An international conference on

Research into Inclusive Outdoor Environments for All

John McIntyre Centre,
Pollock Halls,
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27-29 June 2011

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Conference Proceedings
Summary papers and abstracts

Open Space : People Space 3

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* indicates that the research is being presented as both a parallel session paper and a poster

Introduction to Open Space : People Space 3

An international conference on Research into Inclusive Outdoor Environments for All

John McIntyre Centre, Pollock Halls, University of Edinburgh
Monday 27 June – Wednesday 29 June 2011

In the ten years since the OPENspace research centre was established in 2001, much progress has been made in establishing why inclusive access to the outdoors matters. The bedrock of this understanding is well-founded research, now an essential tool for evidence-based policy making worldwide. In a challenging economic climate, it is more important than ever that those working in the field come together to share findings, methodologies and experiences, adding real value to the funding and support they receive. With a practical focus on people of all ages, backgrounds and abilities, Open Space : People Space 3 is a forum for driving forward ideas that will translate into tangible change on the ground.

Following successful events in 2004 and 2007, OPENspace is hosting its third international conference in collaboration with research partners at the Universities of Salford and Warwick. The event marks the final stages of the consortium's flagship research project - Inclusive Design for Getting Outdoors (I'DGO) - and the tenth anniversary of OPENspace, based at Edinburgh College of Art, The University of Edinburgh and Heriot-Watt University. Discussion will focus on recent research into the design and provision of accessible outdoor environments for everyone and highlight the importance of inclusive environments in improving the quality of life of individuals at different life stages. In plenary, parallel, poster and practical sessions, experts in enhancing people's engagement with the outdoors will explore the links between the design and planning of communities, both urban and rural, and enhanced health and wellbeing.

The principal themes of Open Space : People Space 3 are:
Inclusive design and sustainable community planning;
Physical environment, health and wellbeing;
Age-friendly built environments from childhood to old age.

Sub-themes include: *visual impairment; healthcare and therapeutic environments; children and young people; health and greenspaces around the world; policy and planning; older people; urban outdoor spaces; ethnicity and outdoor space; and intergenerational environments.*

We are grateful to our guest speakers and to everyone who has helped to make this conference possible. Please enjoy it and give us feedback.

Marketta Kyttä
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(To find out more about Marketta, please see the biographies section at the back of this booklet)

The inhabitant friendly, health promoting urban structure

Abstract

The intriguing associations between urban structure and inhabitants' experiences, behaviour and wellbeing are at the core of people-environment research. With a new, place-based approach the various interpretations of inhabitant friendly, health promotive urban environments a) can be studied in close connection to the actual physical characteristics of the locations and b) the research findings can be transferred to the practitioners in visually informative form. The SoftGIS methodology developed in Aalto University enables the combination of 'soft' subjective data with 'hard', objective GIS-data. With the help of internet-based queries large empirical data can be gathered among various user groups, both children and adults. The softGIS data collected from the Helsinki metropolitan area and in the city of Turku among both adults (n=3100) and children (n=2800) reveal interesting associations between urban density, the proportion of green structure, the perceived quality of the environment, active living and the wellbeing and happiness of inhabitants.

1. Introduction

1.1 Current urban planning challenge: Urban infill policy

Communities around the world share a common challenge: how to develop existing environments and plan new communities that are able to combine ecologically sustainable urban structure with inhabitant friendly characteristics of urban settings. These include high perceived environmental quality, good access to personally meaningful places and health and wellbeing promoting qualities of the physical environment.

Among many others, Jabareen (2006) has identified design concepts that are central to ecologically sustainable urban form. These entail compactness, sustainable transport, density, mixed land uses, diversity, passive solar design, and greening; urban structure qualities that often manifest themselves in the form of compact cities. Consequently, it is not surprising that the densification on the grounds of ecological sustainability is currently the hottest topic in the planning field.

In addition to the ecological benefits, urban densification can, however, also lead to a fall in the perceived quality of the living environment, contribute to unexpected changes in everyday life practices and affect the wellbeing of inhabitants. In New Zealand, for example, where people traditionally value sparse housing, residents have experienced negatively the changes in their living environment after intensification and are afraid of losing the quality of life of the garden city (Vallance et al, 2005). Research in the UK reveals that a higher density population and built form do not necessarily produce the benefits suggested by those in favour of the compact city (Williams, 1999). These examples show that urban infill policy can be problematic and challenging. However, more systematic research is needed that simultaneously considers the urban structure characteristics and inhabitants' experiences.

Keywords:
green structure, urban environment, health, inhabitants, softGIS methodology

Theme:
physical environment, health and wellbeing

1.2 Urban structure and inhabitants' health and wellbeing

The recent literature concerning the health promotive qualities of urban structure shows somewhat contradictory results. On the one hand, there is fairly compelling evidence to show that a compact urban structure with high neighbourhood accessibility is associated with the higher probability of walking and cycling to school, doing errands and going to work (Cervero and Radisch, 1996; Krizek, 2003). Urban sprawl is shown to be related to a lower level of physical daily activity and a higher risk of overweight and hypertension. This body of literature suggests that a dense urban structure contributes to positive physical health outcomes (Ewing et al, 2003).

On the other hand, the literature concerning the health benefits of the natural environment shows that the proximity to nature associated with sparse building promotes mental health as a setting for stress restoration (Van den Berg et al, 2003). Also the type of green setting matters: restorative experiences are stronger in exercise and activity outdoor areas, waterside environments and extensively managed natural settings than in places in built urban settings or urban parks (Korpela et al, 2010). To conclude, low density, green settings entail distinct mental health promotive qualities.

Evidence concerning the urban structure characteristics that promote social health is more limited. According to some studies, a moderate level of density is related to an increased sense of community (Brown and Cropper, 2001; Kim and Kaplan, 2004). Dense building is, however, also related to reduced perceptions of safety and experiences of crowding (Gómez-Jacinto & Hombrados-Mendieta, 2002; Miceli et al, 2004). More than density levels as such, a strong sense of community is enhanced by investment in public and semi-public urban spaces.

These somewhat contradictory results originating from different research traditions make the applications of research findings in urban planning difficult both for practitioners and politicians. To overcome these difficulties, I suggest a more context sensitive approach: instead of research solely looking for general associations between urban structure and inhabitants' experiences and health, a more place-based research is needed.

A prerequisite for a place-based approach is the understanding of the materiality in the person-environment relationship and the related theoretical tools. For myself, a central theoretical approach has been the ecological perceptual psychology by J.J. Gibson (1979) and his key concept, affordance (Heft, 2001; Kyttä, 2008). Affordances refer to both the perceiver and the object of perception simultaneously. The actualization of affordances is coded socio-culturally, and the material environment conveys messages about 'right' and 'wrong' ways to behave and use the environment. Making affordances perceptible can be seen as a central task for designers. In urban planning, the applications of affordance theory are rare. Nevertheless, planners should exhibit interest in the extent to which the affordances of designed spaces are really actualized for the users (Kyttä et al, 2011b).

Figure 1. The softGIS applications used in Helsinki metropolitan area among adults (left) and children (right).

3. Empirical evidence from softGIS studies in Finland

3.1 Methodology

The place-based understanding of the people-environment relationship is not only a theoretical but also a methodological challenge. The internet-based softGIS methodology developed in Aalto University since 2005 relies on collecting, analysing and delivering soft, localised, geocoded knowledge produced by the residents of a certain area. SoftGIS methods have been tested already in eleven Finnish cities with promising results and over 9000 Finns have participated in these studies (Kahila & Kyttä, 2009). These methods have been developed in close co-operation with urban planners and the collected database makes systematic GIS and statistical analyses possible.

