs. abstract pictures vs. control – urban images), found positive effects of art experience (figurative more than abstract) on physiological, affective, cognitive, and behavioural measures. We replicated the study in a real museum setting: the National Gallery of Modern Art located in Rome, which hosts two art collections, figurative and modern art. Physiological features (blood pressure and heart rate), attentional (Stroop-test) and self-report emotional indicators were measured before and after the visit to the two different art styles collections (experimental conditions) and to an area of the museum offices (control condition). Seventy-three participants (University students with no training in the arts, mean age 22.5) were randomly assigned to 3 conditions, according to the art style of the museum halls to be visited (24-figurative art, 24-modern art and 25-control condition in the museum offices). Preliminary analyses have been carried out on the difference of the systolic blood pressure before and after the visit (SBP is an useful index to detect changes on the emotional arousal). Considering a difference of 10 mmHg a considerable variation of the SBP, we registered such a variation in the 48% of the participants in the figurative art condition, in the 33% in the modern art condition, and only in the 25% in the control condition. These findings suggest that a restorative effect of the art museum visit, with a greater effect of the figurative art experience, compared to the modern art and control conditions. Key words: Restoration, Art museum, Blood pressure

Technology and innovation in adapting architectonic tradition aiming for a sustainable future in the Middle East

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This is part of PhD research questions the pervasion of the Arabic Traditional Architecture (ATA) as visual and tangible architectonic features. The study considers the adaptation of traditional features to contemporary context using technology and innovation as a vehicle. We achieve that through the investigation of indoor space and the psychological and environmental qualities, focusing on building performance. These elements are recognized through a criteria to maintain sustainable environment without compromising the capability of future generation. The high growth of population in the Middle East (ME) since the 1970s has resulted in a huge demand in housing and infrastructure. This huge demand of dwellings didn't allow local builders and architects to respond. The shortage in responding builders was, therefore, filled by international construction expertise. This expertise, despite its technological capabilities, failed to respond to the physical and psychological well-being of local users, generating a long-lasting effect. The research will try to justify this hypothesis and identify ways to overcome it. In order to recognize the authenticity of the integration between environmental practices and cultural perceptual aspects, the study will focus on certain building-spaces as a unit of analysis in the ME. Spaces will be considered as a living thing, and humans are the managed system where they go in and out. The research will explore and investigate the influence of the architectural trend on building performance and occupants behavior. This parameter will be measured through the traditional features and modern techniques and their articulation with technology and innovation. An initial part of the methodology, will be presented through a conducted survey (qualitative and quantitative), to confirm the study methodology process.

The role of place attachment among pilgrims in Jerusalem

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It is well known that emotional bonds of place attachment are beneficial for the individual as they may yield a stronger identity, stronger connection to history and more life satisfaction. Although this is well-established, it is also evident that the causes of these bonds differ for different places and thus religious place attachment does not necessarily have the same origins as residential place attachment. However, is a pilgrimage religious leisure or rather a homecoming to a distant home? In what light should their emotional bonds be evaluated? The poster will present a study that has investigated whether Catholic and Evangelical pilgrims form different types of emotional bonds to Via Dolorosa, a place that is important to both groups as it commemorates Jesus' death and resurrection.

The objectives were (1) to investigate whether Catholic pilgrims form stronger bonds of place attachment and (2) to determine if certain predictors for place attachment correlate more strongly with certain identities such as denomination, religiosity and zionism. The study investigates to what extent current place attachment theory is enough to understand these emotional bonds, or whether current pilgrim research adds insight into the process. The empirical work was quantitative in nature and questionnaires were distributed to

pilgrims in Jerusalem in November 2015 (N=126). Correlations and analysis of variance were used to interpret the results.

According to the study, there is no significant difference in strength of place attachment between the groups. However, pilgrims with a Catholic identity emphasize the visual appearance of the place, whereas Evangelicals form stronger bonds when they sense that the place confirms their religious beliefs. Thereby it seems like people identifying as Catholics are more sensitive to the spatiality of the place.

The study also confirms that religiosity predicts place attachment, and that zionism correlate positively with place attachment, in contrast to what previous research suggests. Thereby, the study confirms certain parts of place attachment theory as valid for pilgrims, but also challenges current theory and adds new implications for pilgrim research.

Two effects of this are as place attachment is said to influence identity, attachment to places considered holy is crucial in order to understand how a religious person's identity is shaped. Secondly, the vast majority of Jerusalem's visitors are pilgrims, and the ministry of tourism works hard to convey an image of the city as eternal. The city is remodeled in accordance to this, and certain tours are funded in order to get the message across internationally.

By understanding what actually makes pilgrims relate to the place, these efforts can be evaluated. The study also serves as a basis for further studies on spatial rights and power. In conclusion, the proposed poster would present findings on how religious identities shape place attachment, which is essential in order to correctly evaluate holy places.

What physical and social interventions in open space nurture users place attachment?

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It is often stated that urban and rural Japanese communities have lost their 'three spaces' for children to play. In this context, 'space' is written in Japanese kanji using 'ma', which generally refers to a specific space and time (K. Mizukami, 2006; Y. Maki, 2013, H. Hiraiwa, 2015); these three spaces include 'time' (JiNkan[ma]), 'space' (KuNkan [ma]), and 'friends' (NakaNma). This problem is rooted largely in the popularisation of afterschool preparatory schools and significantly decreased security among children. Consequently, communities are no longer considered to be safe play spaces by children or their parents. This limited playtime among children in communities leads to disinterest in their local surroundings, and decreased 'place attachment'. Many prior studies concerning environmental psychology have revealed that place attachment increases according to the amount of time an individual has lived in a location (R. Ahlbrandt, 1984; J. Ksarda & M. Janowitz, 1974). Moreover, greater attachment to a location results in increased sensitivity to community issues, and the promotion of more environmentally responsible behaviours (L. Manzo & D. Perkins, 2006; T. Kyle, J. Mowen, & M. Tarrant, 2004). Conversely, decreased playtime among children in Japanese communities could result in their deterioration due to abandonment or disinterest in them by subsequent generations. This situation contributes to vulnerability and depression of local communities' resilience at the time of large-scale disaster and its future sustainability. However, it remains an unsettled question what physical or social interventions practically nurture people's place attachment. This study aims to figure out physical and spatial environmental conditions, which enhance the users' place attachment by focusing on a physical mechanism that extends a sojourn time and

positive emotional effusion of the users. In this study, an open space in a newly-developed residential area in Nagakute City, Aichi Prefecture in Japan, one of the most growing cities in population growth rate and Kochi Prefecture, one of the most depopulating and aging local municipalities have selected as the case study areas of this study.

This study is composed by two different experimental conditions. For the first case study area, a vacant ground surrounded by a new residential area in Nagakute City has selected. Currently this space has been under managed by Nagakute City Office as an experimental community garden project site from 2015. The second area is Asakura community in Kochi Prefecture. In the first case study site, inclusive design process is applied to draw out an ideal ground layout and equipment through a design workshop in this area. In the second case study area, several different types of community activity events have tested for evaluating an impact for forming the participants' place attachment. From these experiments, this study demonstrates effectual physical and social conditions of open space to nurture users place attachment.

Development of environmental assessment items for the "quality of rest" provided at expressway rest areas in Japan

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Introduction

Expressway rest areas in Japan are public traffic facilities and, therefore currently, priority is placed on meeting technical standards and quantitative improvement rather than the environmental quality of the rest area. Rest areas in the future should not be just a place to take a break during travel but where people of all ages and nationalities can enjoy and feel comfortable at. Assessments for improving the environmental quality of public facilities like airports are already underway, so bettering the quality of rest at expressway rest areas is an issue we must tackle. The world's only assessment index for rest-area environment, the EURO TEST, is currently used to assess rest areas in Europe. We have conducted interviews with the organization that compiled the EURO TEST to confirm the necessity and consistency of each of our assessment items.

Purpose

The purpose of assessing rest areas, using the compiled assessment items, is to clarify the relation between the user's hours spent at a rest area, or average stay-time, which is thought to represent the quality of rest at the rest area, and the scores given to rest areas by the assessment.

Method

In order to improve the quality of rest, we have compiled 111 environmental assessment items which satisfy the concept of QOL and the basic guidelines of the WHO, studying literatures released by Japanese science societies. The 111 assessment items were grouped into the following 7 categories.

1. Safety and security
2. Hygiene and measures to support cleanliness
3. Convenience and comfort
4. Installations offer a pleasant stay

5. Easy to use
6. Planning and operation (Differences between the plan and actual operation)
7. Creating a sustainable environment

We have evaluated 65 rest areas in Japan to see how each of the 111 assessment items in the categories is implemented. Each item was graded from "no compliance: 0" to "degree of compliance: graded from 1 to 5," and the scores were totaled per category. The average stay-time is the average of data taken of some 50 rest areas in another study.

Results and Conclusion

The survey showed that of the assessment items belonging to "Category 5: Easy to use," we found that items for diverse users, such as being children-friendly, scored low, indicating that these items need to be improved. The relations between the average stay-time and rest-area assessment scores showed that categories that contribute to lengthening the stay-time were as follows, in the following order: Category 5: Easy to use, Category 3: Convenience and comfort, Category 7: Creating a sustainable environment.

Keywords:

Expressway, Expressway rest areas, Environmental assessment, Global standards

Sustainable urban agriculture: the case of the cooperative "Co.r.ag.gio." of Rome in the GLAMURS EU-FP7 project

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In urban contexts, cultivated agricultural land increases permeability, improves positive atmospheric exchanges, protects the complexity of agricultural ecosystem and helps general resilience to urban climate changes. We present the Italian case study of the EU-FP7 funded project called "GLAMURS - Green Lifestyles, alternative models and upscaling regional sustainability" (www.glamurs.eu). GLAMURS investigates transitions to sustainable lifestyles and green economies, through an interdisciplinary approach in seven different regions of Europe. In the Lazio Region of Italy, the young agricultural cooperative "Co.R.Ag.Gio" ("Courage"), COoperativa Romana AGRicoltura GIOvani (Roman Agricultural Cooperative of Youth), encourages citizens and institutions to conserve environmental heritages abandoned in the Roman agricultural outskirts. CoRAGio was founded in 2011, as a free association of young people (farmers, agronomists, chefs, architects, day workers, industrial worker, anthropologists, educators). It promotes an original work perspective in this economic crisis, enhancing passions and experiences in agricultural and horticultural activities, teaching and training (educational farms, courses in sustainable agriculture), promoting sustainable food (spreading good practices, organic and 0-km production), and crafts (e.g. earthen oven). It strives to make public land available to all citizens, and preserve agricultural soils from the expansion of the building sector. It promotes an agricultural urban model that is healthy, organic, multi-functional, replacing the degraded concrete buildings with a proposal of a new way of living, based on ecological concerns, respecting labour dignity, and social meanings of agriculture. We report some synthetic results of a system analysis and social network analysis of the case study in the territory, which show how promoting sustainable urban agriculture has positive implications in terms of green

lifestyle, economic and social values, ecological services, and sustainable food production, and improvement of life quality. The results will be also discuss in terms of sustainable use of urban spaces, soil protection, earth resources and biodiversity conservation.

A case study of healthy community, focusing on the ecological viewpoint

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The health problems which was medical challenge now becomes social challenges. Realization of healthy life is being emphasized, within the living environment which is the community of human life. Multi-disciplinary approach is needed not only for improving the environmental quality, but also for mechanism forming community and meanings. In other words, looking into social and cultural relations within the community and searching for sustainable mechanisms is the most important thing to do. The purpose of this study is to analyze the mechanism of healthy community focusing on 'ecological' and 'sustainable' viewpoint. We could define the concept of healthy community and its components by a theoretical research process. And also assumed that is derived elements applied to the mechanism of healthy community on actual cases. The results of this study are as follows : 1) The sustainable healthy community can be conceptualized as a ecological community. 2) The ecological community has four elements: Autonomous human being, Environmental support, Social relationship and Ideological values. 3) As a cyclical system, the mechanism of ecological community has an organic and various properties. 4) The ecological communities are formed by various voluntary participation of inhabitants during the long period.

The study on characteristic and improvement of the community ordinance in Seoul

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Modern people are becoming increasingly accustomed to living alone. Their life is psychological problems such as loneliness and reclusion. So, the "community" is important in living environment. As a result, Seoul Metropolitan Government has progressed in a "Community development project" in order to form a community living environment. In order to support this project, the Seoul Metropolitan Government made the ordinance. However, the Ordinance of seoul has not regional characteristic and does not reflect the characteristics of the residents and region. Therefore, the purpose on this study is to analyzes the problems of the ordinance and suggest the improvement of the ordinance. To this end, we were analyzed 25 ordinances of autonomous regions in Seoul. In order to suggest the improvements, we were analyzed the good community ordinances; 'Guangju', 'Jinan', 'Suwon' and 'Anshan' The results are as follows. First, 22 autonomous regions except to EunpyeongGu, MapoGu and GangdongGu have

the same name of ordinance. It is difficult to reflect the characteristic of region even the name of ordinance. 24 autonomous regions ordinance except EunpyeongGu is similar to the ordinance of Seoul Metropolitan Government in content and composition. And 24 autonomous regions ordinance is lacking a unique operating system and composition systems for each town. Second, the ordinance of community is explained about residents. But the explanations are not concretely and clearly. The ordinance of community have explained insufficiently about the concept of the residents and the role of residents. The ordinance of community have explained insufficiently the legal basis. The ordinance of community have not explained business type and composition of projects subject. Third, a ordinance of good community (Guangjo, Jinan, Suwon and Ansan) is suggested the vision and direction of community in region, is explained the primary ideology and villages of creating community in region. The ordinance of good community is explained about residents concretely and clearly. The ordinance of good community have explained sufficiently about the concept of the residents and the role of residents on the legal basis. And the ordinance of good community is suggested training of the residents order to increase the participation of the residents. The ordinance of good community is suggested 'Town staff' as a third-sector in order to build governance between residents and administration. Therefore, the ordinance of community in Seoul should be improved such as the suggestion the present town vision, the role of the present residents and to build governance between residents and administration.

2016 Olympics in Brazil: Urban legacy for whom?

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The aim of this research is to investigate 2016 Olympics legacy to the city of Rio de Janeiro, in Brazil, taking into account perceptions of people involved in the projects and those who live in areas of intervention. Mega events create opportunities to revitalize degraded urban areas, so their legacy can contribute to the development of the city and to increase people's quality of life. The problem begins when urban regeneration projects take into account only a percentage of population, letting low-income users apart from development. In Brazil, where 53.9 million of people are classified as poor; the low-income classes cannot be forgotten when urban legacy of mega events is planned. There are 6.476.631 residents in Rio de Janeiro, and approximately 2.000.000 people are low incomes classes and live in 'favelas' (slum). In this context, this study focuses in the following objectives: revision of projects of urban renovation as Olympic Park and Port area, regarding issues related to sustainability, environmental preservation, and legacy for local people; and identification of factors that should be considered in mega events in order to guarantee legacy for low-income classes. This study aims to answer the following research question: Which is the urban legacy of 2016 Olympics for the population of Rio de Janeiro?. A case study approach was adopted having two sites of investigation in Rio de Janeiro: Olympic Park and Port area. The methodology applied to data collection comprises: technical visits to Olympic Park and Port area accompanied by their project leaders; interviews with those responsible for the projects of Olympic Park and Port area.; technical visits to 'Morro da Providência' and 'Vila do Autódromo', which are communities nearby the projects; and interviews with leaders of

those communities.

The main results indicated that the projects of Olympic Park and Port area have completely opposed approaches. The Olympic Park project is directed to attend, after the event, a high-income class as the area is going to become a high residential district. According with the interviews realized with City Council officers, the social issue regarding low-income classes' residential problems was not considered. A low-income community next to the Park has been removed by force, but the City Council did not explain why this has happen. On the other side, the officers involved in the Port area project have completely different views: the social issue is one of the main approaches taken into account by them, and the project takes into account the legacy that should be left for local communities. This study indicates that there is no legacy group studying what is going to happen with the infrastructure left by the mega event. This subject is left to Council Officers and, in Olympic Park mainly, to private sector. As the private sector is interested in profits, low income classes issues is not a priority. In conclusion, the research identify the factors that should be considered in future mega events in order to guarantee legacy for low-income classes in order to coordinate local government projects.

It's getting dense out there. Sociocultural sustainability of densification in suburban Oslo **Agnieszka Skorupka¹, Rikke Stenbro¹, Aga Skorupka¹, Erik Bjørnson Lunke¹, Kirsten Østensjø Kørte¹, Hege Hellvik¹**

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Seen in a Scandinavian perspective Oslo is claimed to be growing faster than any other city. With the annual population growth of ca 2%, and expected growth of nearly 30% by 2030. The urban authorities have taken active measures to manage this growth and have amongst others launched a new municipal plan.