In this paper I will present some results from softGIS studies in the Helsinki metropolitan area and in the city of Turku. The research in Helsinki and the neighbouring city Espoo among adults (n=3119) was carried out in 2009. The random sample of 15-65 year-old inhabitants was collected from 11 neighbourhoods. The studies with children were realized in the cities of Helsinki in 2010 (n=1128) and in Turku in 2008 (n=1863). The respondents in both of these studies were fifth graders (11-12 years) and seventh graders (13-14 years). The children's data were collected in schools: in Helsinki, from 17 schools in six neighbourhoods and in Turku, from 54 schools in all parts of the city. The softGIS applications were tailored to make them as user friendly as possible for the study of the inhabitant groups at hand (see Figure 1).

3.2 Results concerning adults' experiences of the urban environment

According to our findings, the relationship between urban density and inhabitants' experiences is not straightforward at all. Earlier evidence from Britain (Bramley & Power, 2009a; Bramley et al, 2009b) and also our previous findings from four Finnish small towns (Kyttä et al, 2011b) suggested that experiential outcomes would be more positive in low density settings than in more densely built urban locations.

In contrast to these results, the study in the Helsinki metropolitan area revealed that the relationship between urban density and the perceived overall quality of the living

environment[1] appears not to be negative or linear. The general pattern of the relationship between the two dimensions was curvilinear: the average perceived environmental quality increased until the density level reached around 100 housing units/ha. After that it decreased again. A series of regression analyses indicated that the rather high density levels between 70 and 130 housing units/ha had a very significant positive association with the perceived environmental quality after controlling for eight different background variables[2] including income level. The density of the environment was measured individually per 500-m buffer from each respondent's home. The average density level was 65 housing units/ha, but in different neighbourhoods it varied between 25 and 157 hu/ha (Kyttä & Broberg, 2010).

Besides the above person-based analysis and the evaluation of the characteristics of home settings, we also performed place-based analysis to study the structure of experienced places beyond the home surroundings. These analyses revealed somewhat opposite results compared to the person-based analysis. We found significant, positive associations between green structure proportion and the probability that the place was experienced positively. The place-based affordances were studied in four main categories: appearance, functional possibilities, atmosphere and social life. In each category the inhabitants were able to define their experiences at a more detailed level using eight subcategories. It appeared that social affordances were generally located in significantly more dense places than other types of affordances. In this case, the urban structure variables were calculated within a 50m buffer around the places that inhabitants had marked on the map.

The overall, perceived environmental quality was associated positively both with the general wellbeing of respondents and with the scores of perceived happiness, perceived health and perceived quality of life. These associations were controlled for the eight different background variables. Direct associations between the urban structure factors and wellbeing variables were not found.

3.2 Results concerning children's experiences of the urban environment

Our recent studies among children in the cities of Turku (Kyttä et al, 2011a) and Helsinki (Broberg et al, 2011) show also intriguing relationships between urban structure characteristics and children's experiences, behaviour patterns and wellbeing.

In both the Helsinki and Turku study, we found a negative association between the amount of green structure around the child's home and the active travel mode to school. The study in Turku was showing also that the more green a child's home setting was, the further away were the affordances that a child had marked. Children, however, enjoyed also larger territorial ranges in lower density neighbourhoods. Also in the Helsinki study, the green

1 *The perceived quality of environment was a mean of four evaluations (0-100) concerning own living environment, namely, the quality of social life, functional possibilities, physical appearance and atmosphere.*
2 *Regression analyses were controlled for all the background variables that were significantly associated with the perceived environmental quality score. These included: age, gender, dwelling size, household type, tenure, income level and the number of bicycles and public traffic tickets per household.*

structure proportion was positively associated with a larger territorial range of children.

The place-based analysis in both cities revealed that urban density predicted an active travel mode and independent access (access permitted alone) to personally meaningful places. Urban density also prefigured the degree of likeability of places that a child had marked.

Both in the Turku and Helsinki study, children's behaviour patterns and environmental experiences were associated with health and wellbeing measures. Children in Turku were less likely to be overweight if they travelled to school actively. In Helsinki, instead, only the amount of moderate physical activity during free time decreased the risk of overweight. Interestingly, also environmental fears increased this risk among children in Helsinki. Fears predicted also the number of daily symptoms[3] in both samples. The number of fears had no association with urban structure variables. We found only one direct link between urban structure variables and children's health and wellbeing variables: in the Turku study, a large proportion of green structure in the child's home environment was positively associated with good perceived overall health.

These findings suggest that both densely built settings and places with a high proportion of green structure have clear qualities of a child-friendly environment. The next question is whether it is possible to combine these benefits in a single urban structure.

4. Locality sensitive analysis and the application of research findings in urban planning

The above findings corroborate the earlier, partly mixed results concerning the connections between urban structure variables and inhabitants' experiences, behaviour patterns and health. They suggest that we have to be careful in defining the type of health benefits that we are talking about and the geographical scope of our research findings.

The above, rather general softGIS data analysis were complemented with a more locality sensitive approach by Kahila (2010). Place-based information concerning the local strengths and weaknesses – the unique neighbourhood character (Dovey, 2010) – is essential here. The respect for existing characteristics of an area is crucial especially in urban densification projects in determining what type and extent of intensification is acceptable to local residents (Minnery, 1992). What is locally important is not only the intensification but also the form it takes.

Figure 2 visualizes various softGIS data from one neighbourhood. Information concerning the located positive and negative affordances, residents' everyday life practices and their suggestions about future renovation projects is attached to specific places. Also the flexibility of the residents towards alterations is evaluated. This more qualitative, profound, and locality sensitive analysis serves as a useful baseline data in planning. In the case of

3 *These were measured using the HBSC Symptom Checklist: how often a child suffers headache, abdominal pain, backache, feels low, irritable or is in a bad mood, feels nervous, has sleeping difficulties or experiences dizziness.*

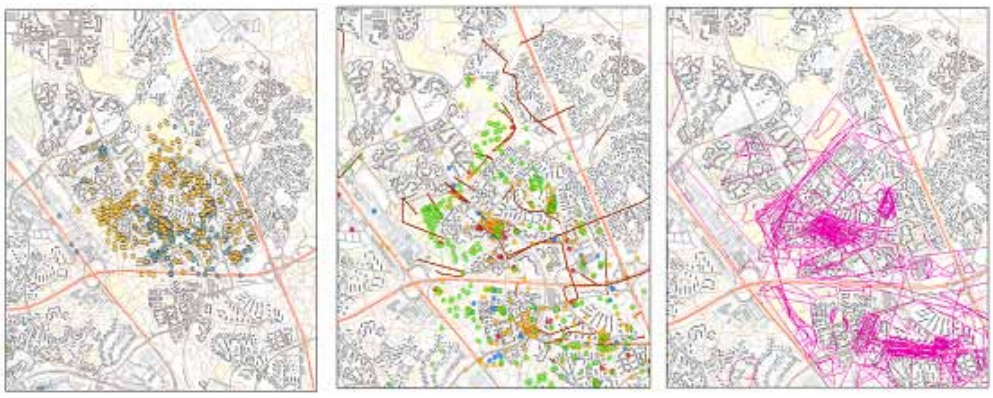

Figure 2. Studies of the unique neighbourhood character. From left to right: positive and negative affordances; suggested improvements; and subareas that inhabitants hope will be improved.

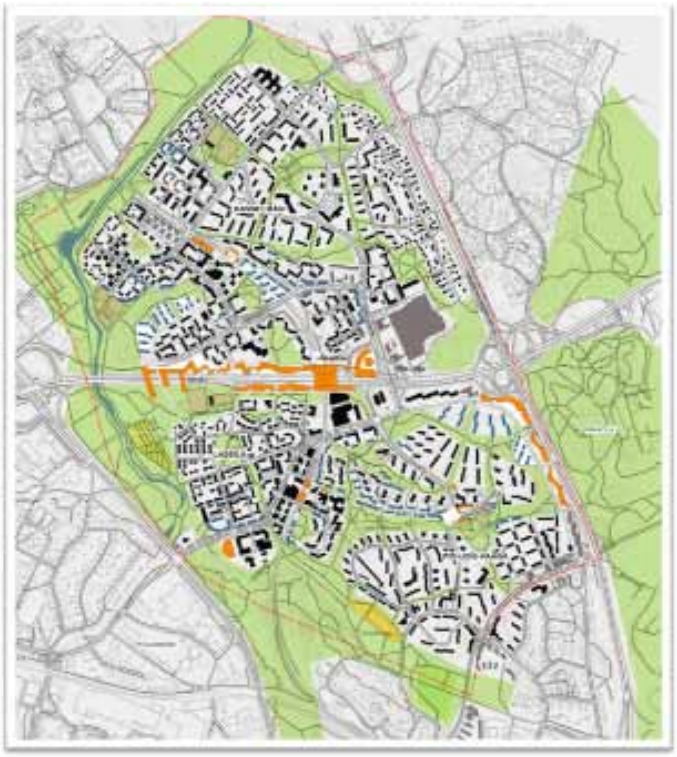

Figure 3. Urban infill project plan where softGIS data has been used. (Plan by architect Niilo Ikonen.)

Kannelmäki neighbourhood, we actually tested the usefulness of softGIS data for planning (see Figure 3). We found that the place-based, experiential information from inhabitants shaped and changed the ideas of the planner. If densification is realised sensitively and experientially, most valuable areas are preserved and the weakest areas improved, leading, we hope, to an increase in the social acceptability of intensification.

Our current attempt is to embed softGIS methodology even deeper into the actual urban planning practice. This includes new internet-based tools to support the different phases of the planning process. Planners will also get their own tool kits to explore and analyse the softGIS data online.

An essential challenge for urban planners and designers is to be able to combine macro- and micro-level research findings to actual planning tasks. New urban concepts will probably emerge that simultaneously guarantee access to green areas' suitable density of the physical structure. Integrating individual wellbeing and environmentalism in urban planning using empirical research results is ambitious. If we are to increase human wellbeing with fewer resources, new research data and innovations, and close co-operation with practitioners is needed in the planning sector.

Key concluding points

- Rather high urban density can include inhabitant friendly characteristics both for adults and children.
- Accessible green spaces are also crucial as health-promotive urban spaces.
- Critical reflection and comparison of research findings from different subfields is needed.
- Internet-based softGIS methodology produces applicable data for locality sensitive urban planning.

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(To find out more about David, please see the biographies section at the back of this booklet)

The day of the Triffids

Abstract

This is the story of a green monster that grew and grew and ended up swallowing the city that it was meant to save. For years we have sought to reform the city, reducing its density and increasing the amount of open space. This can be traced from the Victorian park to the garden city culminating in Le Corbusier's Ville Radieuse. Green space is important for social and environmental reasons. However, like many good things, these benefits do not necessarily increase in proportion to the amount of space provided. There comes a point where there is so much open space that densities fall to levels where urban areas become unsustainable. This can, however, be overcome through design. The design of open space is vital and if done badly, will undermine all of the potential benefits. If done well, the smallest of spaces can have a huge impact.

Introduction

It's a risky business presenting a paper at a conference on open space that argues that open space is not always a good thing. However, there are very few 'good things' that don't become a problem if taken to excess and open space in cities is one of them. I will argue in this paper that the historical drive to increase the level of open space in our cities is important but that the crucial issue is the quality of open space rather than the quantity. Too much ill-defined open space undermines the quality, safety, efficiency and sustainability of urban areas.

Staring at the SUN

My interest at URBED, for the last 20 years, has been how to create successful, sustainable urban neighbourhoods. This started in the 1990s with our involvement in the redevelopment of the Hulme estate in Manchester and later a series of research projects[1] that became the Sustainable Urban Neighbourhood (SUN) Initiative[2] funded by the UK Government and the EU.

Our starting point was the belief that the pattern of settlements in the UK at the end of the 20th century was profoundly unsustainable. Rather than focus, as much research on sustainability did, on the design of energy-efficient homes, we argued that the pattern of settlements was the big sustainability issue. The gradual accretion of low-density suburbs was hollowing out our towns and cities. The average density of new housing at the time was 23 units/ha and the most rapidly increasing source of CO2 emissions was transport.

Keywords:
urbanism, sustainability, open space, standards, urban design

Theme: *inclusive design and sustainable community planning*

There was much debate, perhaps heated argument would be more accurate, in the 1990s about the acceptability of forcing people back into cities. The population was voting with their feet for leafy suburbia and should not be dragged kicking and screaming back to dark,

1 *Rudlin, D. and Falk, N. (1995) Building to Last: 21st Century Homes. York: The Joseph Rowntree Foundation.*
2 *Rudlin, R. (ed) (1998-2006) – 'SUN Dial' [occasional journal], URBED (Urbanism Environment Design).*

overcrowded dangerous and dirty cities – or so we were told. We were called 'new Jacobites' by our critics, something meant as a criticism but which of course made us enormously happy![3] In actual fact the aim of the SUN Initiative was not to force or cajole or even to regulate. We wanted to make cities so attractive that people would want to move back.

On the whole in the last 15 years this is largely what has happened. We can argue about the property bubble in city-centre apartments, but overall, a huge amount of urban housing has been built in the UK in the last decade, much of it very successful. The density of new housing has risen to 43 units/ha and the proportion of new housing in built urban areas to just over 70%[4] (apologies, these are English figures). Whether this will continue is unclear as the housebuilders retreat to suburbia in their post-recession agitation and the government gently loosens the strings of planning policy. Yet I believe that something has changed and UK cities will never again be the same.

Back in the 1990s the Sustainable Urban Neighbourhood was developed as a model of high-density mixed-use urban development that could attract people back to urban areas. Of course, other sustainable urban models are also available in the shops, including the Urban Village, the American Pedestrian Pocket, the Eco Quartiere in France, sustainable urban extensions in Germany and the Bo neighbourhoods of Scandinavia. However, back in the 1990s, it was difficult to point to UK examples. Indeed we wrote at the time that there was not one planned neighbourhood created in the UK in the 20th century that would merit conservation area status in the future. Not one place that people really loved, that had the richness and diversity of a historic town or even a Georgian or Victorian suburb. So we had to content ourselves with field trips to Amsterdam, Frieburg or Malmo to learn how to build good high-density housing. We have got better since then, with early examples like Crown Street in Glasgow and Hulme in Manchester and more recently, Millennium Villages and city-centre apartment schemes that are a half decent attempt to create sustainable urban form. But it still doesn't come easily to us and it is interesting to ask why this is.

Why is it so difficult?

There are many reasons for this: the lack of ambition in the UK development industry, the conservatism of house buyers, the sprawl of our cities, etc. However, as someone who started my career as a local authority planner, I started to realise that one of the problems is the planning system itself. In other words, the very system created to improve towns and cities is part of the reason why many of them are so crap.

This is the central theme of the book I co-authored with Nicholas Falk republished last year as Sustainable Urban Neighbourhood[5]. In this we describe how the Victorian industrial city became so awful that the English at least lost faith in the very idea of cities. Planning was

3 *New Jacobite was meant as a reference to being a slavish follower of Jane Jacobs and particularly her 1961 book, The Death and Life of Great American Cities.*
4 *DCLG (2006) Land Use Change in England: Residential Development to 2005 – (LUCS–21).*
5 *Rudlin, R. and Falk, N. (2009) Sustainable Urban neighbourhood: Building the 21st century home. Oxford: Elsevier, The Architectural Press.*

brought into existence not to make cities more beautiful, as happened in France, but to tame them and smooth off their rough edges. This included sanitation, pollution, sunlight, housing standards, traffic, safety and, of course... green space.

In cities without a tree or a scrap of open space, the Victorian parks movement is one of our greatest legacies. Every evening I walk my dogs in Alexandra Park on the edge of Moss Side in Manchester, opened in 1868 and still a beautiful space and remarkably safe given its location. At a time when the sea of terraces in Moss Side around the park were entirely unrelieved by greenery or play space or even private gardens, the park must have been a wonder.