This paper delivers both a theoretical and empirical take on social sustainability of the densification policies and their outcomes. We look across scales starting with a critical reflection on the strategies envisaged and developed on a political and administrative level in order to cope with the pressure of growth and at which areas are pointed out as suitable for regeneration and densification. This article will investigate whether cultural and social sustainability is a parameter in these strategies by delivering a critical analysis of what the proposed policies and suburban geographies of densification can mean for spatial (in-) justice and spatial segregation.

To provide an empirical perspective we zoom in on one of the preexisting suburban residential neighborhoods that has been pointed out in the new municipal plan as an area suitable for re-development and densification and with use of survey data investigate what the pressure of growth means for the past and present inhabitants and the way in which their cultural, architectural and social histories are dealt with by the city authorities. We conclude the paper with more generalizable implications for other suburban neighborhoods in Oslo

Leap out! The potential benefits of bringing knowledge work outdoors is worth exploring for a more sustainable working life and competitive organisations

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In this presentation we argue that the possibility of bringing knowledge work outdoors is in need of exploration, as well as evaluation. We suggest that knowledge work, which by tradition is being performed indoors, at offices and in meeting-rooms, may very well benefit from (at some points/sometimes) being conducted outdoors, in the nearby surroundings of the workplace. We base this assumption upon research within various fields, such as Environmental Psychology, Outdoor Pedagogy, Cognitive Psychology, Physiology, and Creativity Research, to mention some of the most relevant, which, from different angles, points towards potentially positive effects of swapping conventional indoor sitting, with a variety of outdoor knowledge work activities.

Spending time outdoors, in nearby nature, is linked to numerous positive effects upon health, wellbeing, and learning. Increasing physical activity is also important, as our sedentary life-style is one of the biggest health-challenges of our time. Burnout and other stress-related conditions represent the most common causes for long-time sick leave, both in Sweden and internationally. These conditions often entail cognitive problems, such as diminished concentration and fatigue. Meanwhile, a still growing part of work today contain mentally demanding work-tasks, at offices, instead of exploring how the outdoor surroundings could be used in order to take advantage of the potentially restoring effects on our cognitive functioning and general well-being, of doing so. Recent research also points towards that low-impact physical activity, such as walking, increases our divergent/creative thinking, and even more so when the walking is being performed outdoors.

In order to meet the challenges of the stress-related ill health and the high demands on individual workers, as well as common workplace learning, innovation and development, we suggest investigation into new, more sustainable, ways of working, by altering the indoor office work with working outdoors. Not in order to replace, but rather as a complement to the indoor work-spaces.

Our presentation is based on a literature review, which forms the basis of our forthcoming research project of outdoors knowledge work and its health effects. Our aim is to raise the issue of moving knowledge work outdoors and the potential effects on work performance and work life sustainability. Our wish is to initiate a network for researchers in the field of outdoors knowledge work.

Disconnection from nature: Its role in undermining commitment to sustainable use and development of spaces

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Introduction:

The recent climate change accord reached in Paris highlighted the global importance of sustainability. Increasingly, sustainability will need to be a prime consideration in the design and use of the spaces we use. Yet at a grassroots level, commitment to sustainability is variable, and this plays out in many governments' hesitation to commit to deep cuts

in greenhouse gas emissions. A key factor in this lack of wholehearted community-level commitment to sustainability may be the disconnection from nature experienced by many citizens. This presentation draws on two studies undertaken in Australia showing the importance of the early nature-based experiences at home, work and leisure in influencing pro-environmental attitudes and behaviour.

Methodological approach:

Both studies used qualitative approaches to explore the underpinnings of the attitudes and behaviours of the people who are at the cutting edge of pro-environmental behaviour. The first study, conducted in the mid-1990s, involved face-to-face interviews with 30 CEOs of companies independently assessed as 'environmentally preferred'. The second study, conducted over the past eighteen months, involved interviews with people deemed to be culturally influential individuals whose public commentary and actions suggest both awareness of human-environment interconnectedness and effort to encourage this awareness. In both studies, data was analysed thematically to identify key antecedents of and motivations for the relevant pro-environmental behaviours, with the first study producing a typology of 'green' companies based on the findings.

Main findings:

Both studies identified motivations underpinning the individual and/or corporate behaviour being studied. A key finding of both studies was that, among those people who, as adults, lead action on sustainability (either through the development of 'green' businesses or through being community leaders and advocates for sustainability and a flourishing natural world), immersive experiences in nature during their childhood or youth were found to be pivotal. Despite this, the second study has (worryingly) confirmed perceptions of a growing separation between humans and the natural world. While participants in the first study recognised the need for change in underlying environmental values and ethics, as well as in practical and structural frameworks within which business operates, the second study identified, in much more stark terms, the need for a complete transitioning of the cultural paradigm towards 'a reawakening of that sense of being part of nature' and a new understanding 'of humans as ecologically embedded'. Taken together, these two studies suggest that only when this reconnection is established will we see sustainable behaviours which respect "the processes of life which underpin our existence".

Conclusions:

Unless the growing sense of disconnection between humans and the natural environment (confirmed in the second study) is reversed, it seems likely that governments' commitment to greenhouse gas reduction (as well as the addressing of other challenges to sustainability) will remain limited. Reconnecting people with nature, therefore, moves beyond being something which would be 'nice to achieve' to being something which is crucial for the sustainability of the planet.

A sustainable and ecological project as a collaboration between inhabitants and university students transplanting trees and plants to create new pocket parks

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A sustainable and ecological project has started to develop an actual town planning scheme for constructing pocket parks in Sanjo City, Niigata Prefecture, Japan in 2007. This is our educational program and we made up innovative frameworks such as featured structures through this collaboration. This project takes into account ecological and sustainable aspects for designing and constructing new pocket parks in the center of Sanjo city with only trees and plants transplanted from SATOYAMA. SATOYAMA is the Japanese name for the small hills preserved by the inhabitants. People collected the nuts, fruits, and mushrooms from the SATOYAMA as seasonal foods. Also they used the trees and grasses from them as the materials for their houses. However, now they do not utilize nor maintain the SATOYAMA.

Methods and Concept for the project

This project is not an abstract one but forms an actual part of various town planning projects to reconstruct and form new relationships between the inhabitants of the town. Through this project, inhabitants are reevaluating the SATOYAMA and building new relationships. We have successfully built seven pocket parks. The object of this scheme is for the inhabitants to preserve their own environment and landscape by designing and building through collaboration in ecological ways.

The collaboration between the inhabitants and the students make this a unique and sustainable town planning project in Japan. Through transplanting the trees and plants from SATOYAMA, we have reestablished the relationship of the inhabitants with the SATOYAMA. Through this project people can recognize the value and the diversity of the environment and have a good opportunity to maintain both the new pocket parks and the SATOYAMA.

Main Finding

Transplanting and collaboration are the key methods used in this project. Transplanting means reusing the trees and plants growing on the SATOYAMA. Each one is not the same size, and they have curved, ugly shapes. However, they carry the local DNA from these areas. We do not use any plants from other areas or countries. Collaboration is a new method to rebuild the relations between aged people and the younger generation. Through this collaboration university students have been given a role in developing the activities and bring the inhabitants closer. They have different values regarding the environment, activities and their daily lives. However, our methods are those that most of the inhabitants could easily accept and could share with different generations. This will help the inhabitants to preserve the traditional and natural landscape of Sanjo City and to make this project sustainable.

Conclusion

This transplantation helps the local trees and grasses growing in the typical environment to survive for a long time. They connect the local mode of life, the local culture and inhabitants' relationships. In this project, inhabitants get the opportunity to be able to transfer their knowledge to the younger generations. This is a new method to rebuild the relationship between the environment and inhabitants in an ecological and sustainable way.

A study on the winter travel problems experienced by blind people in a snowy region

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Introduction:

It is well known that blind people use many sensory cues to cognize their surroundings. However, in winter, they often have hard time as physical environment can be quite different in many ways because of snow. For example, newly fallen snow absorbs and reduces the intensity of traffic noise or other usable sound, while slush or wet snow amplifies them. In spite of the difficulty and importance of daily winter travel, there is a lack of research pertaining to specific wintry problems with blind people.

Objectives:

In this exploratory research we sought to investigate how blind people travel daily during winter. Key questions were: 1) Does the travel frequency change in winter? 2) What are the specific wintry problems? 3) Does the frequency of disorientation in streets increase in winter than snow-free season?

Methods:

We interviewed 22 blind people in Sapporo City, Japan. To compare the result with sighted people, we also conducted a questionnaire survey (only on question 1 and 2 above) to 103 students and 35 adults.

Result and Discussions:

Most blind people go out "almost every day (82%)", "two to three times a week (14%)", and "once or twice in a week (4%)." Although some blind people travel less frequently in winter than in snow-free season due to "the bad road conditions", but 70% respondents don't change the travel frequency. This result revealed that winter doesn't particularly reduce the travel frequency of most blind people, whereas more than half of the sighted people travel less frequently in winter, chiefly for the reason of "the cold." However, the result shows that a considerable number of blind people find it hard to travel in winter because snow creates new physical environment that can obscure sensory information. Useful tactile and auditory landmarks or cues are covered, changed, or lost. Uneven and icy surface has been identified by blind people as one of the most difficult winter conditions. An important feature of wintry problem is that these conditions vary from day to day, within the same day, and from block to block and frequently within the same block, and moreover these variable conditions give blind people secondary problems, such as losing balance, bearing, and so on. On the other hand, the cold, limit in transportation (snow makes bicycle unusable), and shoveling snow process were identified as wintry problems by most sighted people. It is also notable that blind people are easily disoriented by avoiding mound of snow on the sidewalk. Mound of snow at the side of the streets also obscures the corner, mislead their routes, and impede street crossings, which makes the disorientation rate higher.

Conclusion:

Through this study, it was revealed that most wintry problems experienced by blind people are related to physical environmental condition changes caused by snow. More collaborative work may need to be accomplished between blind people, city planners, researchers, and engineers to alleviate specific winter travel problems.

Using multi-criteria decision-making to evaluate indicators for urban-friendly walkable environments

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Walking is not only the most basic commuting method but also a popular physical activity. Walking environments should be central to urban planning; however, the construction of walking environments has been neglected. Furthermore, no standard has been established for planning and improving walking environments, thereby preventing expert opinions from different fields from being compared. Consequently, our study involved administering a 2-phase questionnaire to 20 scholars and public sector experts to identify indicators of urban-friendly walkable environments as well as compare and integrate expert opinions from the fields of landscape architecture, transportation, architecture, and urban planning. The first phase entailed applying the fuzzy Delphi technique to the screening of 22 indicators belonging to 4 aspects: mixed land use, walking facility availability, safety, and aesthetics. The second phase involved applying the analytic network process to the establishment of indicator weights. The results showed that all scholars and public sector experts agreed that safety was the most critical aspect of a walking environment, followed by walking facility availability, aesthetics, and mixed land use. Regarding the indicators of mixed land use, diversity and access were equally critical. Sidewalk width, barrier-free design, sidewalk continuity and scenery, cleanliness, and the presence of trees were more crucial than the indicators of the other aspects (i.e., walking facility availability, safety, and aesthetics). The results of this study can serve as a reference for policy makers in promoting human-oriented environments and improving the landscapes of walking environments.

The Walkshop: An educational tool to integrate research on human aspects of sustainable urban design

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Introduction

Architectural urban design is a 'making discipline', and its link to formal research is described as tenuous (Forsyth, 2007). This paper describes the development, implementation and outcomes of a collaborative workshop, the "Walkshop", designed to integrate research in teaching, and to communicate and disseminate research results into planning practice. Disciplines differ in cognitive and cultural aspects (Becher & Trowler, 2001), and an understanding of such differences is needed for a successful communication between them (Woods, 2007). The "Walkshop" aimed at transmitting cognitive and cultural aspects of environmental psychology to architectural students, in its different phases. It bridges the gap between a multidisciplinary research project and a master's programme in sustainable urban design and city planning.

Methodological Approach

Context and participants: Students from SUDes (Master in Sustainable Urban Design) programme, the School of Architecture and exchange students (e.g. Austrian, Brazilian) (N=24), participated in the workshop. In addition, three researchers, two research assistants, two SUDes teachers and three representatives from the City of Malmö and the

Swedish Transport Administration participated in various phases of the "Walkshop". Procedure and Instruments: The "Walkshop" developed through four phases, namely, an introductory theoretical input, the acquaintance with methodology (i.e. use of a research tool to assess environmental walkability in the field), a design task, and a final presentation of design solutions. Main findings The "Walkshop" facilitated the students' learning process towards a close-up perspective in analysis of the environment. For instance, at the end of the Walkshop, students emphasised the relevance of considering the subjective experience of users when designing a place. Besides, they also emphasised positive aspects of increasing their experience of and contact with research, as well as of acquiring useful knowledge to apply in future planning in general. In the end, students' design proposals integrated new perspectives and key facts from research, and provided inspiration and concrete suggestions for the analysed areas.

Conclusions

The "Walkshop" results revealed a change in students' cognitive and cultural approach of analysing the urban environment. Particularly, our results indicate that the aim of strengthening the students' integrative design skills in general and their capacity to integrate research results in their design in particular have been achieved. Collaborative educational workshops like the "Walkshop" seem to be a useful component to include in a Master's course syllabus, to strengthen the link to research in practice-based education, and to disseminate current research results directly into practice.

Keywords

Walking, urban design, educational workshop.

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Poster session:
Theme 8. Design and layout

Location: Ateljé, The A-building

Living or working in tall buildings: Some social-psychological issues

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Tall buildings are becoming more and more common in modern cities around the world, especially in Asia (e.g., China) and the Middle-East, according to the Council on Tall Buildings and Urban Habitat (<http://www.ctbuh.org>). The driving forces behind this trend include rapid rise in urban population, economic growth, and the costs of urban sprawl resulting in a call for more-compact cities and sustainable use of resources and infrastructure, and the race among nations to build the tallest and the most iconic building. Tall buildings will continue to flourish globally and the "city in the air" will be the urban habitat of the 21st century, predicted Ali and Al-Kodmany (2012).

Extensive research has focused on the engineering and structural aspects of erecting tall buildings and more recently, environmental sustainability (Lee, 2014). Yet few recent studies have been conducted to examine occupants' satisfaction, and physical and psychological well-being, even though it is the real people who live and work in these buildings. There was a splatter of research studies conducted by social scientists back in the 1960-70's, when cities started building taller buildings of about 20-stories high. The most recent review by Gifford (2007) of available empirical studies conducted mostly outside Asia and the Middle East concluded that there were methodological problems with many of the studies but overall, there appeared to be negative consequences of living in high-rise buildings for their occupants.

In 2014, The Council on Tall Buildings and Urban Habitat (CTBUH) published a report Roadmap on the Future Research Needs of Tall Buildings (edited by Oldfield, Trabucco, & Wood, www.ctbuh.org/roadmap) based on their survey of "those involved in the ownership, development, design, planning, construction, consultancy, operation, maintenance and research of tall buildings" (p. 9). Despite the exclusion of occupants or ordinary citizens in their survey, the report identified that "research to improve the social impact of tall buildings on both surrounding communities, and on those who live and work at height, is a significant research priority" (p. 9).

This presentation will clarify the terminology for various tall building types, outline the history of development of tall buildings, and provide a synopsis of the research priority areas outlined in the Roadmap report that should be of interest to environmental psychology researchers, together with additional social and psychological issues. Each of these areas will be illustrated with a research study or two from the research literature. Topics might include sustainability, density, view, skyline, perception of height, perceived safety, and social contact.

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Environmental color combination based on the user's emotion about general hospital's lobby

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Antia Olds and Malkin's and other several previous studies claim that hospital's lobby should function as a healing space, but previous studies dealing with user's psychology and emotion are lesser than studies about physical aspects. Environment color is an element that effects on human psychology and emotion and can be used as an objective index for healing environment formation when planning the environment coloring that corresponds to the user emotion.

The purpose of this study is to identify the hospital's lobby environmental color combination based on the user emotion.

Study method is as follows:

- 1) Field research: 5 general hospitals in Korea that opened or remodeled their lobbies during the past 10 years and has more than 1,000 beds, the environment colors were measured by using a spectro-colorometer.
- 2) From the Preceding studies on emotional aspects of color for healing environment, 307 emotional vocabularies were extracted on general hospital lobby environment and finally, 11 emotional vocabularies were extracted through Delphi technique (expert agreement technique).
- 3) Based on the field research database, 16 types of color image of general hospital were developed, and 40 students who majoring in design has evaluated the 16 types color image through 11 emotional vocabularies.