The next stage in the taming of the city came with the garden city movement at the beginning of the 20th century[6]. This took the argument to another level by redesigning the city around sunlight, fresh air and… open space. We remember now the early schemes by the garden city pioneers like Hampstead Garden Suburb and Welwyn Garden City that were to be such influential models for 20th-century planners. We forget the theory within which they sat that suggested that the garden city would cover the whole country, with a dispersed network of low-density settlements incorporating within them their own agriculture and recreational space. In the US, something similar was developed by Frank Lloyd Wright called Broadacre[7], in which every American family was to be given their own acre of land so that they were self-sufficient yet still be able to get around by high-speed personal transport (helicopters).

It is clear that density and open space were a source of debate at the time. In 1912, Raymond Unwin published a pamphlet called 'Nothing gained by overcrowding'[8] . This argued that, for a given number of people, there was a requirement of so much open space, school grounds, recreational facilities, etc. As the density of housing rose, these requirements increased, taking more and more land. Efforts to increase housing density were therefore subject to a law of diminishing returns because higher densities reduced the amount of land available for housing. Mind you, the ideal garden city density was 15 units/acre, which translates to 37 units/ha, considerably higher than the 23u/ha mentioned earlier.

Next came Le Corbusier who was a great architect but completely mad when it came to urban planning or for that matter social reform. His plans for the Ville Radieuse in Paris solved Unwin's dilemma by building on stilts. He proposed a city where the entire land area was open space with the people, shops, schools and workspaces accommodated in towers on piloti floating over the rolling landscape. It would be mad had it not been taken so seriously through the work of CIAM (Congress International de l'Architecture Moderne) which for many years was the leading urban think tank in Europe publishing its Charter of Athens in 1933 and holding a major congress in Coventry in 1952[9] from which the city has never really recovered.

The influence of this history can be seen in every suburb and council estate from the second half of the 20th century. The suburb is marked with an obsession with private space, the council

6 *Howard, E. (1898) Tomorrow: A peaceful path to real reform, (republished 1902 as Garden Cities of Tomorrow), TCPA.*

7 *Fishman, R. (1982) Urban utopias in the 20th century. Cambridge, Mass: MIT Press.*

8 *Unwin, R. (1912) – Nothing gained by overcrowding.*

9 *Congress International de l'Architecture Moderne (1952) Congress Proceedings, CIAM.*

estate with a fetish about public space, much of it undulating and dotted with trees, useless for wildlife or indeed playing football and dangerous to cross at night.

How much is too much?

Green space is important in a city, it provides space for recreation, play and sports, it allows ecological diversity, helps microclimate and enhances visual appeal. However, like many good things, these benefits do not necessarily increase in proportion to the amount of open space provided. There comes a point where there is so much open space (both public and private) that the density of activity fall to levels where it is no longer possible to support local shops and facilities, where bus services are no longer viable, where walking distances become such that everyone drives, where the lack of other pedestrians makes places feel unsafe, where unsupervised open areas are taken over by gangs of youths and become difficult to maintain. You can have too much of a good thing.

Open space standards in England are set by each local authority and they vary across the country. We have worked in areas where the standard is based on proximity in terms of how far every home should be from a local play area, park, etc. Often they are based on a certain amount of open space per house or per person. For many years, the 'gold standard' for open space provision was the National Playing Field Association's six-acre standard first published in 1925. The most recent version was published in 2008[10] . This sets a standard of 1.6ha of sports fields and 0.8ha of play provision per 1,000 people as well as standards for proximity. Natural England[11] has also produced standards for natural green space based on area and proximity (every home within 300m of a 2ha natural space) and a provision standard of 1ha/1000 people to a nature reserve. The National Society of Allotment and Leisure Gardeners[12] has a standard of 20 plots per 1000 households. Some authorities also have standards for private space. This is all very confusing but what is clear is that the amount of open space in our plans is never enough.

It is not my intention here to get into the complexity of standards, however, it is clear from our experience that these standards are doable in suburban developments such as a scheme of 1600 units that we have been developing in Wigan. Here we have 37ha of housing land and just under 13ha of open space, which would meet the six-acre standard (depending on the mix and occupancy figures used). This results in 1ha of open space for every 3ha of housing land (1:3). However, in urban areas, the situation is very different and in London we have just got planning consent for a scheme of high density two- and three-bed apartments, where the standard would have required 2ha of open space for every 3ha of development (1:1.5). It is these latter urban situations that are the problem, perhaps unsurprisingly given that the six-acre standard came out of the garden city movement.

10 *FIT (Fields in Trust)(formerly the National Playing Field Association) (2008) Planning and Design for Outdoor Play. Stoneleigh Park, Warwickshire: FIT.*
11 *Natural England (2010) 'Nature Nearby' Accessible Natural Greenspace Guidance, NE265.*
12 *www.nsalg.org.uk/*

It is instructive to compare these ratios to the open space ratios of our great cities. London, with its tradition of great parks, has an open space ratio of 1:7[13] and Paris is similar. My point is that open space standards, like many of the rules that regulate development, remain a reaction to the Victorian city. We have spent a century trying to right a wrong. We have instigated planning policies, housing standards, privacy distances, density guidelines, highway standards and of course, open space yardsticks to try and reform the city. Each profession has been busy optimising their particular area of responsibility but cities aren't like that. Optimise one area and others will suffer. Cities are a set of messy compromises, nothing is perfect but the whole is more than the sum of these messy parts.

The principles of design

We need a new approach to open space in urban areas, one that focuses not so much on quantity as on quality. The benefits of open space relate to the way in which it is designed. As I said, every evening I walk my dogs in Alexandra Park in the middle of Moss Side in Manchester. This is, supposedly, one of the most dangerous parts of the city but the park is one of the safest places, because of the way it is designed. Contrast this to, say, the Medlock Valley running through East Manchester. This was designed as a green corridor and a recreational resource for the surrounding communities. Some parts work, but others are characterised by burnt-out cars, graffiti and vandalism. The difference is the way that the space is designed.

Many of the principles of good open space design are the same as those that guide good urban spaces. In rural areas, isolation and solitude may be a good thing, but in a city, safety and security comes from other people. Alexandra Park, like many traditional parks, works because there are generally enough people around with good intentions to make it feel safe. These include the dog-walkers, like myself, fishermen, parents and children on their way to the day centre in the heart of the park, cyclists using the cycle route that crosses the park at a diagonal, the football teams and the Asian cricket league that seems to play at some unearthly hour in the morning. There are many others and they change with the seasons from the sunbathers in the summer to the kids on their new bikes on Christmas day. All of this, remember, in a park that is in the heart of Moss Side, supposedly one of the most dangerous districts in Manchester.

Local green spaces, pocket parks and playgrounds have different rules. Here the security of 'other people' generally comes from the people in the surrounding buildings (or at least the perception that there may be people overlooking the space). Like good streets, small green spaces feel safe when they are small enough to be overlooked by surrounding roads, housing and other buildings. Too often spaces are designed to the rear of houses and away from roads on the basis that this will make them safer. This can work in suburban areas, but in urban neighbourhoods, it can often mean that these spaces are not supervised and therefore attract youths and become a target for antisocial behaviour.

Very local space tends to be in private gardens and it is important that urban housing includes

13 *Rudlin, D. and Hemani, S. (forthcoming) Climax City.*

private space. In apartment schemes, this takes the form of private courtyards, balconies and roof gardens and for housing, it means gardens and terraces. The important thing about this private space is security; strangers shouldn't be able to access the space without fear of challenge. This is obvious for private gardens but is often overlooked for communal space in apartment schemes. The easiest and most traditional way of doing this is to use the perimeter block, which creates a clear definition between external public space and internal private space. In most urban areas this private space makes the largest contribution to the green infrastructure of the area. I live in a Victorian suburb that has no public open space but which is full of wildlife and almost obscured on the aerial photographs by its trees.