Study result is as follows:

- 1) The general hospital's lobby color range is usually composed of Y type color(Y, YR, GY color), and takes 97% of total color, and the range of brightness and chroma is 3.6~8.9 and 0.3~6.4, respectively.
- 2) The user demand colors that bring emotion of "bright", "warm", "clean", "Cheerful", "Comfortable", "Friendly", "Sophisticated", "natural", "changing", "Wide", and "Open" in the general hospital lobby.
- 3) As a result of emotional vocabulary evaluation on colored image, the floor and the wall should be high in brightness and low in chroma, the emotion such as bright, clean, and wide is highly evaluated while images composed of low-brightness and high-chroma showed stable and artificial emotion.

Individual attributes relate with preferences of living room appearance

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Keywords: Preference, Interior, Questionnaire

Abstract

Introduction: This study intends to determine the relation between individual attributes and preferences of living room appearance in the context of preference-individual attribute relationship studies.

Experiment: The impressions of a series of 40 living room images were rated on 17 semantic differential scales including their preferences and 11 monopolar scales. A questionnaire, which consisted of 174 two- to four-point scales, was also completed after the images were rated to determine the participant's lifestyle and their attitude. The experiment comprised 99 subjects who were young female students aged between 18 and 22 years.

Results: The five sample clusters, derived from cluster analysis using the preference ratings, consisted of decorative rooms (RG₁), feminine taste rooms (RG₂), popular taste rooms (RG₃), Japanese-style or modern style rooms (RG₄), and stylish rooms (RG₅). The experimental participants were divided into five groups (PG₁–PG₅ comprised 14, 26, 4, 21, and 34 people, respectively) depending on results of cluster analysis.

The average values of each questionnaire were compared among participant groups using Tukey's HSD test to assess the attributes concerning preference tendencies. The relationships between rating differences across the room image groups and differences in scores are as follows.

- 1) People belonging to PG₁ preferred only RG₄ (Japanese-style and modern rooms), like common fashion more than PG₂, and prefer weak colors and non-fancy taste more than PG₄. They would be comfortable maintaining a low profile.
- 2) People belonging to PG₂ preferred RG₂ (feminine taste rooms) in addition to RG₄. They spend money on fashion more than PG₁, prefer warm, light, and bright colors as compared to PG₅. They would have interest in fashion, and have colorful tastes.
- 3) People belonging to PG₃ preferred only RG₃ (popular taste rooms). It is difficult to interpret the difference among participant groups because the number of constituents was very small.
- 4) People belonging to PG₄ showed much higher rating averages than did other participant groups preferred RG₅ (stylish rooms), in addition to RG₂ and RG₄. They love communication and want to be perceived as grown-up when compared to PG₂, want to be richer and like an extravagant atmosphere as compared to PG₅, and they are more fascinated with individuality than are other groups. They would be extroverts, and long for their dream life.
- 5) People belonging to PG₅ have a similar tendency to those in PG₄, even though the preferences for RG₁, RG₂, and RG₃ were lower. They are particular about room appearance and prefer structured design more than the other groups do, and do not prefer girlish designs.

These consequences indicate in part the ability of room interior preferences to reflect a person's characteristics, especially as concerns their high-low profile tendencies, on the other hand, partly express design preferences for color, light, form, and so on.

Design of information grounds; A comparison of physical factors of interiors of popular information grounds and unpopular information

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Background

Information grounds form continuously in prosaic, daily environments. An information ground can be defined as an "environment temporarily created when people come together for a singular purpose but from whose behavior emerges a social atmosphere that fosters the spontaneous and serendipitous sharing of information," (Pettigrew, 1999). In the modern society, Internet allows creating information grounds easily and people can use them. However the importance of the knowledge of the particular circumstances of time and place was minimized. Besides Fisher, Landry and Naumer concluded that physical, place-related factors play "an extremely important role in the effectiveness of an information ground," suggesting that place-related factors may be the single greatest influence on member loyalty and satisfaction, surpassing even the quality of the information acquired as a central evaluation point (Fisher, 2006). Thus it should be considered that how place-related information grounds will be designed and which factors of interior aspects will be applied.

Method

This study is to propose the design of information grounds in terms of place-related factors to enhance social interaction based on the comparison between popular information grounds and unpopular information grounds in a college library. In this particular study, a college library is chosen because of its wealth of information grounds such as student lounges, study centers, hallways and gathering areas and its effectiveness of social interaction for information exchange in education. Social interaction is the primary activity at information grounds; therefore, this study is to address which design factors of interiors are valuable for creating information grounds through social interaction.

The theoretical framework composed of four major areas (social factors of third place, place attachment, place-related information ground factors and M-R model) will be adapted to compare two information grounds in a college library; popular versus unpopular for this study. Very similar physical settings of two student lounges will be subject to observation of uses at peak time and their differences compared; reasons why one is popular and the other is not, based on the theoretical framework will be investigated. Also, college students will complete a survey relevant to the physical factors of the interiors.

Implication

Through this study, the theoretical framework proposed is proven to affect the creating of information grounds for productive information exchanges. Also, the physical factors of interiors for creating information grounds are analyzed and presented for future study. The rationale of making information grounds for social interaction is a significant aspect of design and the influence of interior spaces is addressed. The framework may also be used to simulate new insight and investigate multidimensional research.

Keywords: information grounds, theoretical framework, social interaction

Research on color environment characteristics of public libraries in Korea by spatial functions

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Environmental color in library supporting concentrative works is one of the important elements that influence on users psychologically and mentally, but current researches focused more on the administrative sections than color sections.

Therefore, this research purposed on understanding the color conditions of the public libraries and by apprehending the characteristics of color compositions based on their spatial functions, and on providing the basic data for the future planning. The research proceeded by visiting 9 public libraries located in Busan city, which opened within the last 20 years, and total 242 environment colors were measured by a spectrophotometric device and analyzed to draw the characteristics of them. .

The results from this research are as below.

First, the general color composition of the 9 public libraries were shown to use Y affiliates (32%), YR affiliates (28%) and GY affiliates (13) whereas Y affiliated colors were frequently used. The average brightness of floors were 6.5 and average chroma at 1.4 while the wall's average brightness was 7.5 and average chroma at 1.65. In an overall point of view, these colors showed to bring a bright and calm atmosphere.

Second and when looking into the color characteristics by its spaces in public libraries, the reading room would need to have noises eliminated and use colors that can increase one's concentration. The reading room's colors were used by an order of Y affiliates (35%), YR affiliates (22%) & GY affiliates (12%) whereas the average brightness was measured at 5.8, showing to be a little lower than the entire facility's average brightness while the chroma was shown to be at 3.2 which is a little higher value compared to the entire facility's average.

As for the multimedia room which is a space where computers & data processing devices are used, colors were used by an order of Y affiliates (32%), YR affiliates (24.6%) and GY affiliates (13%) with an average brightness of 6.22 which was a similar brightness average compared to the entire facility. As for the chroma, the average was at 2.7 which was a little lower value compared to the entire facility. These results can explain that the spaces had a similar atmosphere with the entire facility and that the colors were well mixed to accord to the environmental colors in creating a free, dynamic atmosphere. The audiovisual room is a space that are mainly used to operate various cultural programs for the culture activities of the local community whereas the space should use unified & evened colors for the educations & activities that are held in this room. Colors showed to use YR affiliates (32%), Y affiliates (29%) and PB affiliates (9%) with average brightness at 6.22 and average chroma at 2.7. Various color compositions were founded and with the furniture colors also varying, they also showed to create a diverse atmosphere.

Research on color images of the general hospital lobbies in South Korea

Mulin Jeong¹, Minjae Lee¹, Heykyung Park¹

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The lobby of general hospital is a location where the hospital's first image is made and is an important space as a hallway connecting to the other facilities in the hospital. Large-

scaled general hospitals in South Korea begin to realize its importance and do remodeling to satisfy their visitors by a psychological & sensible point of view. From here, color is one of the most important environmental factors that affect to the visitors. Therefore, this research has the purpose to analyze the color characteristics from the general hospital lobby's environment to discover the overall state of colors and their images. The analyzed data will be used as basic materials in lobby color plans of general hospitals so that they can increase the satisfaction of the visitors from a psychological & sensible point of view. The research method is a field survey by visiting 5 large-scaled & major general hospitals that has remodeled during the last 10 years and opened more than 1,000 sickbeds in South Korea, and measuring colors with a spectrophotometric device. The states of the color compositions and characteristics are analyzed based on the colormetric system, and , the color image's vocabulary was extracted by the IRI image scaling.

Research results are as below.

First, when viewing the compositions of colors by the spaces, the floor showed to use 63.8% of Y affiliates and 18.1% of YR affiliates. The walls were used at 46.6% of Y affiliates, YR affiliates at 40% and with furniture using 44% of Y affiliates, the general environmental colors showed that the Y affiliated colors (Y, YR) were being frequently used. The result shows that the color compositions are planned similar each other.

Second, the average brightness of a lobby's floor was at 6.66 while the average chroma was at 1.02. In a general point of view, this shows that the use of averaged brightness and low chroma creates a quite bright & calm atmosphere. The wall's dominant colors showed an average brightness of 7.10 and an average chroma of 2.08. Both the brightness & chroma was shown to be higher than the colors on the floors while the wall's secondary colors showed an average brightness of 5.93 & average chroma of 2.29. This shows that the brightness is a little lower and not much difference in the chroma when comparing with the dominant colors, having us know that the color compositions harmonized in an overall standard.

Third, "simple", "conservative," "idyllic" and "stable" were the vocabularies with most frequency, by analyzing the colors based on the IRI image scale. This result seems to come from the frequent use of Y affiliates while generally applying colors that have low chroma.

Investigation of office space planning: The relationship between individual characteristics and differences in environmental setting needs

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Introduction

In recent years, office space has been composed of an arrangement of different types of furniture, such as the desks, chairs, and partitions required to support a variety of office workers' activities in different settings. Furthermore, the environment that can motivate high individual performance among office worker has come to be important, since office workers have had responsibility for greater intellectual activity. Therefore, it is necessary to clarify not only the relationship of activity to workspace, but also the needs for different environmental settings caused by the various individual characteristics of office workers.

Purpose

The purpose of this study is to reveal the preference of requirements for environmental

settings which is caused by not only the contents of an activity but also the differences in office workers' attributes, including age, gender or section. To consider the settings necessary in a diverse office space, the requirements for each activity, such as the feelings of being watched from the surrounding and the interval to the next seat must be considered.

Methods

Nine of the following office activities were classified according to the results of the preliminary survey, and the eight items indicated were selected as attributes of the office worker. A questionnaire was then undertaken with a total of 222 office workers working in four different offices of a certain furniture manufacturing company and the data were analyzed using multivariate analysis techniques.

Type of activity: divergent thinking/convergent thinking/information gathering/routine task/corporative work/scheduled meeting/unscheduled meeting/refreshment/chatting

Attributes of office workers: age/gender/section/position/existence dedicated desk/smoker/per day of in-house time/personality (extroversion)

* Extroversion: An extrovert is "a person who is interested in objects, such as events and others." An introvert is defined as "a person who is interested in the psychological processes of the subject or the subject itself."

Results

The results of this study were as follows:

1. The workspace for each activity was classified according to two points of view, including "whether the environment is open or closed" and "whether the distance to other workers is near or far."
2. The needs of the work environment for each activity were affected by the differences in personal characteristics, such as age, gender, work style, smoking, and extroversion.

Conclusion

Office workers conduct a variety of work, including individual work and group work, and take breaks in their office. The frequency of contact opportunities with other office workers is also emphasized in the work environment. Moreover, this fact suggests that by being conscious of the need for environmental settings relevant to the personal characteristics of office workers, it becomes possible to provide an environment that it is easier for the individual worker to work more productively.

Study on architectural layout in its contribution to the efficiency of group home staff and residents' life style

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Objectives

A purpose of this study is to reorganize the problems of group homes for older adults with dementia and to propose the necessary conditions for the layout plan of group home contributing to the efficiency of care staff and residents' life style. "Efficiency" is here defined as the smooth operation of group homes which includes a situation where the staff are not overworked and it satisfies the quality of living for the residents.

(Methodological approach)

Survey contents of four group homes are the following things.

- ① the area in charge of one care staff

- ② movements and activity of care staff

- ③ number of times, place and content of conversation between care staff and residents

(Main findings and conclusions)

The point of layout plan of group home is following things.

- It is effective to have the entrance in the common space is to prevent residents from going out without permission.
- Uniqueness in front of each private space is effective to prevent residents from getting lost.
- Securing a space for wheelchair storage is needed.
- As the look out point for the staff was not designed in a location that has easy access to where the residents are, and also has a good view of the residents, it was made clear that this was bringing in some difficulties. Therefore, it is necessary to establish this look out point in the designing process.
- Limitation of space naturally creates an opportunity for communication.
- Group homes had information posted on the walls in hallways which lead to communication. Therefore, this must be included when placing information.
- Connecting external space to internal space is effective to activate communication.
- High communication skills are required for care staff. When care staff ask things to the residents, they should always use interactive questions that allow options.

Environmental design keys for the future

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This is a research on the Alameda and Carballeira of Santa Susana, which is a public park very important for its historical and environmental value located in the Old Town of Santiago de Compostela. The Old Town is a World Heritage Site since 1985.

This city of Santiago de Compostela is also the culmination of a major European Christian pilgrimage route, the Way of St. James, declared a World Heritage Site in 1993

The objective of this research is to discover the design keys of this built environment that are instrumental in achieving eco-friendly places with a high symbolic significance for the community of which they are part.

The circumstances that relate these design keys to its moment are included in the analysis in order to elucidate if, from the fact that they were valid at its time, we can conclude that they are still useful to establish proposals for the future.

To this end, a holistic approach to the analysis of the patterns of design of this park, the Alameda and Carballeira of Santa Susana, which is an excellent meeting place for the inhabitants of the city and tourist spot of intense influx, is required.

The main results of this analysis are organized on the basis of the two premises of our study: to be a significant green space for citizens and to pay the necessary attention to a low consumption of resources with a null polluting impact. The projective and technological issues that have determined this splendid park are studied in its time frame.

A first and predictable conclusion is the relevance of this park to the objectives sought. It is a paradigmatic park that was chosen precisely because it meets both conditions, to be a representative and sustainable community garden, conditions that are essential for the ecological design of the venues and for the enjoyment of the city.

The other conclusion, less predictable, points to an additional requirement for the optimal design of urban living spaces, curiously, a requirement that affects the two essential aspects of the problem: the social and the technical one.

Rigid decisions made in the past, especially during the twentieth century, that were invariably governed by the scheme of order and planning, and that were usually related to functional issues, have constrained the garden to be just urbanized nature. Now, in the twenty-first century, we should not take for granted such obsolete civic schemes but instead we should rethink how to live in community and how to share and manage urban spaces. The idea is perhaps that common citizens participate in the management of their parks to recover the involvement of people in the future of their environment. This way they would regain a sense of belonging to nature, and some inevitable contingencies that are essential for life would appear.

“Those speeches that focus on a comprehensive environmental protection are obviously nostalgic. They seem to ignore the creative power of nature” (Clément, 2012, pg. 19)

Clément, G. (2012). *El jardín en movimiento*. Barcelona: Gustavo Gili.

Key words: environmental design, historic parks, urban gardens

Designing studios as a social interaction place for enhancing creativity

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Background

Design studio has long been the major component of design education and it functions both as a learning center and as a complex social organization. Design is a process that students gain practical and theoretical knowledge and learn to transform this knowledge with their creativity to the representation of a design model and the design studio is the place for this process (Sevinc, 2009).

The creativity literature presents good examples of people’s creative habits and launches the general argument that space means a lot for people’s emotional well being, which in turn is fundamental for creative work (Tore, 2004). Besides, there is a limited knowledge on how the physical space actually enhances creativity. Most of researches about design studio have focused on collaboration and communication for work efficiency or design process for creativity, not about physical place; students’ behaviour and their emotion towards physical settings. Thus, better surrounding for enhancing their creativity should be proposed and the relationship between the environments, which is design studio and design students, who pursue creativity should be reviewed.

Method

In order to create design studio for social interaction, this study addresses the relationship between environmental psychology and interiors in terms of students’ behavior and their emotion towards studio setting. M-R model of Approach and Avoidance Behavior and concept of place attachment are reviewed. In M-R model and concept of place attachment, intimacy regulation is viewed as the overall process by which individual attempt to attain and maintain a preferred level of involvement with others and the environment. It is the expected level of achieving approach behavior for active social interaction in the design studios. Also Wallas’s model of creativity (Wallas, 1926) composing of four steps; preparation, incubation, illumination and verification, social learning theories, and creativity

theories are reviewed to create generative framework focusing on how three concepts are interconnected to foster social interaction for enhancing creativity in design studios (Truman, 2011). Analysis and synthesis of integration between two can be linked with the arrangement of design studio for enhancing social interaction. Thus all elements will be synthesized to construct design strategies for future application.

One of design studios at a college in the mid-west of United States is chosen to compare factors between current settings and the proposed setting applied based on the design strategies constructed. Junior level of college students majored in design disciplines are subjected to answer of survey questionnaires to be analysed for future applications.

Implication

Through this study, linkage between environmental psychology and interior design in terms of creating design studio focusing on social interaction for creativity will be presented. Positive effects of creating design studios focusing on social interaction will be demonstrated for students’ understanding and level of design creativity. Design strategies of designing a design studio for enhancing students’ creativity could be adapted to other settings in the design education. Finally the outcomes of the importance of social interaction in design studio for creativity will be discussed.

Coworking’s secret sauce: Aesthetics, experience, and community in work environments

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The multi-billion dollar valuation of co-working operator WeWork, alongside the media frenzy around their success, is economic proof of a prevailing appetite for new modalities of interaction and connection in the post-industrial workplace. Beneath co-working as a real estate business model, within the startup economy or freelance community, there lies a deeper conversation about human needs in the workplace. The success of coworking shines a clear light on critical factors of occupant experience within work environments. While social science and environmental psychology have long supported the power of these design features, the popularity of coworking is further evidence of occupant desires.

Our work explores two main features: visual transparency and domestic aesthetics including comfort. Transparency, visual clarity across space, is known to provide many business and organizational benefits, including building trust. Co-working environments have been particularly successful at leveraging design to enable relationships between otherwise unknown individuals. In 1977, Stanley Milgram coined the term “familiar strangers” to describe those with whom one repeatedly encounters, but does not directly interact with. Spaces that exhibit transparency have also been proven to reduce hierarchy, enhance communication through body language, provide prospect, and facilitate learning. Personalization and domestic features in the workplace are shown to de-institutionalize space and enable relationships between people. The domestic experience is enhanced by soft seating and adjacent cafe space, secluded retreat and game areas, secure and well provisioned toilets, continuous music, and curated arrangement of objets d’art. As explained through more recent studies, such intentionally domestic, personalized, symbolic objects create the notion of an imaginary host, an embodiment of unique personal expression. Our research also explores the symbolic quality of materials, the power of choice and

preference, the desire for authenticity in design, and the value of a 'for us, by us' experience at work.

Research on pleasant darkness evaluation in restaurant

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Background information and objective

With the development of lighting equipment, more and more light has been used to brighten rooms. Especially in Japan, light has been a symbol of hope, prosperity and freedom after the war, and therefore an overflowing amount of lighting energy has been used. Taking into account of the global issue of reducing energy use, it is time to reconsider the thought, "Brighter the better." This research intends to reveal that evaluation of darkness and evaluation of pleasantness are independent. The pleasant amount of light depends on the behavior taken, therefore several behaviors has to be considered.

Methodology and main findings

First of all, a preliminary investigation was done to narrow the examining target. To figure out the suitable behavior and places for darkness, pictures of dark interior spaces (about 200) were collected from architectural magazines and the internet. Then a simple survey was done to 5 subjects to see if their impressions were similar. As a result, only one third of the pictures was evaluated to be dark by more than 3 subjects. Within the pictures, living rooms and restaurants were the two most space utilities being rated as dark. Since the living room is a private space where the user can easily change brightness level, this research focuses on the restaurant. Through the observation of collected pictures, dark spaces are not totally dark, and the "brighter space" is effectively used to exaggerate the "darker space." As a result, patterns were categorized into 8 groups, and commonly used lighting methods and space utilities were organized.

Using the result of the preliminary investigation, an experimental plan was designed. Three of the eight lighting patterns, which were commonly used in restaurants, were selected. Experimental apparatus was designed with the image of a cabin restaurant in mind. The size of the experimental room is as follows; width 3m, length 4.1m, height 2.6m. To create the lighting patterns, five downlights and line equipment for cornice lighting were arranged. 4 lighting adjusting patterns were set.

1. Adjusting four downlights for general lighting.
2. Adjusting one focus downlight.
3. Adjusting ambient light (cornice) with one focus downlight on.
4. Adjusting one focus downlight with ambient light (cornice) on.

20 subjects were asked to adjust to see the darkness range and the pleasantness range. For example, to figure out the darkness range, subjects brighten the light until the evaluation changes from "dark" to "not dark." To show that the ranges differ by behavior, 5 behavior patterns were planned; drinking only, drinking alcohol, eating, relaxing and chatting. Results differed by subjects and by behavior patterns. Yet, as a whole, the darkness range and the pleasantness range differed, which showed that the hypothesis that darkness evaluation and pleasantness evaluation were independent was right.

Conclusion

The experimental target was selected from commonly used dark space utilities. The pleasantness range differed by the subjects as expected. Further analysis and experiments

need to be done to apply the result into various occasions.

Response ability: Rethinking design thinking

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Response Ability: Rethinking Design Thinking

- Design Thinking is manifested in theory.
- Design Theory is expressed as design-specific concept.
- Design Concept gives focus in design process.
- Design Process fundamentally is about asserting control over and achieving coherence among myriad decisions involved in creating the built environment.

This model describes a monological approach that is problematic when the design objective is social responsibility. The approach can lead to prematurely formed design concepts that do not guide a full spectrum of design decisions. The result can be designs that are dismissive if not derisive of social factors and environmental implications.

To achieve design that is coherent as well as responsive to social and environmental factors, how can design thinking be shifted away from the prevailing approach of controlling—a monologue—and toward one that embodies responding—a conversation?

Christopher Alexander offers a framework for answering this question. In describing his principle of organic order he states, "Planning and construction will be guided by a process which allows the whole to emerge gradually from local acts." (Alexander, p.5) From this principle four components of a conversational approach to achieving appropriate design responses can be interpreted.

- Knowledge, both evidence-based and tacit that describes social and environmental considerations, drives design thinking not primarily for the purpose of theory formation but to achieve understanding that will inform design decisions.
- Exploration that involves examining relationships between design decision-related factors one set at a time enables discovery of appropriate responses. Employing Christopher Jones' Morphological Chart method (1972), sets of related factors can be listed in the left column and alternate design responses for each set can be generated per row. This charting method serves to organize lateral thinking—playful, creative exploration of design-response alternatives. Factors to be related and explored include but are not limited to individual and social behaviors to be accommodated, user preferences, spatial and dimensional limitations, material and fabrication/construction options, environmental impacts, and aesthetic interpretations.
- Concept Formation, delayed as long as possible into the process to ensure understanding, should be allowed to emerge from scrutiny of alignments among the collection of responses to all sets of relationship.
- Decision Making should be guided by an appropriate conceptual framework to achieve coherence not only among functional responses but also aesthetic interpretations not explicitly or otherwise directed by the design program.

This rethinking of design thinking is in part a reshuffling of current design approach components. Concept formation remains an important component in that the social program never fully informs all design decisions. Conceptual frameworks yield the coherence among all decisions, those that are of a definitive problem-solving type and

others that are highly interpretive and aesthetic in nature. What distinguishes this rethinking is its emphasis on social responsibility. Will tight timelines, limited budgets, and the need to be efficient with billable hours discourage use in practice of this potentially time-consuming approach? Will the approach engender the same level of self-motivation design students experience with a theory/concept focus? Can this approach actually help make designers response able?

Environmental Perceptions on college campuses in Brazil
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The presence of natural environments is increasingly scarce in the urban context. This reduction is able to change aspects of the quality of life of city dwellers. Studies focused on the person-environment relationships, has explored perceptual processes of human interaction with these environments in order to bring out feelings of well-being caused by the proximity to nature. The concepts of environmental awareness and preference have directed the deepening of aspects that permeate these relationships. The importance attached to the issue reflects a movement of environmental psychology toward an ecological approach. Studies conducted under this bias stress environment properties conceived as able to promote relaxation and psychological recovery, necessary for the resumption of daily activities. There are still few publications nationwide that evaluate the restorative capacity of natural environments. In the academic context, the demands experienced by college students are seen as causing constant stress. The link between these demands and the evidence of the benefits of contact with natural environments did the idea of building this research. The study aimed to understand the environmental perceptions of students about green spaces in the university environment. For this, we sought to characterize the green spaces of two Brazilian university campuses; identify ways of use and preferences of students in relation to these places; explore cognitive, emotional and interactive aspects to these environmental perceptions and highlight psychological restoration possibilities in this environment. With exploratory and descriptive approach, followed by a qualitative approach through content analysis. They interviewed 109 undergraduate students of two federal universities located in the north (campus I) and south (campus II) of Brazil. The use of the technique of the photographed environment and observations allowed to verify use and environmental preferences from the features present in the green spaces of each campus. Green spaces were predominantly chosen by students on campus II, despite the campus I present a more extensive green area. Interviews with semi-structured, evidenced environmental perceptions that intersect between students from each campus, but there are specific characteristics of each scenario that makes them so distinct as to further enrich the discussion and raise questions as to the reality of Brazilian university campuses. Individual experiences and intentions of individuals of these cultures have changes in ways of perceiving and relating to the environment. It was evident that spaces aesthetically crafted with features produced by human intervention promotes greater perception of psychological restoration. It concludes that the amount of natural elements is not what actually enhances the environmentally restorative capacity, but the possibilities of interaction perceived by those who come in contact with these places. In this sense, it is understood that the environment alone can not perform a restorative function,

as there is a reciprocity in this relationship that needs to be perceived, experienced, built and rebuilt. In addition to writing, these data may generate dialogues with students and managers to consolidate changes in promising scenarios for psychological restoration today.

Comparing and contrasting two squares in Budapest: Meaning making with the mental mapping technique

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Urban spaces have become a quintessential setting for modern everyday life. Naturally, city squares are important nodes in many aspects of city life (e.g., commuting, social interaction and other activities human beings share on a daily basis). Earlier we presented our study titled "The influence of the research frame and the task on mental map drawings" (Brózik et al., 2014) in which we examined the possibilities of the free recall mental mapping method by focusing on one of the best known city squares of Budapest: Blaha Lujza square. Mental mapping has proved useful as a method for exploring what people know, think and feel about specific places. Subsequently we decided to further develop our research by involving an additional city square with similar physical urban characteristics to be able to compare two separate sets of data. The square we chose as a counterpoint is Oktogon square. Like Blaha Lujza square it is situated in a central area with heavy loads of vehicular and pedestrian traffic; it is a typical inner-city location with many fast-food restaurants; it is a famous meeting point where very many and different people appear. Nevertheless, there are also differences between the two squares: for example, Oktogon is located in a World Heritage area while Blaha Lujza square is not and Blaha Lujza square has a wide and spacious underpass. Two groups of participants completed a free recall mental mapping task; namely, they were asked to draw Blaha Lujza square or Oktogon square respectively on a blank sheet of paper as they were represented in their minds. Participants were free to express whatever they deemed important about the given place. In the case of both studies, our goal was to explore the possibility of gathering information without conducting interviews, relying solely on drawings. We examined the similarities and differences of the mental maps of the two squares and investigated how the differences were displayed. We could use the same code-system that we had developed (and introduced) in our former study. This means that we have come one step closer to exploring key elements and landmarks of a city square that are not only characteristic of one particular square but are an essential part of a definitive pattern for any such entity. The conclusion of our study was that, in spite of the urban physical similarities, the two squares greatly differ with regard to the mental representations of the participants concerning safety and tidiness, which may be a result of an interplay between participants' stereotypes and actual experience. This phenomenon shows the importance of people-environment transaction in forming of sociophysical meaning.

The role of water in designing climate-responsive urban spaces a case of Lahijan, Iran

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Within the last 60 years Iran has gone through a very rapid urbanization process. In the absence of a sustainable model of development Iranian cities are growing, natural resources are being depleted and green spaces are being lost. As the cities are growing, hard surfaces are also expanding, absorbing higher amount of sunlight and converting it into heat. While climate change in global scale is causing warmer urban environments, Urban Heat Island (UHI) phenomenon is exacerbating the effects of global warming in the local scale, resulting in the elevation of the urban temperature. Moreover, technological advances of the 20th century have introduced the underground water-pipe network to Iranian Urban water management system. The new urban water system, albeit facilitated access to clean water and secured conveyance of wastewater and stormwater out of the city, caused less appreciation and weakened presence of water in urban spaces. Additionally, the current urban water/wastewater/stormwater infrastructure is only functional under normal conditions while they are highly vulnerable during extreme weather events. Lahijan, a small city in Northern Iran is selected as a case study and some results of the conducted research are used to provide examples of the proposed strategies. Despite the fact that Lahijan enjoys an average annual rainfall of 1000 millimeters, the current combined sewers of the city are not functional in extreme weather events. Lack of resiliency of the current infrastructure along with the increasing imperviousness of urban surfaces result in more frequent urban runoff overflows on the streets and urban flooding. Therefore, people have started to consider rainwater as a nuisance rather than an asset of the city. In response to the inefficiency of the conventional approach, the current urban water management system of Lahijan should change to meet the goals of a resilient system. An integrated stormwater management system is among the solutions to integrate water into urban design practices, to reintroduce water into urban spaces and thus, to improve the quality of living environment. Following the Water Sensitive Urban Design concept, the paper discusses how involving water in design of public open spaces can manage the problem of urban runoff and stormwater while promoting climate-responsive urban design and providing comfortable and pleasant outdoor urban spaces. In other words, under the new paradigm large-distance underground transfers of stormwater will be minimized or eliminated and on-site treatment will be implemented to form a decentralized cluster-based system. Unlike the previous approach, managing stormwater on the surface provides recreational amenities to the community and contributes to the aesthetic qualities of a given space. The paper concludes that employing WSUD approach to manage the stormwater not only adds resiliency to the future uncertainties of the urban environment but also improves the quality of living environment through providing thermally comfortable public spaces. It further argues that considering water from the early stages of the design of a city and connecting water management with place making would contribute to higher living standards in cities while it would address the problems of flooding and pollution.

Strategic Cooperation - Working together in research and planning

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“Problems can never be solved by the same level of thinking that created them.”

Albert Einstein

Strategic Cooperation

Working together in research and planning

Key Words: Multidisciplinary, Cooperation, Research and Practice, Architecture, Sociology, Psychology

These days humankind is confronted with complex challenges such as climate change, urbanization processes, migration, or structural and demographic change. Solutions to these problems can, due to the interconnectedness of many affected areas, not be found by one single discipline, by one single way of thinking. The sciences are now, after decades of specialization on smaller and smaller aspects, at a turning point towards cross-linked, interdisciplinary and multidisciplinary cooperation.

Psychologists, sociologists and architects of Constance universities conducted a series of interdisciplinary teaching-research projects, in which, in addition to new results, various experiences concerning interdisciplinary collaboration were made.

How can the typical challenges of interdisciplinary work be recognized and how can be dealt with them strategically? How can the different professional cultures, languages, media and methods be connected to a meaningful interdisciplinary communication and to knowledge transfer within the group?

In our seminars we use an interdisciplinary approach at the interface between science and practice. Students of architecture, sociology and psychology work to understand the influence of the room and the environment on psychological processes that affect behavior and wellbeing, and to define the users' needs on built environments. Together they try to find design solutions in real life projects, and also to make scientific knowledge accessible and usable for the design practice. The students are concerned with the role of social sciences in planning practice and the responsibility of the planning professions for mankind and its habitat.

In order to work efficiently, we developed methods that help to bring different groups together and identify and dispel stereotypes; such that support recognition of different expertise and finding a common language; methods that help to organize group-work and to gear the different abilities towards a commonly defined goal.

These methods can be useful for different kinds of interdisciplinary cooperation, especially on the interface of science and practice but also of professionals and laymen. They show ways of how to deal with typical challenges and how to avoid characteristic arguments.

Individuals with high working memory capacity are less susceptible to mind-wandering: Evidence from cross-modal oddball tasks.

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Mind-wandering is a common phenomenon and is likely to happen when people perform some routine task where the consequences thereof are of little to no importance. However, when mind-wandering occurs during an effortful task, such as an attention heavy task, it can have dire consequences and may result in poor performance. Working memory capacity holds some predictive value for executive functions and a vast amount of studies show that individuals with high working memory are more resilient to external distraction than their low-capacity counterparts. By analyzing the correlation between WMC and the standard deviations during three different cross-modal oddball experiments, the current study shows that individuals with low WMC display higher variation in their response times than individuals with high WMC. As all external stimulus is held constant during the task the found difference in variation may be interpreted as susceptibility to mind-wandering. That is, WMC does not only predict resilience towards external stimuli but also towards internal stimuli. Interestingly however, this link is only apparent when the standard sound is held constant as opposed to changing with each occurrence.