Don't get me wrong

It is not that I am anti-open space, far from it. I just object to the view that the more green space we have, the better it will be. Too much green space not only becomes a problem in its own right in terms of management and security, it also undermines the qualities of urbanism that are so important to the safe functioning of towns and cities. Too much green space – which is what many standards still demand – means that densities are reduced, children are too far from school not to be driven, buses become unviable, shops lack sufficient local customers to survive so that the people have to drive to the supermarket and neighbourhoods lack activity and feel unsafe. A balance needs to be struck between the benefits that open space brings and these impacts on urban life. Good urban areas should be net contributors to biodiversity with trees, green walls and roofs, gardens and balconies. They should have a hierarchy of open space and while suburban areas may be able to meet the 6-acre standard, urban areas can probably meet only half of this. However, even in the densest urban areas, these open spaces through good design can do twice the work and can become spaces that people love, which was something that never happened to Le Corbusier's green landscape.

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Taking care of the changing needs of pedestrians in evolving communities

Basic principles for walkability policy development, interventions and implementation start with the pedestrian (Steg & Vlek: NOA) and Design for All (Universal Design) including safety principles; comprehensive analysis; the Cascade principle.

In this paper, the analysis covers facts, expected changes and context and preconditions for policy development. Under facts, some perspectives and the indicators for mobility, sojourning, safety and security, and satisfaction are highlighted. Under expected changes, major trends are identified. Under context and preconditions, public opinion, knowledge, a willingness to intervene and improve and some positive consequences of walking are summarised.

The paper also presents some solutions. Four levels of intervention are distinguished: pre-conditional measures, strategic activity level measures, tactical level measures and operational activity level measures.

The recommendations are:

- Target the independent mobility of the elderly, and car dependency
- Invest in awareness building
- Evolving communities necessitate comprehensive studies
- Apply the cascade principle.

Keywords:
pedestrians, transport policy analysis, road safety, mobility

Theme: *age friendly built environments from childhood to old age*

1. Introduction.

With regard to the City of Geneva's Pedestrian Masterplan, Wiedmer-Dozio[1] aptly expresses what governmental tasks regarding the pedestrian comprise:

'Taking care of [the] pedestrian is managing everyday life's commonplace events, [it] is having an interest for and being sensitive to the unseen. No glory nor glamour. It is all about discretion, and is nevertheless our life's foundation.'

Clearly, walking is essential for accessibility and functioning socially. A little more than 25% of the time people spend in public space is spent on foot. About 18% of all door-to-door trips are made on foot (190 km per person, per year). Obviously, without walking, other forms of travel are not possible. One needs to walk to and from one's car, bicycle, public transport, etc. This generates some 1,800 short walking trips, averaging 70 metres, per year, totalling 130 km distance walked per person, per year (Methorst, 2010-2). Walking is the 'glue' of the transport system (Risser, 2010).

Oddly, there is relatively little research on walkability policy. Admittedly, there is an increasing body of literature on what are called 'slow modes', 'vulnerable road users', 'non-motorised

1 *Marie-José Wiedmer-Dozio is head of the Service de l'urbanisme de la ville de Genève (Director Urban Planning City of Geneva).*

traffic' or 'human powered modes', but a closer look reveals that this research focuses on cycling and that the pedestrian is discounted most of the time. People, and researchers are no exception, they do not seem to believe in walking (Lavadinho, 2010). Recently two international research projects on pedestrians, walking and sojourning policy development have been carried out: the COST 358 Pedestrians' Quality Needs project, and the OECD/ ITF Working Group [on] Pedestrian Safety, Urban Space and Health. These studies have substantiated Jan Gehl's statement that there is more to walking than walking. Walking: It's not rocket science, it's much more complicated than that.

2. Basic principles

In the COST 358 Pedestrians' Quality Needs project, with regard to policy development, it was agreed to start from a number of basic principles:

1. Start with the pedestrian
2. Design for All / Universal Design
3. Comprehensive analysis
4. The Cascade principle.

2.1. Start with the pedestrian

Usually policy development starts from the span of control of the domain that takes the initiative. The general idea is then to solve walking and sojourning problems while opportunity knocks, like updating legislation, street or intersection renovation, traffic management programmes, etc. In practice, this leads to suboptimal solutions, as other issues are given priority. Most of the time, these issues are perceived as more urgent, are better documented, backed up by more powerful stakeholders or viewed as politically attractive. The pedestrian should be seen as the key element in the system to be improved (see Figure 1).

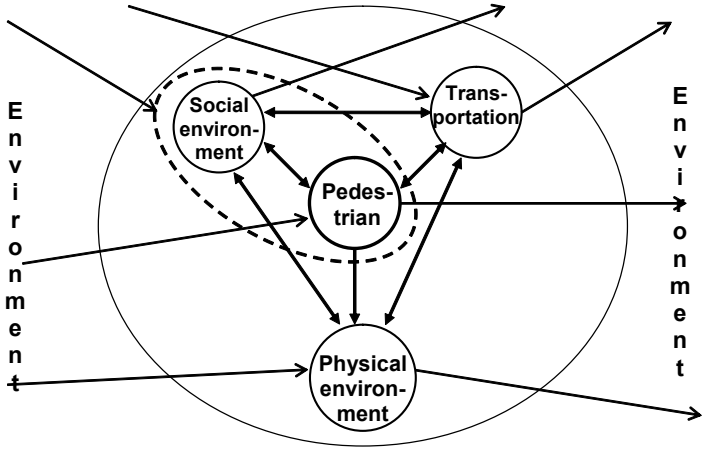

Figure 1 Model of pedestrian system (Methorst et al, 2010)

Starting with the pedestrian's needs and abilities can be expected to provide more helpful insights into the support that is required for walking and sojourning in public space. Steg

and Vlek suggest that needs, opportunities and abilities (NOA) together determine behaviour. Starting with the pedestrian will mean that a system needs to be adapted to the pedestrian and not vice versa.

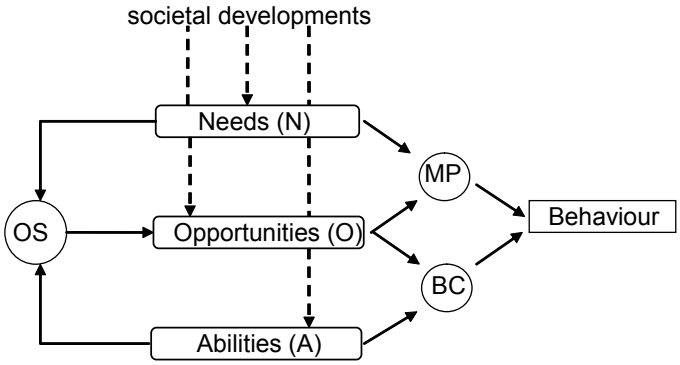

Figure 2 NOA model (after Steg & Vlek, 2008)

2.2. Design for All / Universal Design

Design for All (= Universal design = Inclusive Design) is an approach to the design of products, services and environments to be usable by as many people as possible regardless of age, ability or situation (see Figure 3). It strives to be a broad-spectrum solution that helps everyone, not just people with disabilities. It also recognises the importance of how things look and appeals to a wide range of potential users. The key precept is that all individuals, particularly those that have no option but to walk, are enabled to choose to walk and that there are no unacceptable impediments regarding their choice to do so.