Different selves: Sustainable behaviour at home and work

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The human being can be a very different person at home, work and leisure. There are often inconsistencies in the way people behave in different settings. In relation to sustainable actions, people are often more environmentally engaged in a home setting compared with a leisure setting, and this negative spillover between contexts is often greatest for individuals who are moderately pro-environmental, often the majority of people in a sample (Dolnicar & Grun, 2009; Barr, Gilg & Shaw, 2011). The negative spillover between home and leisure contexts might be intentional because of behavioural inversions; people often go on holiday to intentionally take a break from daily routines, within which pro-environmental behaviours situate (Currie, 1997; Shaw & Williams, 2004). It is, perhaps, unsurprising that pro-environmental behaviours performed at home do not spillover to a holiday setting. People want to be a different self when on vacation. Due to greater similarity in frequency and routinization, we might expect people to have more similar selves in home and work settings. Indeed, in relation to pro-environmental behaviour, the direction of spillover between home and work settings is less distinct; both positive and negative spillover has been observed and appears to differ according to behaviour type. People tend to display a home bias when performing recycling behaviours (Tudor, Barr & Gilg, 2007; McDonald, 2011) whereas for energy consumption, the direction of the difference is less distinct and both positive and negative spillover from a home environment has been found (Littleford, Ryley & Firth, 2014). Overall, it seems that a change in context from home to work can disrupt significantly pro-environmental behaviour and prevent spillover across contexts. Put differently, the human being can also be a very different person at home compared with at work. In light of these empirical findings, the research reported in this paper explores

further behavioural fluidity across home and work contexts by exploring the spillover in pro-environmental behaviour between home and work settings across a greater range of pro-environmental behaviours. To progress existing research, it also explores the perceived influence of intrinsic and extrinsic factors on people's ability to save energy in these settings. The data were collected by questionnaire and self-reported. The results indicated a degree of spillover in the performance of pro-environmental behaviours with explained variance ranging from 7%-42% depending on the behaviour type. Concerning the factors that are perceived to influence energy saving at home and work, there was a large degree of similarity; personal beliefs and responsibility consistently had a strong influence in both contexts however, some differences also emerged. Respondents thought that social and physical factors in the context had a stronger influence on their workplace behaviour. These results suggest that individuals do not take their whole self to work or perhaps that factors in the workplace prevent people from being their true self. Future research should consider how workplaces can encourage positive spillover from home and enable people to act pro-environmentally consistently across locational settings and different sites of practice. pro-environmental behaviour; spillover.

Behavioral tracking of the families with small children and the elderly at expressway rest areas

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Introduction It is requested that the public facilities improve "quality of life" to the various users from a viewpoint of well-being. In Japan, we are aiming to make the expressway rest areas a place not only for taking a break from the travel but where people of all ages and nationalities can spend time conveniently and comfortably. Japan is faced with a low birth rate and an aging society. So in addition to taking measures for the seniors, providing an environment that is friendly to the parents and small children as a countermeasure to stop the falling birth rate has become important. This idea also applies to the rest areas, and therefore, it has become essential for the rest area facilities to meet the needs of the families with children as well as the elderly. Purpose The purpose of this study is to clarify what makes a convenient, comfortable rest area for the families with small children and the elderly, by observing their behaviors at the rest areas. Method To analyze the behaviors of the families with small children and the elderly, we conducted behavioral tracking and interviewed them at the rest areas, after getting their permission to do so on the day of the survey. The elderly who are a subject are people sixty five years old and over, and the families with small children who are a subject are the families with children aged one to six years old. The observation was carried out at three well-equipped rest areas in Japan, and fifty nine families with children and forty one seniors were observed. The details of behavioral tracking are as follows. 1) Tracks of behaviors of the subjects are recorded on a map. 2) Classified behaviors of subjects into indices "location, condition, action" set based on preliminary research and recorded duration of behavior. Also recorded if behaviors of subjects are those specified in the established rest-area program "using restroom, eating,

moving around” or not. Results and Conclusion 1) A high percentage of behaviors taken by the families with children originate from the children. Playing in the park take up a high percentage of behaviors of children that are not included in the rest-area program, although the interview revealed that most families did not realize there was a park at the rest area, even though there was one. 2) As for the seniors at the rest areas, a high percentage of them spend time to get some air and a change of pace by sitting on an outside bench where the view is good or going window shopping. Keywords expressway rest areas, behavior observation, children and elderly.

Relationships between the meaning of urban environment and active behavior from the perspective of cognitive linguistics

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Introduction People’s active behaviors reacting to environments are influenced by transactions between man and environment. In such transactions making sense of the behavior is important. But few studies have been done to verify what “meaning” the environment holds from this viewpoint. Meanings are studied mostly from a linguistic prospective, and especially in cognitive linguistics, meanings are considered a cognitive phenomenon. Cognitive linguistics basically sees meanings as things that do not distinguish between meaning and conceptualization. Conceptualization is considered as active behavior which selects meanings from experience to carry out sense-making. So to grasp the meaning of an environment, which is yet to be defined, through active behavior of people, looking at it from a cognitive linguistics perspective is an effective method. Purpose The purpose of this study is to clarify relationships between active behavior and the meaning of urban environment from a cognitive linguistics perspective, by studying people’s wayfinding behaviors in urban areas. Method Wayfinding behaviors of subjects in a relatively quiet residential area were studied. The subjects were divided into 3 groups based on the given “sense-making” instructions and behaviors. Group A: Subjects were initially told that the proving ground is an urban area where they might live in the future, giving a meaning to their behavior. In the appraisal, the subjects behaved actively and found their way following their thoughts. Group B: Subjects were told the same as Group A. But the tester took Group B along the route that Group A took. In the appraisal, Group B’s wayfinding behavior was passive. Group C: Subjects were not given initial instructions. And like Group B, the tester took them along the route Group A took, and they followed passively. Results and Discussion 1) Recalling experimental memory based on the cognitive map created The correctness ratio of the recalled experimental memory a week after the test was in the following order: Group C < Group B < Group A. This shows that a memory of an urban environment attached with a meaning tends to be more easily placed in long-term memory. 2) Conceptualization of urban environment based on Grounded Theory Approach Conceptualization of urban environment becomes structurally richer in the following order: Group C < Group B < Group A. Group C conceptualized only the observed facts in the urban environment, but Group A and B conceptualized the urban environment not only on objective facts but on a construal that the place may be where they will live in the future, projecting themselves in the area. Conclusion Active behavior in urban environments functions to enrich the structure of memory and concept in an urban environment. Passive behavior also creates meaning to the urban environment but the richness of the meaning

does not surpass the meaning created by active behaviors. That is to say, the elemental meaning of an urban environment is shaped by active behaviors of people. Keywords meaning, active behavior, transactionalism

Embedding health in sustainable policy: Healthy Australian universities for work, education and research

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Background: Health promoting Universities have the potential to reach thousands of people directly and indirectly. In Australia there are 39 universities who employ 120,000 staff and educate over 1.3 million students annually. Universities as a setting have the capacity to embed health in their core business and values. There is strong evidence that links healthy environments with positive health outcomes and lifestyle choices. Universities are a place of work, education and research, they have a large impact on the local community as well as serving the larger community in research and practice. Universities are often considered leaders in our society with resources to champion the demand for healthy environments in Australia. This thesis aims to understand the motivators for universities in Australia to increase healthy campuses through sustainable health promoting interventions and policies. Smoke-free campuses as a case study is applied to understand the complexities within the university setting. This example looks to explain the motivators and uptake of smoke-free, and the implementation approaches. Smoke-free environments in Australia represent a significant public health effort in tobacco control and the most prevalent of health initiatives across Australian universities. Methods: First phase: Policy document analysis of all 39 Australia universities smoking policies. Policy analysis has been undertaken to understand the current smoke-free climate across all universities. The analysis tool used was based on four existing models, informing the development of a comprehensive analysis tool for policy documents and interviewing. Second phase: Semi structured interviews with up to 70 key stakeholders in a range of roles across a sample of Australian universities. These interviews are currently being undertaken to understand the motivators for moving to some-free campuses and the implementation and engagement approaches to sustain change. Organisational change theory is guiding the collection and constant comparative analysis of the data. Results: The analysis highlights significant variation across the universities’ policies and processes. There is a limited sense of cultural change and progression to embed health within the current documents across the universities. This will be explored further through the interviews with key stakeholders to highlight the enablers and barriers experienced within and across universities. Conclusions: The links between research, policy and practice will be highlighted through this study and reveal the nature of health promotion within the University setting. This research has the capacity to guide universities into health promoting environments and enrich the lives of those staff and students directly affected as well as those family, friends and community indirectly affected.

Psychological benefits of green buildings

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Some studies suggest that environmentally certified buildings may have psychological benefits for their occupants (e.g., higher perceived overall comfort and greater work place satisfaction). In my coming paper, I aim to investigate whether people will perceive a room as more comfortable and satisfactory following information regarding a bogus environmental certification of the building in which the room are situated. The research procedure will consist of two conditions (i.e., one experimental and one control condition) and two measurements. Both conditions will first receive a questionnaire before a lecture regarding a survey exploring how students perceive the indoor environment in a classroom in which they are in, the questionnaire will also contain questions about environmental concern and pro-environmental behavior intentions. One month later the participants in the experimental condition will receive the exact same questionnaire but with complementary information telling them that the room has in the past month undergone certain interventions leading to an environmental certification, whereas the control condition will receive the exact same questionnaire again. The hypothesis is that the participants in the experimental condition will perceive the room as more comfortable compared to the control condition in the second measurement. An intriguing research question is if the participants in the experimental condition will score higher on pro-environmental behavior intentions and on environmental concern compared to the control condition, if this is the case it will have implications for previous studies showing that occupants of environmentally certified buildings have greater environmental concern compared to occupants in conventional buildings. Finally, the results will both methodologically and theoretically deepen the understanding about why "green" buildings can have psychological benefits.

Poster session:

Theme 9. Designing for elderly

Location: Ateljé, The A-building

The elderly's preferences on patient room design

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Along with the recent rapid growth of the elderly population, the portion of inpatients 65 years and older in South Korea has increased from 8.8% to 25.4% over the last two decades, causing demands for patient-centered geriatric hospitals to escalate. Inpatient rooms compatible with elderly patients' distinctive physical and psychological needs may generate a positive impact on older patients' healing processes and well-being. In order to provide age-appropriate healing environments for the elderly, patient rooms should be planned and designed with respect to their environmental needs and preferences. The purpose of the study was to investigate healing design attributes for Korean elderly patients by examining their environmental preferences on patient room designs. A total of one hundred elderly people 60 years and older in Korea participated in the study. In order to identify the impact of different health conditions on preferences of the elderly, participants consisted of fifty hospitalized patients and fifty non-patients. The study adopted a pre-construction simulation method in measuring respondents' appraisals of patient room designs. A total of 10 computer-generated semi-private patient room photos were examined by participants, with 8 different design variables: flooring, wallpaper, view from window, personal storage units, bed frame finishes, seating, ceiling lighting, and partitions. The first room was a prototype based on an existing patient room in a local hospital, finished with linoleum flooring, solid colored wallpaper, a city view, a tall storage unit, metal bed frame, folding chairs, shared lighting, and a privacy curtain. The next room was a new patient room finished with wood flooring, patterned wallpaper, a natural outside view, a low storage unit, wooden bed frame, sofa, individual lighting, and a wooden partition. Changes in the 8 design variables from that of the existing patient room to that of the new patient room were embedded separately in each of the next 8 patient room photos. These 8 photos were compared with the existing patient room. In order to identify the impact of a complete design change in patient rooms, the existing patient room and new patient room were examined using sixteen bipolar word pairs. The results showed that the participating elderly evaluated the new patient room design more positively than the existing room, indicating that existing patient rooms for elderly patients in Korea need to be modified. With regard to each individual design variable, participants preferred linoleum flooring, a natural outside view, a tall storage unit, wooden bed frame, sofa, and a privacy curtain, with no significant preference of wallpaper pattern. *This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government(NRF-2014S1A5B8044097)

A comparative study between Korean and Japanese environmental design checklists for the elderly in exhibition facility

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As the population of old people around the world is increasing, and as the people pursuing various cultural activities, more elderly people tend to visit the exhibition facilities. Therefore, their physical environments need to afford the elderly with high amenity. The purpose of this study is to investigate, compare, and analyze whether the exhibition facility environment design checklist considering the elders physical attribute is applied to the representative exhibition facility of Korea and Japan this study will also draw out the method of upgrading the checklist. Study method is as follows: 1) Develop the Checklists in Exhibition Facility Design checklist in exhibition facility that considers physical attributes of the elderly: Draw physical attribute of the elderly and set the checklist range by classifying the exhibition facility into entrance, exhibition, public service, social education, and movement at exhibition facility. U.S.(Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities, 2002), Japan(Heart Building Law, 1994), Korea(Laws on convenience assurance of disabled, elderly, and pregnant woman, 2012) and preceding research(Lee, Jae-Goo, 2002/ Lee, Hye-Jung, 2004) and Seoul City's Barrier Free Manual(2012) is evaluated to develop 51 checklist items. 2) Investigate and compare the checklist items for the elderly by visiting 8 representative exhibition facilities in Korea and Japan: 4 From Korea (2 historical and 2 art museum - National Museum of Korea, Seoul History Museum, National Museum of Contemporary Art, Seoul Museum of Art) and 4 from Japan (Tokyo National Museum, Edo Tokyo Museum, Museum of Contemporary Art Tokyo, The National Art Center, Tokyo) 3) Draw out the method to improve the checklist by analyzing the both application states comparatively. Study result is as follows: 1) Korea and Japan both show significantly low or no sign of facility supporting the elder's hearing (audio guide, audio service). 2) Sign system, exhibition specification, lighting, finishing materials application considering the visual characteristics for the elderly (low vision, cataract, yellow color phenomenon) are inadequate. 3) Items specified on law is somewhat satisfactory, but the checklist items derived from the previous study is only partially or wasn't applied based on the condition of each facility.

Influence of reminiscence flavor on mental health for elderly

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Objective: Environment - human impact is not limited to the present. A new intervention combining reminiscence and elements of narrative therapy was developed and the effects on reducing depression and improving psychological well-being were studied. Past studies focus on visual and auditory elements of intervention. However, compared to other senses, olfactory and memory relationship more closely, this study want to explore reminiscence flavor on mental health for elderly. Method: The study employed a two-group pre-post-test design with random allocation to narrative reminiscence or an general conversation control condition. A total of 60 elderly people were interviewed, and the use of Biofeedback systems to measure the Heart Rate Variability (HRV) and Galvanic Skin Response (GSR)

changes in the interview. Psychological state was measured with State-Trait Anxiety Inventory(STAI-S) and Geriatric Depression Scale(GDS). Results: Analysis of changes from pre-test to post-test revealed that narrative reminiscence led to statistically significant reduction in symptoms of anxiety and depression in contrast with the control group. Further found that the intervention group LF / HF tended to stabilize the faster than the control group in HRV and GSR there was no significant difference in the two groups. Conclusion: The olfactory intervention has to be developed further and recommend follow-up studies can compare the differences influence of olfactory, visual, Auditory reminiscence for elderly. Keyword: Environmental flavor; reminiscence; elderly

The life of the elderly in senior housing with supportive service: From a comparative survey based on a questionnaire for residents of senior housing in Japan and Finland ***Satoshi Ishii¹***

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In this study, a questionnaire survey was carried out with the residents of senior housing with supportive service in Japan and Finland as the target participants. This study specifies the participants' age, gender, understanding of their physical condition, reasons for moving to senior housing, the state of their life at the housing in relation to their various activities, and the state of their relationships to their family and others. Furthermore, this study aims to clarify differences in the understanding of and interactions with housing for the elderly through a comparative examination of the survey results based on an understanding of the differences in societal and cultural backgrounds. The targets of this study are the residents of elderly housing who have a comparatively high degree of physical independence and live independently on a daily basis. We received responses from 230 individuals in 10 flat housings in Japan and from 147 individuals in 12 flat housings in Finland. The survey was initially carried out in 2011 and the same survey is currently being carried out again 4 years after the 1st survey in Japan. Because there have been drastic changes to the system and policy in these last 4 years amidst government intentions to actively push for senior housing with supportive service, there has also been an increase in awareness concerning senior housing in the society and it is also predicted that there have been changes to the understanding of the residents themselves. By adding the comparative analysis of the survey results from 4 years ago to the results of the survey currently being carried out, I believe we will be able to clarify the understanding and changes to the understanding of the elderly towards senior housing for the elderly in Japan as well as to clarify the state and characteristics of established the housing in Japanese society.

A study on the bathroom planning based on the care system of staff in nursing homes for the elderly

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Background In Japan, the aging advances most in the world (As of 2015, 25%), it is the feature that the speed of the change is much more rapid than that in western countries. Although the number of elderly people increase year by year, by declining birthrate the

young population tends to increase. Furthermore, in the nursing home, the state that is short of chronic labor is continuing, because the treatment of the staff, what is called pay and social status is not so high. Consequently, although nursing homes are upgraded and the number of nursing homes is growing, Even if facilities are completed, as they cannot be assuring the enough numerical staffs, administration may not start. At the peak in 2025, the elderly person population of Japan declines. During then, since it leads to sustainable life to keep the balance of supply and demand of the staff, it is necessary to take immediate measures. One of the measures is restraint of the physical burden, which is one of the factors that is short of care staff, the other is the construction of care system by the numbers of people less than the present. The introduction of the welfare equipment attracts attention to achieve those purposes. Specifically, caring the aged to take bath is the most difficult work to take times and to be burdened. But, this is especially important because taking bath is quite significant custom for Japanese. Purpose This study aims to investigate bathing environment reducing the burden on care staff. Therefore it was analyzed by bathroom space such as space scale, the use situation of the welfare equipment, and both sides of the care method like as the use situation of the space, use of bathroom. Design methodology Four following technique were used to achieve the purpose. 1. The actual situations of burden placed on nursing staff and usage of welfare equipment 2. Plane characteristic of the bathroom space 3. Tendency of the user in various bathtubs 4. Space use of the bathroom and line of flow of the bathing assistance Conclusion This study explored outcome of an optimal bathroom plan to decrease the nursing staff's burden. Bathroom maintenance policies in Japan included the following things. The setting of a dispersed bathroom to the staff reduces the burden that care staff must regulate with others, the space scale that is appropriate (not too big), The dressing room which can perform various activity are demanded. The usage of welfare equipment and care bathtub is effective to raise safety. But, the ability for independence of the elderly is robbed of it excessively, when they are depend on it too much. Thereby, it is important that I ascertain the need individually. It is thought that the findings in Japan which the aging advances most in the world can be applied to facility planning of Asian countries in the future.

Age-friendly degree of living environments of Busan city perceived by the elderly
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As the aging population has been rapidly increased, the demands for age-friendly living environments are also growing. The age-friendly living environments, especially physical ones were the fundamental factor for independent life of the elderly. This study examined how the old people perceived their living environments from the age-friendliness perspective. This study focused on the physical environments which were made up 34 items from 3 areas; 12 items of outdoor environments and buildings, 14 items of transportation area, and 8 items of housing area. The subjects were 525 old peoples who lived in Busan city and aged more than 60 years. They were selected from 16 Gu. The data were collected through the interview with 525 aged. They answered the degree of age-friendliness of their living environments using by 4-points Likert scale. The findings were as follows: 1) The subjects answered that their physical living environments were relatively age- friendly. They

rated 34 items from 2.05 points to 3.02 points. Among 34 items, 24 items were more than 2.5 points(2.50-3.02 points) and 10 items less than 2.5 points(2.05-2.49 points). 2) The 12 items of outdoor environments and buildings were rated from 2.36 points to 2.99 points. The 14 items of transportation were min. 2.05 to max. 2.97 points. The 8 items of housing were 2.34 to 3.02 points. 3) These age-friendliness of living environments which the subjects perceived were significantly different according to the old people's characteristics, such as residential area(31 items), economic level(28 items), housing type(21 items), academic background(19 items), health condition(18 items), and home ownership(17 items). The age-friendly degree of 31 items related to living environments were different depending on residential areas. The higher their economic levels and academic backgrounds were, the higher age-friendly degrees of their living environments the subjects perceived were. Also, the old peoples who lived in multi-family houses perceived their living environments more age-friendly than the ones in independent houses. The subjects who were healthy and had home ownership perceived their living environments more age-friendly. These findings implies that all residential areas should be evenly considered to be age-friendly. In order to achieve this, the systematic approach from the municipal authorities needs. This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government(NRF-2015S1A3A2046745).

The analysis of the difficulty of daily life regarding all elderly people in aging Kita ward, Tokyo

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The objective of this paper is to show the way of the environmental improvement and the support scheme for the sustainable urban living of the elderly. The Kita ward that we focused on is the most aging urban area in 23 wards of Tokyo. The rate of aging is 25.2% in 2014 and is still going up. The number of single or couple elderly household is also increasing. On the other hand, the various dwelling styles such as detached house, apartment, and housing complex are found in this urban area. This means that the characteristic of environment or community would depend on each block, that is, the needs of the elderly support service would be different from what nature of the block has. From this point of view, collaborating with this ward office, we tried to grasp the difficulty of daily living about all the elderly in each block. The ward office conducted an administrative survey of 77,903 old people in 2011 and got the comprehensive characteristic of the daily life through the response from 60,219 people. Based on this data, to analysis in detail with the objective, we set the following 9 indicators selected from the questionnaire ; 1) lack of enrichment in daily life, 2) less the pleasure, 3) no relation with own family and friends, 4) less relation with neighborhood, 5) no adviser or mentor for daily anxiety, 6) inconvenient of purchase, 7) less opportunity of going out, 8) just stay at home even in poor physical condition, 9) nobody comes quickly in case of emergency. If one would reply all "yes" to these indicators, it is cleared that he or she would be in so serious situation. Thus we tried to get the tendency of the reply combination for one person as a unit by using the corresponding and cluster analysis software. As the result, the elderly in the ward was classified into 9 types of the difficulty in daily living. The number of the elderly who answers all "no" to the indicators was about 31,623 people (52.5%). This type of the elderly has little anxiety about their own life and could enjoy their everyday lives. On the other hand, two types within 9 were in the most

serious situation. One of them lead a solitary life with less happiness and 1,055 old people were applied to this type. The other had less relation with neighbors and less chance to going out without own pleasure of daily life. This type applied 1,372 old peoples. In addition, we grasped the composition of the types in each block. Those two serious instable living types were distributed in some specific blocks where the large-scale housing complex was built. Furthermore, even the administration has undertaken various support service for the elderly, they had low degree of recognition and didn't receive the service enough. From the above, it is important to analyze the urban life condition in the every block and to consider the measures for each local subject.

Use of public space and life satisfaction on elderly

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The research recognizes the relationship between the physical environment in urban context and the human behaviour, particularly in elderly ((EC, 2012, WHO, 2007). Nevertheless a systematic understanding on the impacts and opportunities offered by the urban environment on the human cognitions, emotions and behaviour, is still not fully explored. Aging contributes to the perceived and real reduction of the motor and cognitive abilities as well as the health state, often accompanied by a negative mood. The physical environments in urban and periurban context, sometimes appear as a hostile with an overflow of stimulation, dangers and challenges that can contribute to a reduction of self-efficacy perception of the elder people. The result is usually a reduction of action outside the home and the consequence reduction of social relationships. Otherwise, if the quality of physical urban environments is perceived as friendly it is expected that relevant contributions from two central aspects will sustain the ageing people active and well at home with an independent living: physical activity and social networks. In fact, the living environments can promote a cognitive and physical stimulation by facilitating and promoting the mobility, the access to natural settings and to public spaces, promoting the social interaction and by providing a set of facilities that support the aged people needs. The aim of this study was to explore the importance of sociodemographic factors (such as age, sex or household composition), and the physical characteristics of the residence area (such as residence type, and distance to the city center) in environmental perception (as the perception of environmental barriers, and the perception of the quality and safety of paths) and on the perception of self-efficacy and perceived motor skills. Finally, how these factors influence the use of public space, social interaction and the satisfaction. 140 residents of a city situated in the periurban area of Lisbon, aged 65-85 years, were interviewed. The questionnaire included questions about the use of space; public space quality and security perception; perceived barriers, self-efficacy perception, social networks, place identity, and life satisfaction. Regression analysis showed the relationship between these variables and showed the importance of studying these variables to understand the use of urban space in the elderly. The implications of these findings for the design and urban planning were explored.

Poster session:

Theme 10. Designing for people

Location: Ateljé, The A-building

Intergenerational home share program in Seoul, Korea

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The concept of 'sharing' has been recognized to the public since Seoul metropolitan city government declared and established the ordinance to conduct 'Sharing City Seoul' project in 2012. 'Room sharing between the generations', which is a part of the 'Sharing City Seoul' project, is a home share program between old and young generations aimed to solve aging problems as well as housing problems of the youth. Seoul city government supports this program for gu-district government to offer citizens a chance to participate in and experience 'sharing'. Since one test bed in Nowon-gu district office started the program in 2013, the program has expanded to other gu-districts in Seoul as well as on a nationwide scale. Home share was a common living arrangement among students, young workers, newly-wed families, families with young children, etc. until 30~40 years ago in Korea. Due to the housing policy 'one dwelling for each household', home sharing climate disappeared with mainly high-rise apartment complex being supplied massively. Currently there exist many housing poverty issues among the youth because of the shortage in college dormitory and high rental fees. Meanwhile elderly single households have relatively high home ownership and direct/or indirect home sharing experiences. Thus home sharing can be concluded as an attractive living arrangement to the both parties with different interests. Now that the home share program has been implemented for three years in Seoul, there is a need to evaluate the program to push it forward. This study searched the realities and problems of the program from four gu-district offices (Nowon-gu, Gwangjin-gu, Seodaemun-gu, and Seongdong-gu) which succeeded in more than 10 matches by August, 2015. Data were drawn from websites and interviews with the staff in charge. Actual participants of the program and waiting lists of householders and homesharers have been increased over time in the districts. More than half of the total of 102 cases were female single householders with female students. As expected, the main reasons for sharing were loneliness, security, and inexpensive housing. Apartment type of dwelling was the most preferred by homesharers. Regular or irregular staff charges the whole program consisting of five stages (advertisement, reception/ counseling, matching, contract, and follow-up service). It is required to train a professional coordinator and transit the program to NPO in order to specialize and sustain the program. Follow-up study would explore the needs of potential householders and homesharers along with troubles in home sharing to develop a step-by-step manual to systemize the whole program. It would be recommended to construct a national organization and join the international home share network to share the worldwide experience in order to more widely spread and better establish.

Analysis of shared housing program types according to the environmental awareness of the aged society

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The aging of population is one of the characteristics of modern society. Despite the fact that there are OECD countries such as Japan, Germany and Italy that have already entered the super-aged society, aging in Korea is being carried out constrictively at an unprecedentedly high speed. The Statistics Korea (2015) predicts that since Korea has entered the aging society in 2000 with the population age 65 accounting for 7.2% of the entire population, it will undergo the aged society in 2018 (14.5%) and enter the super-aged society in 2026 (20.8%). In contrary to the increase of the aged population, the child population is rapidly decreasing, showing an abnormal change in the population structure. The objective of this study is to come up with the concepts of shared housing according to the changing environmental awareness of the aged society, and to investigate and analyze program types of cases. The research methods are as follows. First, the concepts of shared housing for intergenerational shared space of the aged and the rising generation are deducted to replace the individual residential life of single-person households of the aged and the rising generation that are showing the greatest change in the population structure. The concepts are deducted by determining the scope of new social perception of housing type, and setting research scope with basic conceptual definition to grasp the issues and provide solutions based on case studies similar to shared housing. Second, a database is established by conducting a literature review of previous studies and cases in Korea and overseas, and exploring the spaces on site. The cases are data on shared life between different generations, which enables social relations with the rising generation while constantly maintaining the personal life of the aged in the intergenerational shared space. Detailed programs for each case are analyzed. Third, a demonstrative case is analyzed to determine the applicability in Korea according to the concepts of intergenerational shared space and types of programs. The existing shared houses for the aged are not yet actually implemented in Korea despite the increase in the aged population, and thus most studies are merely investigating and analyzing overseas cases. The analyzed cases and programs will be a foundation for them to be actively applied to the Korean environment. In conclusion, the study and analysis of program types according to the concepts of shared housing may result in the following ripple effects. First, new topics of academic research may be derived with the generational exchange and convergence between the aged and the rising generation. Second, in the social aspect, the results of this study can be used to solve social and welfare problems such as solitude, isolation and economy with support for the aging society such as active aging and aging in place. Third, this study is expected to be used in multidisciplinary convergence education of humanities & social science, environment, residence, city, architecture and design to implement plans to expand generational exchange by training and nurturing human resources.

Perceptions of housing among single mothers in South Korea: The case of residential welfare facilities

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This paper examines residential satisfaction in residential welfare facilities exclusively built for low-income single mothers in South Korea. The goal is to identify single mothers' perceptions of various residential environment attributes. In particular, single mothers' sociodemographic features, subjective assessments of their physical and social housing environment, and objective spatial characteristics of the residences were studied to determine specific indicators that may influence overall residential satisfaction. Data were obtained by surveying 233 single mothers in 23 welfare residential facilities in the Seoul, Incheon, and Gyunggi areas in South Korea. Supplemental data were collected in field studies and interviews with the housing managers of the 23 residential facilities. The results indicated that, in general, the respondents were satisfied with their residential environments. However, their levels of satisfaction varied depending on their sociodemographic backgrounds and the objective spatial characteristics of their housing. Single mothers in their 40s, single mothers with stable jobs, single mothers with two children, and single mothers with a child of elementary-school age were more satisfied with their residential environment. In terms of objective spatial characteristics, residences with L-shaped plans, common spaces at low levels, and two-bedroom units were more satisfactory. With regard to subjective assessment, factor analysis revealed 13 factors in the physical, ambient, social, management, and neighborhood domains. Predictors of residential satisfaction were identified from among sociodemographic, subjective, and objective characteristics. Sociodemographic variables related to the family's lifecycle stage such as the age of the mother, the age of the first child, and family size emerged as strong predictors of residential satisfaction. Management and maintenance, family activities, and the quality of the corridor space were also predictors in regard to subjective assessment. Objective characteristics such as plan form, the sectional arrangement of common spaces, and housing-unit occupancy types were also predictors of residential satisfaction. Instructive findings and implications are discussed. Keywords: Residential satisfaction, residential welfare facility, single mother

Living in a large housing estate - A long-term project over 35 years

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A sociological long-term study over 35 years gives evidence about the dynamics of a large housing estate socially, environmentally and concerning construction changes. 10 sociological surveys have been conducted to analyse the resident's perception of their housing conditions, their place attachment and the valuation of their residential quality. The major aims of the survey are: - a realistic valuation of the housing and living conditions in this estate from the perspective of the residents, - the acknowledgement of the improvements of the estate over three decades - to gain knowledge about the main obstacles and limits to consider this housing segment as favourable - to highlight the environmental advantages of the location - to pursue the socio-demographic

development of the population over a long time duration and to deal with ageing - to give recommendations for adaptation of social and technical infrastructure according to the change of the socio-demographic structure of population - to face the challenges concerning integration of refugees and asylum seekers within the estate From the methodological point of view I will demonstrate the value of a long-term observation to characterize the non-linear development of an entire estate in a proper manner.

Retirement-ready neighborhoods: Designing an intentional naturally occurring retirement community (iNORC)

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By definition, the key ingredients to “successful aging” include: physical health, social engagement, and purposeful activities. Though straightforward, accomplishing these is complicated by common late life changes. For instance, milestones, like workforce retirement and no longer having children at home, shrink a senior’s social network. Common physiological changes, such as reduced mobility and visual acuity, also present challenges. These make it more difficult to make trips beyond home, increasing isolation. Perhaps this is why many older adults are attracted to Naturally Occurring Retirement Communities (NORCs), known for attracting seniors as a result of their lively social scenes. NORCs refer to mainstream apartment complexes/neighborhoods not specifically designed for seniors yet having high concentrations of aged residents. Though seemingly an ideal non-institutional housing solution for seniors, NORCs are difficult to replicate since this housing type includes a variety of neighborhood and apartment complex types and sizes. Often debate as to their specific attributes results from this diversity. Also, NORC residential and communal space designs reportedly fall short of meeting seniors’ changing needs. This suggests NORCs may attract seniors but are not a housing panacea. In NORCs, and mainstream housing in general, home environments are rarely designed to support common aging-related changes. Consequently, many older adults struggle to thrive. Despite this, the vast majority of seniors seek to spend later life in their family homes. To support seniors seeking to age successfully in mainstream neighborhoods, it is critical to understand how to create neighborhoods and their social spaces (e.g. cafes, coffee houses, etc.) to meet older adults’ needs. For this purpose, this study sought to understand the relative importance of 40 factors identified in prior research as aiding seniors aging in place. To do this, Multi Attribute Utility Theory (MAUT) was applied to interview data from 63 seniors living within the case study community. MAUT analysis provided mathematical insight into each factor’s relative value, identifying design priorities to create neighborhoods and social centers to optimally support aging in place. In other words, this analysis tells us not just what is important but how important a factor is as well. Of 40 factors examined, the most critical factors to include in neighborhoods intended to attract older adults and aging in place social needs included:

- Locating key retail services (i.e. pharmacy and grocery) convenient to home and other places visited daily
- Maintaining a site’s natural beauty
- Having family nearby. Pertaining to neighborhood social spaces, the most essential factors to include were:
- Creating spaces that support private conversation and group gatherings
- Appealing to mixed ages
- Offering flexibility to accommodate various group sizes. These findings may be useful to individuals aging in place as well as to developers and other commercial entities creating or

owning parts of these communities. By imbuing mainstream neighborhoods with qualities known to attract seniors and support their social needs, the application of these findings are intended to inform the intentional development of Naturally Occurring Retirement or iNORCs.