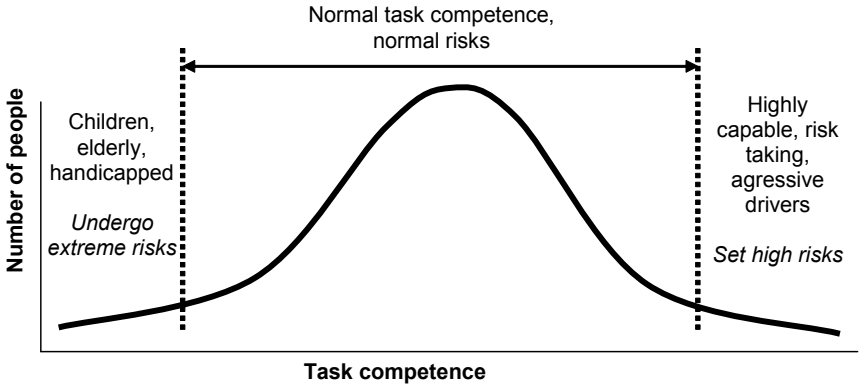

Figure 3 Populations for Design for All (Methorst et al, 2010)

2.3. Comprehensive analysis

Policy development should include all factors that affect conditions for walking and sojourning in public space. As not all phenomena are substantiated by empirical evidence, information gaps need to be identified and addressed through insights gained by approximations from models of the pedestrian system. Analysis and policy development need to go beyond empirical data.

2.4. The Cascade principle

This principle states that at all activity and planning levels, the context sets the stage for activity. Consequently, it is most effective and efficient to intervene at the highest possible level. Macro level conditions and interventions set the scene for the functioning of the system in terms of lower activity levels, corresponding with the sequence of walking and sojourning decisions: activity, destination, mode and route choices, walking behaviour (orientation, speed), actual walking and sojourning (interaction). It is therefore very sensible to start intervention programme development by looking at the practical options for intervening at the macro level, then dealing with the meso level and finally, with the micro level (Methorst, 2000). The principle is shown in Figure 4.

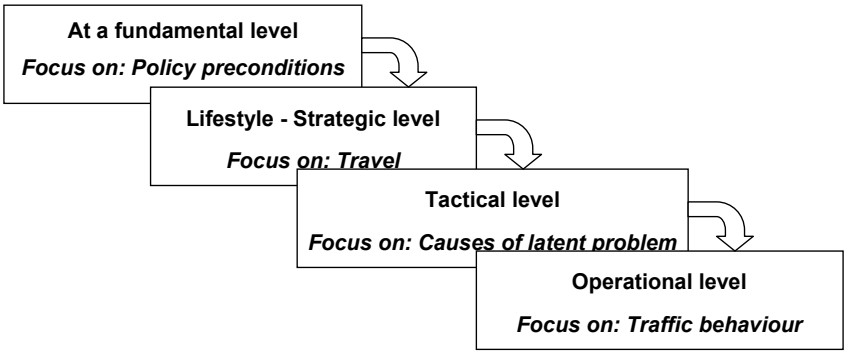

Figure 4 Cascade of interventions (Methorst et al, 2010)

3. Analysis

3.1. Facts

There is ample evidence showing that mobility, including walking, relates to people's needs and abilities as well as the opportunities that are offered to them. For example, people need food. To get food, they need to go to a supermarket. For that they need to be able to travel to it. One can only do that on foot if there is a supermarket within walking distance and when the conditions along the way are good enough to actually reach the supermarket.

Behaviour takes place on several planes: on the general lifestyle level (where to live, employment, holiday decisions, etc), on the day-to-day strategic level (where to go, when and how), on a tactical level (which route to take, attention level, how quickly to move) and at an operational level (how to walk and react to traffic and others in the environment). All these levels need policy attention.

In practice, many problems with regard to walking are hidden from the policymakers' sight. They, like most people, see particularly what problems they have themselves, and not so much what others' experience. As most of them are male, between ages 25 and 50, in good health, having a fair income and owning a car, they do not automatically see what less fortunate people experience. Furthermore, with regard to walking and sojourning, there are many biases in statistics and information. Comprehensive analysis is needed to uncover (partially) hidden matters.

With regard to abilities and opportunities, children, the elderly, persons with mobility handicaps and low-income people often are captive walkers, meaning that they have no alternative other than to go on foot. They are also less able to cope with difficulties while walking; they have special needs.

Pedestrian mobility includes both door-to-door walking and walking to and from other transport modes. On average, walking to and from other modes takes almost as much time and energy as door-to-door walking. The average total time spent walking is about 100 hours per year, per person. As mentioned above, there is, however, inequality in mobility opportunities. About 50% of the population does not have the choice to go by car. For the elderly, essential trips concern those related to services/health, social contacts, exercise. For them, proximity is a crucial requirement.

Sojourning can be seen as an objective in itself. It is estimated that the average time spent in public space for sojourning reasons equals the total walking time: about 100 hours per year, per person.

Regarding safety and security, in statistical terms and the public's perception, it is seriously biased. Dutch and Swedish studies have shown that the dominant accident type is falls. There are 4–9 x more victims from falls than by traffic accidents. Furthermore, it became clear that, as a road user, the elderly are not a risk, but at risk.

Regarding satisfaction, there is hardly any information available. This makes it difficult to develop suitable strategies for improvements, as the only reference then is the perception of the policymaker.

3.2. Expected changes

From both the PQN and OECD/ITF projects, we learned that major trends affecting the pedestrian's position are:

1. Ageing of the population:
- The number of persons with limited abilities will increase substantially, demanding higher quality levels of the walking environment
- The total workforce will not increase, but the demand for services will increase substantially; there will be insufficient capacity regarding services and support
- The number of vulnerable persons will increase, leading to larger numbers of casualties, even if the number of accidents does not increase
- More people will have free time
- As the older people's average level of education and income grow and they become more used to the quality on offer, they will have higher expectations regarding use of their free time and recreation.

2. Increasing car dependency:
- There will be a growing inequality of access to transport, making larger numbers of people dependent on the help of others or just suffer the consequences.

3. Increasing car and HGV traffic:
- More traffic on the roads means that in particular, the less able population will have trouble and be at increased risk while crossing the (main) roads.

4. Climate change:
- There will be more weather extremes: wind, heat, cold, rain, snow. This will lead to suppressed mobility, and an increased risk of falls and risk in emergency situations and disasters.

5. Increasing raw materials' prices:
- As raw materials like oil, iron and precious metals become rarer, their cost will go up. Consequently, transport will be less affordable.

6. Call for healthier lifestyles:
- As the average population becomes richer, it will also be more obese, consume more alcohol, etc. This leads to substantial health and services/support expenses, which need to be met or rather, prevented.

7. Governments will lose power and influence, and they will have lower investment budgets.

3.3. Context and preconditions

In practice, existing preconditions regarding walking policy and policy implementation determine their aims, ambitions, effectiveness and efficiency.

Public opinion, which heavily influences the practitioners and politicians' opinions and attitudes, is a first determinant. Currently, the popular idea is that walking is a choice and not really a problem as there are good alternatives (Amato, 2004). This opinion needs to be corrected, because in fact, about half of the population do not have good alternatives. They suffer the consequences of increasing car-dependency (Risser, 2010).

A second factor is knowledge, particularly that of practitioners and decision makers. Up till now, walking has received little scientific attention. This seems to be shifting, however. Data availability, resulting in low potency arguments and severely biased data are an additional obstacle. In many cases, adequate knowledge about walking is absent on the work floor level.

A third factor is a willingness to intervene and improve. There appears to be no strong walking advocacy as negotiator; stakeholders without power have most to lose; there is little economic drive: no financial interest; low cost facilities. It is clear from many studies that walking is a solution to many urgent problems, such as lack of space, health, environment, a shortage of raw materials, security, etc. It is not yet clear what the benefits of walking are for the larger system. This still is an area that needs to be substantiated. The PQN study includes some theoretical considerations, and very recently the WHO presented the HEAT checklist for assessing the economic benefits of walking.

Another obstacle is that the financial benefits do not flow back to the payer of the measures. Local authorities do not get the benefits: they are spread over the general population and are hidden, indirect savings for national governments.