Dualism in Javanese house

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Indonesia is an archipelago country and it consists of diverse ethnic groups. Among its islands, Java is the largest island with highest number of population. Yogyakarta, a city within Java, has been the center of Javanese heritage and culture.

Javanese believe that cosmos (natural world) is composed of various opposite concepts – day and night, brightness and darkness, heaven and earth, left and right, male and female etc. When such contrasting concepts are balanced orderly, cosmos gains equilibrium. Since Javanese people perceive house as a microcosm of the natural universe, they seek to find balance in their housings as well.

To the Javanese, building a house means unifying oneself with the nature (Himasari, 2011). As the result, when Javanese build a house, they balance the contrasting housing components - east/west, front/back, public/private, male/female, open/closed, etc. – in order to follow the symbolic order of the natural equilibrium. Such dualism, which is significantly represented in the form and the use of Javanese housings, causes the house to consist various separated units assigned with contrasting concepts.

In addition to the dualism, hierarchic order is another belief signified in Javanese housings. Javanese people believe that cosmos consists hierarchical divisions between god, human, and animal, which keep nature in balanced peace. Such belief in hierarchy influences the floor level, height, lightness, and the decoration of the housing spaces’ forms and uses. We have done documental reviews about Javanese housings (Kim and Ju, 2014), and this study takes the second step of such precedent study. Through conducting case studies of selected traditional houses in Kotagede of Yogyakarta, we aim to clarify the applications of dualism.

Field survey was conducted on August 2014. During the field survey, we measured the houses and interviewed with the residents in order to understand the history and use of the housing components. After the survey, we chose five Javanese houses and analyzed them. The study focused on three major dueling concepts – god/human, public/private, and male/female – to analyze each Javanese buildings and spaces. By studying the residential behavior, decoration, location, and purpose of the housing components, we aimed to understand the influence of dualism in Javanese housing culture.

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Potentials and challenges of the social, natural and built environment in large housing estates from the resident's perspective

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In Western European Countries large housing estates have been often considered as social hotspots but without any natural and built attractiveness. Social tensions among the residents, riots and youth unemployment are the topics in the news-reports about living and housing in large housing estates. Nevertheless, there are potentials for acceptable housing conditions if these estates are considered as important parts of the housing market of the city, experiencing public attention and investments to house people in good conditions. A recent sociological survey in June 2015 among the residents of a large housing estate in the city of Leipzig in Germany with about 40.000 residents gave evidence about the appreciation of their residential conditions. Appropriate infrastructure facilities, diverse green and open spaces as well as well functioned public transport are the main features for high residential satisfaction and place attachment. In contrast to the positive characteristics, negative experienced behavior such as alcohol drinking people in public spaces or reports about security issues such as burglary and lack of cleanliness affect the quality of life in this estate. And what is most problematic, the negative characteristics get much more public attention than the mentioned positive features, and they coin the image of the entire estate. Nevertheless, there is a growing need for well-equipped apartments with payable rents in healthy environments which can be offered in these estates. Local people are looking for appropriate housing offers and direct their attention towards these estates. Additionally, many German cities are facing big challenges to house a large number of refugees and asylum seekers. In these estates exist buildings which are not private owned and thus, can be used to provide accommodation. But there are restrictions by the residents fearing more social tensions and negative impacts on their everyday life. How to keep the residential conditions in good quality and how to integrate newcomers including refugees and asylum seekers, are the major challenges of the large housing estates.

Housing needs of zero-rent renter households in Jeonju, South Korea

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This study investigated housing situation and housing needs of zero-rent renter households, a disadvantaged group that could not even afford public rental housing, among recipients of the National Basic Living Supports in Jeonju, South Korea, in order to for development of support programs. In January 2014, a questionnaire survey was conducted to 166 zero-rent renter households sampled through a two-stage sampling procedure. First, among the 1,590 households receiving the National Basic Living Supports in Jeonju, 500 households were proportionally selected based on number of households in each of administrative districts (Dong). Then, 166 zero-rent occupants among the 500 households were finally selected as the study subjects. The questionnaire included current housing condition, housing cost burden, housing satisfaction and needs, and socio-demographic information. Two-person teams visited subjects' residences to conduct the survey.

Major findings were as follows. Most frequent type of the zero-rent renter households were those living in friends' or relatives' residences without rental payment for financial difficulty resulted from sudden divorce, death of spouse, disability, other health reasons, debt or foreclosure (88.1%). More than half had lived under current housing situation for more than ten years, and 71.1% did not have any plan to move. Most of the respondents lived in single-family detached houses and multifamily housing. Average house size was 67.1 square meters and 82.6% were in 2- or 3-bedroom units. More than 50% lived in old structures aged 25 years or older. There were households lived in units without private kitchens, private bathroom, or flush toilet. Some lived without hot water supply in kitchen, heating, proper water supply, sewage service, fire safety features, short circuit breakers or sufficient insulation. Housing costs were perceived the heaviest burden to the household finance by 88.5% of the respondents. Average housing costs was 191,000 won which was 34.9% of average monthly household expenditure (547,300 won).

Housing satisfaction was measured in five-point scale ranging from 'very dissatisfied (1)' to 'very satisfied (5)'. Average housing satisfaction 3.05 and 32.1% were found somewhat or very dissatisfied with their housing. Major reasons of the dissatisfactions were poor insulation, old and poor structure condition, crampedness and expensive maintenance costs. Overall, neighborhood satisfaction was moderate to show average score of 3.10 while satisfaction with access to social welfare facilities was lower (2.80).

Major housing needs were summarized in two aspects: Housing stability and housing quality. Regarding housing stability, top-rated needs were extended provision of public rental housing, government control over private rent increase rate and improvement of homeownership. Regarding housing quality, enforcement of minimum facility, equipment and environmental conditions of private rental units were most needed.

In conclusion, to improve housing situation of zero-rent renter households, following three aspects should be considered. First, structural quality including heating and insulation should be improved. Second, burdens of housing maintenance costs (energy, electricity, water, sewage costs, etc.) should be lessen. Energy cost burden could be reduced after home energy-efficiency improvement. Third, policy supports should be extended to improve housing independence and stability including low-cost public rental housing.

Poster session:

Theme 11. Designing for the youngest

Location: Ateljé, The A-building

Nature experience areas – A new spatial category to promote urban quality of life for children?

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Urban environments provide a high level of stress, leading to a need for restoration. Rich theoretical and empirical approaches have shown that natural environments play a key role in restoration, particularly for children. Attention Restoration Theory points out that natural environments restore physical, psychological and social resources that have been diminished by daily demands. However, a recent trend shows that children's independent mobility and their cruising radius decreases constantly, limiting opportunities to perceive natural elements in an urban context. Some authors even address the alienation from nature in children. Planning processes can provide possibilities for children to perceive nature even in an urban context. In this study we focus nature experience areas, characterized as spaces mostly allocated by natural development with little human influence or extensive care only. Children are invited to play and experience nature without major supervision. Natural experience areas provide an affordance for natural contact, enabling cognitive, physical and health development of children living in an urban environment. A participatory approach aims to design three research spaces along with children in Berlin. The research questions focus the acceptance of such areas on the one hand and the comparison of play in nature experience areas and conventional playgrounds on the other hand, e.g. in terms of social interactions and complexity of play. In a longitudinal study approach user behaviour and place attachment are being focused additionally over the timespan of four years. Structured face-to-face-interviews will be carried out at three given times with a) institutions providing nature experience areas and with b) children using them. Restoration will be measured by the German translation of the Perceived Restorativeness Scale including the subscales „being away“, „fascination“, „compatibility and „coherence“ (Kaplan & Kaplan, 1989). Physical characteristics and planning processes are evaluated by experts in urban planning. First results of the research study will be presented and discussed. By serving children's need for restoration as well as physical and cognitive development, nature experience areas can provide an important opportunity to enhance their quality of life. The impact for planning and operation of nature experience areas will be discussed. Key words Nature Experience area; urban green space; cognitive restoration

The establishment of child-friendly environment indicators for urban neighborhood parks

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In recent years, the population in Hsinchu County, Taiwan has grown rapidly, especially in Zhubei area, and local residents' demands for public facilities have also increased over

the years. Neighborhood parks are the most approachable public recreation facilities, and are also the most common and open recreation sites. This study implements the "child-friendly" concept to establish a "child-friendly outdoor environment indicator" system as the examination basis for neighborhood parks, and uses it to assess the extent of child-friendliness of the environment. This study chooses Fu-Hsing Park, Wen-Hua Children's Park, and Hsin-Sou Park in Zhubei City as study sites. Indicator hierarchical framework and evaluation standards are established through reference induction, along with the use of "expert surveys" and "Analytic Hierarchy Process (AHP)". Three levels of indicators are determined. The first level is "physical environment" and "social psychological environment"; the second level includes "natural landscape", "artificial facilities", "learnability", "sociability", "healthfulness", "security", and "sense of participation"; the third level of indicators consist of 16 items including "can observe plants and animals", and among them, "safe use of space" is most highly regarded. The following conclusions are made after empirical study: Wen-Hua Children's Park has better overall planning and design, and therefore, are more child-friendly than the other two neighborhood parks; Hsin-Sou Park is the neighborhood park that is most well maintained; Fu-Hsing Park is full of historical and cultural atmosphere, and is the neighborhood park that has the best sense of neighborhood cohesion. The evaluation result of this study showed there is a difference in child-friendliness among neighborhood parks, and this indicator system may help provide some reference when it comes to planning, managing, or updating neighborhood parks.

Relationships of children's outdoor leisure activities and neighbourhood outdoor space in rural and urban areas of Taoyuan City, Taiwan

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Recently, the relationship between Taiwanese residents and their neighbourhood environment has gradually changed because of societal and lifestyle changes, for instance, in the development of personal transportation. However, neighbourhood sites are still planned according to stereotypical and traditional methods, with extremely similar spaces planned in different surroundings. In addition, the interaction within these similar spaces, such as neighbourhood parks, between neighbours and space users is infrequently discussed. Criticisms of and modifications to what neighbourhood areas afford in terms of children's activities seriously influence children's mental and physical development. Neighbourhood outdoor spaces are crucial for the development of children as they offer a suitable environment in which such development can occur. We selected one community in an urban central area and one community in a rural area, both located in Taoyuan City, northern Taiwan, as the study settings. Through in-depth interviews and questionnaires, we investigated the relationship between children's outdoor leisure activities and neighbourhood outdoor space affordance in rural and urban areas. The results are as follows. The favourite neighbourhood spaces of urban parents, based on the affordance of children outdoor activities, were schools (particularly elementary schools), large parks, basketball courts, skating rinks, temple squares, and neighbourhood parks. The favourite neighbourhood spaces of rural area parents, based on the affordance of children outdoor activities, were schools, courtyards, neighbourhood fields, temple squares, and ponds. Children used school spaces as their main neighbourhood outdoor activity

space in both urban and rural areas. Because of a lack of space and facilities, parents considered parks an unsatisfactory neighbourhood facility for children's outdoor activities. Safety was the parents' primary concern among the practical factors of spatial affordance in neighbourhood areas. Parents indicated that spatial closure (i.e., the affordance of surveillance) was the most crucial spatial affordance because of a lack of security in their neighbourhood. The activity scope of urban children was restricted by their parents more than that of rural children was. Parents in the rural area and urban area were both unsatisfied with the affordance of neighbourhood outdoor spaces regarding children's outdoor activities. Parents in the rural area considered the neighbourhood environments as too monotonous for children's outdoor activities. Parents in urban areas were unsatisfied with the neighbourhood outdoor space's affordance of facilities and adequate area for children's outdoor activities. Moreover, parents in urban areas highly worried about both the local traffic and the public security problems and consequently restricted the geographical range of children's outdoor activities in their neighbourhood.

Children's independent mobility and sense of neighbourhood

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Children the age of under eleven in Hong Kong are being advised that they have to stay home or travel always accompany with their guardian. This means that they are not allowed to be alone under any circumstances, neither outside nor inside of their house, for instance, go and from school, play with friends, go to an afterschool programme, and so on. In addition, they travel more and more on automobiles than moving on foot, and their travel behaviour is becoming just like a teleportation from one place to another. This gives children almost no opportunity to explore their neighbourhood by their own. Under these living conditions, how do children recognize their own surroundings? A Questionnaire research among children and their guardians has been conducted. The research shows that around One-Third of children do not visit their friends after school, Two-Thirds of all children even do not go out after school and just stay at home. Further more than One-quarter of all children do not go out for playing in their free time at weekends. However, under the conditions of very strong family relationships, very high dense of dwelling situations, and very convenient transportation system in the city, those children do not feel inconvenient of their living conditions and quite satisfied with their surroundings. Living conditions in the very high dense city with very low birth rate put children in surroundings always among adult. It means children's mobility and activities are controlled by parent's schedule and habit. This phenomenon limits children's activities and independent mobility, reduces their engagements to their community, and prevent from forming a sense of neighbourhood. It would be discussed that how we design the built environments and encourage children for more engaging to their own community, if forming a sense of neighbourhood is a key not only for making good living environments, but also for creating physical and mental health and well-being.

Urbanicity in relation to internalizing and externalizing problems in elementary school-aged children

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Background and objectives: Urbanization is steadily increasing worldwide. Although health in general is better in urban areas, adults are 34% more likely to suffer from a mental disorder when they live in a city. Retrospective studies suggest that, in particular, having grown up in a city increases this risk. However, few empirical studies have examined this question in children. The aim of the present study was to study whether urbanicity was an independent risk factor for internalizing and externalizing problems in elementary school-aged children. Specifically, we investigated whether urbanicity was a significant predictor of internalizing and externalizing problems, and whether this remained so while controlling for neighborhood socioeconomic status, family socioeconomic status and parental factors (i.e. parenting style, parental stress and symptoms of psychopathology). Methodological approach: Data came from a longitudinal study of children (n=892) from the Dutch general population. Information from four waves was used, in which children were aged approximately 7, 8, 10 and 11 years old. Neighborhood urbanicity and socioeconomic status were quantitatively measured by Statistics Netherlands. Child internalizing and externalizing problems and family and parental factors were reported by the mother. All variables were averaged across each year of the study. Mixed effects models were used to assess the influence of the predictors (i.e. neighborhood urbanicity, neighborhood socioeconomic status, family socioeconomic status, parenting style, parental stress, parental symptoms of psychopathology) on the outcomes of internalizing problems and externalizing problems separately. Main findings: The results of the analyses showed that children who lived in urban areas had a significantly higher chance of exhibiting both internalizing and externalizing problems. This effect remained when controlling for neighborhood and family socioeconomic status, parenting styles, and parental stress and symptoms of psychopathology. Conclusion: In line with the research in adults, urbanicity seems to be an independent risk factor for internalizing and externalizing problems in children. A possible underlying mechanism is that the city is a stressful environment for children to grow up in, which leads to an increased risk for developmental problems.

The effects of color on preschool children's attention in the classroom

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Color impacts student behavior within the physical learning environment. The purpose of this study is to test the relationship between child's attentions with the changing of color in the classroom. Controlling of different kinds of classes and different levels of children's attention characters. Five testing weeks were arranged in the kindergarten. There are 40 children in this classroom. Both the quantitative and the qualitative method were applied to collect children's attention condition. The results show that color is important in designing functional learning spaces. The results of this analysis may benefit educators and design professionals in designing beneficial learning environments for all students.

The influence of schoolyard's different landscape elements and leisure facilities on children's physical activity and health

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Besides their home, schoolyard is the place children spent the most time in and has the greatest impact on them. Past studies showed schoolyards' external environment would affect children's behavior and learning ability indirectly. However, exactly which elements would influence student's physical activity and health were not mentioned, and relevant empirical studies are also missing. This study chooses students from 15 elementary schools in Hsinchu City, Taiwan as subjects. First, GIS analysis is used to objectively analyze aerial photos and calculate the ratio of green cover of the different campuses. Then the research team would personally visit each school to investigate their landscape elements and leisure facilities, document and calculate the amount, and randomly select 60 students from each school to study their physical activity and health information. A total of 900 students are selected. Finally, SPSS is used to explore the relation among the schoolyard's landscape elements and leisure facilities and children's physical activities and health. Results include: 1. higher levels of physical activity leads to higher levels of health status; 2. there is significant difference in the size of the schoolyard and student's physical activity; 3. higher levels of physical activity for boys are measured on the school's soccer field, basketball court and climbing bars; higher levels of physical activity for girls are measured on the school's volleyball court and hopscotch area; 5. Students have higher levels of physical activity in schoolyards with higher ratios of green cover.

Eating (alone) with Facebook: Millennials' transition to college

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This research project investigates college freshman's social interaction patterns in dormitory dining halls during their initial semester on campus and its potential influences on their transition to college using mixed methods. In American context, college matriculation is young adults' first adjustment on their own. Unsuccessful transition to college can result in loneliness, depression, and other negative health outcomes. Studies uncover both positive and negative effects of social media use on college transition. From interviews and focus groups, I learned dormitory dining halls are still among major social hubs on campus; yet, freshmen are afraid to go there alone. When they need to dine by themselves in dining halls, they are more likely use their screen or to engage in some task (e.g., reading). Ironically, however, freshman also report that they are less likely to join if a stranger sitting next to them looks busy, for example, using a screen. I conducted online surveys and semester-long observations in the two major dining halls in the freshman dormitory cluster at Cornell University. The surveys tracked freshmen dining hall behavior, sense of belonging, and mental health in weeks 3, 8, and 12. The observations documented over 800 students' face-to-face communications, screen usage, other behavior such as reading a book, and physical attributes of the dining locations. Survey participants' GPAs were collected during their initial two semesters yet found irrelevant to other measures.

I am in the midst of data analysis and developing a framework to help better understand interpersonal communication patterns, use of social media, and the role of environmental design. For example, preliminary analyses suggest that corner location interacts with group size—alone versus group. Solo diners use mobile technology more when they are located in a corner; whereas group diners use technology less often in corner locations. One possible reason for this might be that diners prefer corner locations that afford greater enclosure and may facilitate intimacy for group diners. However, lone diners in a corner location may experience more eye contact with those seeking out a corner table. This may lead the solo diner in a corner to use the Internet to feel less uncomfortable or to cope with stress of being alone. I will present our findings of interpersonal communication patterns, screen use, and the role of environmental design. With increasing physical mobility, the findings may contribute to environmental design and social integration and expand to other settings and populations.

School voices on school spaces

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This work is part of a wider basic research, funded by the Department of Architecture and Urban Studies at the Politecnico di Milano and aimed at renewing the design-thinking about the schools, in their proper meaning of "educational environments", through an interdisciplinary approach involving both scholars of architecture and educational science, as well as the school personnel. In particular, the school for pre-teens (11-13 years) is the selected field of study, that is called "middle" or "lower secondary" school in Italy. There aren't any specific design studies on this level of school, so currently projects are only guided and supported by dimensional and functional national standards, now out of date. The objective of the work is to deepen the issue of pre-teens relation with school spaces, in order to update the framework of needs and to outline intervention strategies, aimed at improving the existing school buildings, according to educational goals, as well as to those of the well-being of students and teachers, and of the environmental sustainability. The research activity needed some reference frameworks. So, they were collected and critically analyzed some recent and meaningful experiences of intervention processes for the renewing of secondary schools (at European level), according to educational approaches and goals. Then, a samples analysis was carried out (at local level) of types and functional uses of these school buildings. Later, an experimental activity involved different groups of users (school directors, teachers and students), focusing on the school spaces and the strategies for updating their ways of use. It was, in fact, carried out a school voices inquiry, aimed at highlighting their perception / feeling referring to various school spaces, as well as their feedback about space organization and way of use, and even on fittings and equipment. It was also aimed at collecting the main topics about the improvement of the school spaces, from different points of view and in various situations. This work required a preliminary stage for selecting and testing methods and tools, to be used in order to effectively engage the different groups involved, with particular reference to students. As many researches have already pointed out (but studying mainly those for children up to the end of the primary school) the care of the school environment is an extremely important element for reaching a meaningful educational atmosphere. The work, however, confirmed

the close relationship between school-life environment and educational relationship, even referring to pre-teens students. It has also highlighted how, in these cases, the relationship between students and school environments is widely perceived and treated as a more problematic than proactive issue. In conclusion, they were outlined and described those main issues, on which may be appropriate to develop a design thinking on school environments, specifically dedicated at the transition age from childhood to adolescence, and in accordance with objectives of educational innovation, of empowerment of students and of the enhancement of school spaces for the local community.

The effect of classroom arrangements on social skills and learning achievement

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Classrooms are very closely connected to pupils in their school life. Different educational experiences are provided for pupils in various classroom arrangements, which effect their participation and learning achievement. Previous researches in classroom arrangements were less being discussed. Therefore, the main purpose of this study was to investigate the influences of classroom arrangements on social skills and learning achievement. This study chose fifth and sixth grade elementary school students in Taoyuan city as study subjects, which a total amount 437 children were being examined. The study adopted descriptive statistics, one-way ANOVA analysis, regression analysis, and the open-ended questionnaire to analyze data and the main results were in the following:

1. Students might care about visual factors if they had chances to choose the sitting position they want.
2. Different classroom arrangements of students' social skills had the remarkable difference. Students seated in clusters enhanced their empathy and negative assertive behavior than those in rows and U-shaped.
3. Different classroom arrangements of students' concentration had the remarkable difference. Students seated in clusters enhanced their competitive selection than those in rows and U-shaped.
4. Different classroom arrangements of students' learning achievement had the remarkable difference. Students seated in U-shaped enhanced their learning achievement than those in rows and clusters.
5. Concentration was positively related to learning achievement.
6. Social skills were not related to learning achievement.

Poster session:

Theme 12. Designing for the health care

Location: Ateljé, The A-building

Health environment design and gender

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Now, as Japan's society is aging rapidly, individuals as well as society as a whole are confronted with both quality of life and socio-economic issues, and health maintenance is one topic that is at the forefront of both these issues. This study has focused on elucidating differences of seniors based on gender and how to help improve their health through designs of living environments. Östlin et.al(2006) ¹ pointed out the importance of paying close attention to disparity and inequality by gender for health promotion. This study examines the relationships between gender and life style. If gender differences are significantly different, then designs for senior's living environments based on the needs of both genders must be considered. To analyze the daily routines of the elderly, this study focused on the postures of elderly people inside their houses to measure the amount of physical activity. Research Methodology In July and August of 2014, we distributed questionnaires regarding health levels and posture (sitting, standing and lying time) to seniors living with a partner and independently. We asked each participant about their general health, activities in their communities and with their neighbors, and amount of housework done. Questionnaires were distributed to 430 seniors who frequented community centers in MAEBASHI. Approximately 40% of those receiving the questionnaires responded (146), and this study is an analysis of the responses that were satisfactorily completed (73, with 27 men and 46 women). Findings It was found that through the course of one day, on average seniors sit for approximately 486 minutes each day and stand for approximately 399 minutes. Considered from the point of view of gender, women stand for approximately 444 minutes, whereas men stand for approximately 323 minutes. On the other hand, men sit for 552 minutes a day, but women sit for about 448 minutes. women respondents stood much longer than their counterparts when considering the compulsory activities such as house work. There is no significant difference between men and women regarding the average of the health evaluation score. Correlations ($p < 0.05$) are evident between the score of evaluation and posture time: 1) a negative correlation of men's 'feeling well', 'physical function' and lying time; 2) a negative correlation of men's 'physical function' and sitting time; and 3) a correlation of women's 'motivation' and standing time. These results suggest that the men's activities are influenced by their health condition more than the women's. Conclusion We found a difference between the genders in the time spent on sitting and standing activities in the living environment. A difference was also found between these activities when considered from the health of the respondents. When considering designs of the living environments for seniors, they should be designed to help increase physical activities for maintenance and improvement of health while also considering differences between genders in the level and length of activities.

The sustainable patient's rooms based on structural relationship between privacy and stress

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The goals of healthcare design are based on the human right to manage a physically, psychologically, and emotionally healthy life. It is another facet of living at home for the inpatients to stay in a hospital for more than a day sometimes their families. They even meet friends there as well as eat and chat. Such patients struggle with major stress factors related to their illnesses and also experience various types of stress triggered by the unfamiliar environment of the hospital during their stay. Privacy requirements of the patients are important factors when designing healthcare facilities as they significantly affect their satisfaction. This study focused on the relationship between the inpatient's stress and privacy for the patient's room for the sustainable approach to user-centered healthcare design. This research involved the literature review of books, documents, and related reports that analyzes design criteria for patients' rooms along with the factors of stress levels and the privacy requirement of patients, while considering how these factors and the inpatient satisfaction were measured. The questionnaire was then designed according to the part of the HSRS (Hospital Stress Rating Scale), the privacy scales, and the privacy requirement in the hospital. Altogether, 123 patients in general hospital were participated in this survey from September 17, 2015 to October 2, 2015. A total of 120 copies of the questionnaire were statistically analyzed using SPSS Win Program 20.0. Consequently, the inpatient stress levels and the privacy requirements were subdivided into several categories and their interrelationships were examined and proven. In conclusion, the privacy requirements of patient are important healthcare design factors for the sustainable patients' room to reduce the users' stress and to improve the satisfaction levels.

A study on spatial planning factors for improving habitability in patient rooms at elderly long-term care facilities in Korea

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Since Long-Term Care Insurance was introduced in July 2008, the environment for Korean long-term care facilities has drastically changed, and its number has increased. Senior Welfare Act, which provides the standard for the installation of elderly long-term care facilities, specifies types of rooms and requirement for facilities in specific spaces as required for facilities of different sizes. Still, discussions are needed for creating detailed standards, and it is the time that especially as to patient rooms, which perform a crucial function in long-term care facilities, research had to be done from more various perspectives. One of the characteristics that decide the current quality of the environment for Korean long-term care is the significantly higher ratio of installed and used multi-person patient rooms, where 3 or 4 persons share a single room, as compared to Japan, the US, and Northern Europe. Especially, with not a few of those smaller elderly long-term care facilities, space design and indoor environment fail to provide adequate support for treatment. As far as multi-person rooms are concerned, one should check if they sufficiently consider behavioral and psychological characteristics of elderly patients. So, this study limited the scope of elderly

long-term care facilities by requiring a Seoul presence and a maximum capacity of 30 persons and focused on patient rooms where elderly patients dwell and spend most of their time to survey the characteristics of space arrangement and physical setting. The purpose of this study is to propose the spatial planning factors for improving habitability of patient rooms by collecting and analyzing data on form and size of patient rooms, installation of any support areas such as restroom and storage, and arrangement of furniture including hospital beds. It is hoped that this study will contribute to improving habitability of elderly long-term care facilities in Korea.

User evaluation for sustainable children's hospital wards with the child-friendly environmental design factors

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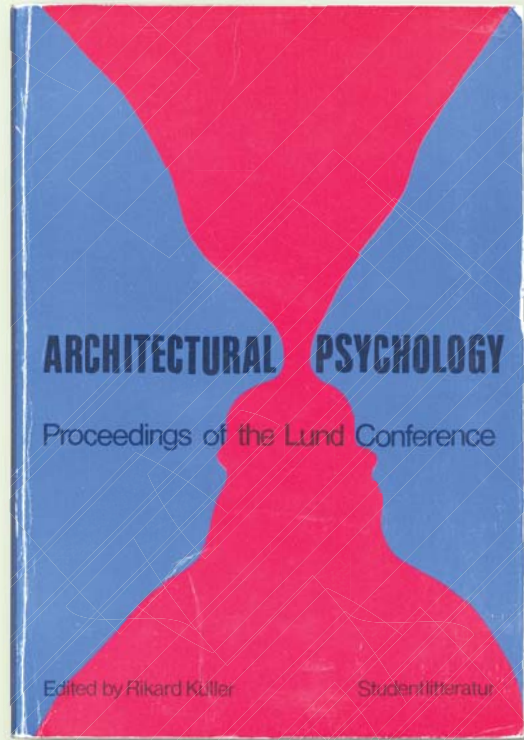
A hospital is defined as a place where sick or injured people receive medical treatment. Consequently, hospitals have normally been planned and supplied from the medical services provider perspectives focusing on administration and management. Recent increasing expectations for healthcare services due to social and economic development have placed demands on the healing environment to provide patient-centered systematic healthcare from a consumer's point of view. Korean children's hospitals are outnumbered by the USA (over 250) or Japan (over 27), and they have a short history. Therefore, it is important to evaluate and improve the hospital environment reflecting the child inpatient's characteristics with standards as medical facilities. In particular, a ward where patients and caregivers stay most of the time during hospitalization should provide the feeling of a home by designing it to be child-friendly. This study aims to propose high quality of healthcare environments for a sustainable children's hospital by drawing the design factors and by identifying the user needs. The caregivers of children who are hospitalized in a tertiary care children's hospital in South Korea carried out a questionnaire survey. A total of 103 copies of the questionnaire were finally collected and analyzed. The data was processed statistically using the SPSS WIN 18.0 Version software. The priority of design factors which are comfort, privacy, safety, pleasure, accessibility, interaction, rest, aesthetics, and dynamism derived from literature reviews were measured by spaces of the ward with the patient's room, the hallway, and the rest zone. There were significant differences in six factors which are comfort, privacy, interaction, rest, aesthetics, and dynamism. 'Safety' was the prominent design factor in the patient's room and the hallway while the most important design factors were 'Comfort' and 'Pleasure' in the rest zone. To satisfy the caregivers and child patients in this ward, it is necessary to support a safe and hygienic environment without the dangers or infection in the patient's room and hallway and to support a range of behaviors such as resting, eating or drink, and talking to others without interruption in the rest zone. Also, larger and separated spaces should be provided to allow the patients to feel at ease and control privacy.

Assessing the physical and social environment of an outpatient space in a children's hospital: Surveying parents of disabled and non-disabled children

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The present study reports users' assessment of the qualities of the physical and social environment of an outpatient space in a children's hospital, with particular focus on the viewpoints of parents of disabled and non-disabled children. By surveying parents on their children's behalf, the aim is to explore the differences and similarities in how children with disabilities and non-disabled children perceive hospital environments. Which aspects of the physical and social environment are lacking or sufficient in the various indoor spaces of the outpatient zone in the children's hospital? Are certain environmental attributes perceived as more desirable and satisfactory among one user group but less so among the other? For the two groups, to what extent does the physical and social environment contribute to the overall hospital experience? By comparing perceptions of the hospital environment among users from the two groups, the goal is to identify the specific environmental needs of disabled and non-disabled child patients and to confirm findings to ensure that future hospital design serves the needs of both groups. Thus, a children's hospital in Seoul is examined; the hospital was specifically designed to provide physical and mental healthcare for children with disabilities alongside non-disabled children. The hospital has four primary care units: the pediatric, rehabilitation medicine, psychiatric, and dental clinics. This study focuses on the outpatient zone—specifically, the main lobby area, waiting area, play area, and doctor consultation area—because the inpatient zone is primarily for the long-term care of disabled child patients. The research data are obtained by incorporating objective and subjective methods. For objective data, the arrangement of horizontal and vertical layouts of indoor spaces are analyzed through architectural drawing studies and observations during a field trip taken by the author. The intent is to understand the relationship amongst the spatial areas in the outpatient zone and to determine specific areas for closer examination. For subjective data, a survey method is used to assess the physical and social qualities of the spaces for parents of children visiting the outpatient clinics. At present, data collection and analysis (using SPSS V.21) are in progress. Overall hospital environmental quality is to be measured by the index value of four correlated items (modified from Francescato et al., 1989). One-way ANOVA, factor analysis and reliability tests, and correlations between the factors and the index of overall hospital environmental quality are to be computed to compare the spatial perceptions of the two groups of parents with regard to the hospital environment. The results of the study and design implications will be discussed. Keywords: Children's hospital, disabled children, physical and social environment.



From the archives:
Conference held in Lund,
Sweden, 1973



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