4. Solutions

We strongly recommend that the Cascade principle is applied, by first setting the stage and ensuring that preconditions for concrete measures are in place. Crucial activities in this regard are:

a. General preconditions, resulting in the proper atmosphere for the improvement of walkability conditions:

- Building awareness of the economic benefits of walking and sojourning
- Data collection and management
- Monitor and evaluate policy implementation
- Knowledge management and research planning; education of practitioners
- Issue national guidelines, policy papers and 'carrots'
- Enforce proximity of services in land use
- Organise fall prevention

b. Strategic activity level measures

- Improve connectivity, accessibility, conspicuousness and information
- Promote awareness of attractiveness and true opportunities
- Road classification: separation traffic flow – sojourning

c. Tactical activity level measures

- Route guidance
- Supply shortcuts
- Improve network safety

d. Operational activity level measures

- Forgiving pavements and roadsides
- Safe crossing facilities
- Improve convenience, conspicuousness and comfort of walking facilities
- Systematic maintenance, removing obstacles and cleaning; organise winter maintenance
- Control absence of obstacles in pedestrian space
- Issue permit policy for works in progress
- Monitor and evaluate usability of public space

5. Recommendations

Our recommendations, based on the PQN and OECD/ITF work are:

- Target the independent mobility of the elderly; and car dependency
- Invest in positive awareness building: we càn solve the matter
- Evolving communities necessitate comprehensive studies:
    - Rule: Garbage in – garbage out
    - Quest for the unseen
- Undetected problems are expensive
- Apply the Cascade principle: ad-hoc approaches waste money.

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Landscapes of health and hope

Abstract

The conditions of modern living (work and life pressures and the physical places we inhabit) threaten the health and wellbeing of millions of Europeans. Chronic exposure to stressful events and unhealthy settings put individuals at higher risk of cardiac disease and stroke, and also threatens their mental health. There is mounting evidence, however, that exposure to places that include trees, grass, and open space can reduce the psychological symptoms of stress and promote recovery from mental fatigue. Some recent research has produced startling results: compared to individuals who have less exposure to urban green, those who have more have been show to live longer, are less likely to produce low-birth-weight babies, and engage in less aggression and violence. In this paper, I consider these recent findings and discuss the implications for, and importance of, having everyday contact with green, open spaces.

1. Introduction

City living can be exciting – full of opportunities, choices, and possibilities. But it can also be stressful and exhausting. Cities can feel congested and noisy. They can also feel demanding, as though you need all your resources to successfully navigate your way through city life. The consequences of living under stressful, mentally fatiguing conditions are far from trivial.

An individual's capacity to moderate the demands and pressures of everyday life has profound and far-reaching consequences for their health. Chronic exposure to stressful events and unhealthy settings put individuals at higher risk of cardiac disease and stroke, and also threatens their mental health. There is mounting evidence, however, that exposure to places that include trees, grass, and open space can reduce the psychological symptoms of stress and promote recovery from mental fatigue (c.f., Bowler, el al., 2010; Kaplan & Kaplan, 1989; Ryan, et al., 2010).

Some of the research has produced startling results: compared to individuals who have less exposure to urban green spaces, those who have more exposure have been shown to live longer, are less likely to produce low-birth-weight babies, and engage in less aggression and violence. As we'll see below, some of these findings speak to our common concern for developing equitable living conditions in cities.

In this paper, I consider recent studies that examine the impact of having exposure to green, open spaces; examine the findings in terms of human health with a particular focus on the relationship between exposure to green open spaces and stress; and discuss the implications for, and importance of, having everyday contact with green, open spaces.

Keywords:
health, wellbeing, healthy places

Theme: *physical environment, health and wellbeing*

2. Nature and stress reduction

To what extent does contact with nature reduce the experience of stress – the physiological and psychological responses to stressful situations? To answer this question, we look to a number of studies in which people's stress reactions are assessed after they were exposed to

varying levels of green, open space.

One line of studies comes from reports of individuals feeling calm or being able to function more effectively after being in or viewing a green space. In one such study, individuals exposed to urban forests reported feelings of 'peacefulness', 'tranquility', and 'relaxation' (Ulrich, 1993). Another study showed that individuals who had participated in a nature vacation reported decreased levels of occupational stress after the vacation (McDonald, 1996).

Similarly, in a study of patients about to undergo dental surgery, views of an aquarium with fish reduced anxiety and discomfort, and increased scores for patient compliance during surgery (Ulrich, 1992). A more recent study demonstrated a connection between visiting an urban green space and levels of stress: the more often the visits, the fewer reported illnesses related to stress (Grahn & Stigsdotter, 2003).

For children, exposure to green spaces has been shown to moderate the impact of stressful life events. In a study of 337 rural children, the impact of life stress was lower among children with high levels of nearby nature than among those with little nearby nature (Wells & Evans, 2003).

Another line of studies concerning the relationship between contact with nature and lower levels of stress comes from clinical tests of physiological functioning. In one such study, 120 individuals watched a stressful film and then were shown videos of either urban or natural settings. Individuals who viewed natural scenes showed significantly faster physiological recovery from stress than individuals who were assigned to watch the urban scenes (Ulrich, et al., 1991).

In a similar study, 160 individuals viewed one of four different video-taped simulated drives through outdoor environments immediately following and preceding mildly stressful events. Participants who viewed drives that showed very little vegetation, relative to participants who viewed nature-dominated drives, showed greater physiological activity indicative of stress. In addition, participants who viewed nature-dominated drives experienced quicker recovery from stress and greater immunisation to subsequent stress than participants who viewed drives that showed very little vegetation (Parsons, et al., 1991).

Figure 1. A growing amount of evidence demonstrates the health benefits of having everyday contact with green, open spaces.

Similar findings have resulted from studies of workers exposed to indoor plants (Lohr, 1996), and workers in rooms with views that varied by level of naturalness outside their office windows (Chang & Chen, 2005).

In sum, there is considerable anecdotal and empirical evidence that contact with urban green spaces is associated with lower levels of stress. At this point, however, there is still important work that needs to be done. We do not know what dose of urban open space is necessary to produce lower levels of stress. That is, we do not understand the shape of the dose-response curve for exposure of urban green space on stress. This is a critical gap in our understanding and it prevents us from making specific recommendations to designers, planners, and policy-makers about how to design and distribute open spaces within urban areas.

3. Does exposure to nature guard against early death?

There is reason to believe that, for urban dwellers, regular contact with green, open spaces, will result in lower levels of physiological activity indicative of stress. Although we do not know how much exposure is necessary to have an impact on longevity, three recent studies suggest that the impacts – both in terms of health and in terms of economics – may be enormous.

The first hint that living near an urban green space (as opposed to living in a less green urban area) may result in an increase in longevity comes from a study of elderly people in Tokyo. That study found that living in areas with walkable green spaces was positively associated with the longevity of Tokyo's senior citizens independent of their age, sex, marital status, baseline functional status, and socioeconomic status (Takano, Nakamura, & Watanabe, 2002). That is, after accounting for all kinds of things that we know are associated with living longer, this study found that individuals who lived in close proximity to green, open spaces did in fact live longer than their counterparts who lived in less green surroundings.

The second hint comes from a recent study conducted in northwest Florida. In this study, Hu and his colleagues examined a variety of characteristics of neighbourhoods and found that neighbourhood greenness was negatively related to the incidence of mortality from stroke (Hu, Liebens, & Rao, 2008). That is, people who had greater exposure to green, open spaces were less likely to die of a stroke. This finding held after controlling for other potential confounding factors such as income and air pollution.

Figure 2.Green neighbourhoods are associated with increased longevity in a number of studies.

The third hint comes from a study of all residents of England between 2001 to 2005. Mitchell & Popham (2008) classified the population of England at younger than retirement age (greater than 40 million people) into groups based on income and distance to a green space from their home. They obtained individual mortality records from those people who died during the study period (more than 366,000 people) and established that an association between income and mortality varied by exposure to green space. Mitchell and Popham report that all-cause mortality, and mortality from circulatory diseases, were lower in populations living in the greenest areas.

As can be seen in Figure 3 below, the association between exposure to green space and the likelihood of death was not the same for individuals in each of the three income categories. For individuals in the highest-income category, there was no statistically significant relationship between green space exposure and likelihood of death. But for the middle-income group, there was a statistically significant, negative relationship: the greater the exposure to green spaces, the lower the likelihood of death. This relationship was even more pronounced for individuals in the low-income group.

How do we explain the lack of a relationship between income, proximity to green spaces near home, and likelihood of death for the highest-income earners? Although we do not know for sure, I suspect that knowing the amount of green space near a wealthier person's home is not a good measure of the amount of green space to which these individuals actually get exposed. I suspect that compared to people who earn less money, high-income earners are more likely to travel, play golf, engage in other activities that bring them in to contact with green spaces, or simply to seek out green experiences. Knowing the amount of green space surrounding a low-income person's home, however, is likely to be a good measure of their exposure to green spaces.

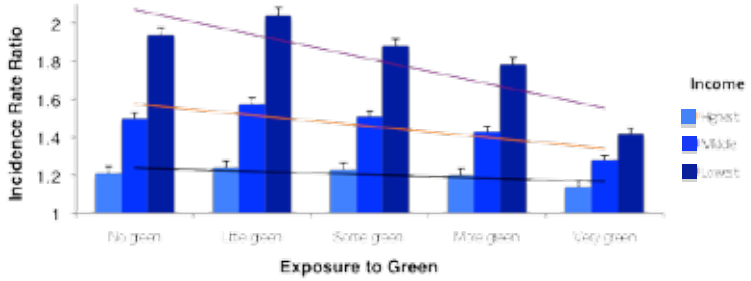

Figure 3. In the Mitchell and Popham study, the Incidence Rate Ratio, that is, the likelihood of dying during the study, was negatively associated with exposure to green spaces near the homes of people in the middle and low-income groups. For these two groups, greater exposure to urban forest was associated with lower likelihood of death.

It is worth taking a moment to consider the implications of this study. The findings indicate that for individuals in the middle and low-income groups, having everyday contact with green spaces is a matter of justice and equity. Look back at Figure 3 and examine the disparity between likelihood of death at various levels of green for individuals in the high and low-income categories. Notice the extent to which the disparity decreases as exposure to green spaces increases. These findings suggest that providing green spaces throughout a community is not merely a wonderful thing because green spaces make communities more attractive. It suggests something much more fundamental to the development of an equitable and just society. Providing adequate green, open spaces may dramatically reduce the disparity in death rates associated with income. For individuals who are not at the top of the income scale, easy access to green, open spaces appears to have a dramatic impact on health and longevity.

In sum, there is growing evidence that exposure to green open spaces reduces the level of stress that individuals experience and that lower levels of stress result in longer, healthier lives. The impact, however, is not the same for people across a range of incomes. For middle income and low-income earners, living near a green, open space seems particularly important.

4. Key concluding points

In light of the research findings described above, it is altogether appropriate to enact policies to protect and enhance green open spaces in cities. Such policies should encourage the development and management of green spaces that are easily accessible from homes, schools, and the places where people work. Accessible opens spaces are likely to have positive impacts on health.

Urban planners, designers, ecologists, and the public can help create cities that promote health by providing abundant opportunities for people to have contact with green open spaces. In addition to urban parks, such contact can occur along tree-lined streets, and on school campuses, hospital grounds, civic centres, and in public housing neighbourhoods.

Based on the empirical evidence reviewed here, it is clear that having a green space nearby is more than just an aesthetic amenity. Such spaces are a critical part of healthy urban habitats.

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Keywords:
accessible design, built environment, inclusive design, tactile paving

Theme: *inclusive design and sustainable community planning; age friendly built environments from childhood to old age*

Is your inclusive my exclusive?

Abstract

Over the past 20 years we have seen changes in the way that society acknowledges the diverse nature of the population. In the UK, like many other countries, we have moved away from a view that people have to adapt if they are to survive in society, to a position of changing the societal environment to cater for everyone, but how much of this is only rhetoric? This paper challenges the extent to which the environment can respond to everyone's needs and through a case study example of tactile paving finds that accessible designs, whilst helping some people, may create significant barriers for other people in getting out and about. Additionally, the paper considers why designers need to move beyond application of a minimum standards approach and the practicalities of finding and implementing better practice guidance. In conclusion, the value of adopting an inclusive design approach is given.

1. Differentiating between accessible, universal and inclusive design

There are differing terms given to what appears to be the same underlying goal – to create a world that everyone can participate in to the fullest extent possible. It is, however, important to challenge the myth that within the context of our participatory world we all start from the same level of understanding. Accessible design is design to accommodate specific individuals or groups of disabled individuals, and is usually applied at the end of the design process as an afterthought, or retrofit to a completed design. However, because in certain situations it may be the only solution for some problems and some users, accessible design will always be necessary. Specialized accessible design is usually more expensive than inclusive or universal design and may segregate and stigmatise the users it is designed to accommodate, highlighting their disability (Story, 2002).

An accessible design solution for one person may conflict with the requirements of a different individual who finds the solution unworkable for them. For example, the kerb provided at the edge between a footpath and roadway helps to keep pedestrians and vehicles separated. For a visually impaired person who is a cane user, the difference in footpath and roadway heights made by the kerb identifies a tapping point for the cane, enabling location of the division between the two areas. At a crossing point the kerb is lowered to allow people pushing prams, wheelchair/powerchair users to ride down off the footpath, cross the road and get back up to the footpath on the other side. This can lead to a loss of tapping point for a cane user at the dropped kerb section if it is completely flush with the road level. We can produce accessible solutions that will appeal to cane users but not to wheelchair users, and vice versa, can we seek to provide a more inclusive solution that not only appeals to both groups, but also includes as many other people as possible, or is it always going to be a compromise?

By contrast to accessible design, universal design is 'a strategy, which aims to make the design and composition of different environments and products accessible and understandable to, as well as usable by, everyone, to the greatest extent in the most independent and natural manner possible, without the need for adaptation or specialised design solutions.' (The

Tomar Resolution ResAP(2001)1 Council of Europe.) Based on seven principles (equitable use; flexibility in use; simple and intuitive; perceptible information; tolerance for error; low physical effort; size and space for approach and use) developed by Ron Mace et al (1998) in the US, universal design is slowly gaining recognition in diverse design disciplines and in many countries, with the emphasis on infusing the principles throughout the design process and in design education.

Through the integrative approach of universal design there is improved acceptability of the design and less stigmatising, or exclusion, of individuals. Imrie (2001), however, suggests that whilst universal design addresses the technical and procedural issues, it fails to address the social and attitudinal barriers. He argues that, by contrast, inclusive design achieves this through working "with" rather than "for" people as building users and this is an important distinction between the two terms. From these differing views, an appropriate definition of inclusive design would seem to be:

'Inclusive design is a way of designing products and environments so they are usable and appealing to everyone regardless of age, ability or circumstance by working with users to remove barriers in the social, technical, political and economic processes underpinning building and design.' (Newton and Ormerod, 2003).

Other definitions of inclusive design have been provided, such as that by the UK Commission for Architecture in the Built Environment (CABE, 2006) but they mainly seem to consolidate the principles of universal design possibly in order to avoid copyright. We suggest that an eighth principle should be added to those of the seven universal design principles to address the shortfall identified by Imrie (2001) – the principle of user engagement in the design process. This additional principle is further justified during the development of an inclusive design toolkit (Keates and Clarkson, 2004).

However, we should remember that equally as important as the design of an inclusive environment is also the management and maintenance of it, because a designer cannot constantly monitor how the client uses and adapts the original design. What may have been devised to be inclusive, can easily become exclusive, through poor management decisions and practices.

2. Legislation and guidance supporting the implementation of inclusive design within the UK

The UK Equality Act (2010) brings together nine different strands of discrimination legislation into one unified act, including the Disability Discrimination Act (DDA) (1995). The relative newness of the Equality Act means that there is little evidence of claims of discrimination. However, the DDA has been fully in force since 2004 and does have some track record of claims and a much larger number of settlements out of court. There have been some developments and refinements to bring in areas originally excluded from the DDA and to give greater emphasis on public bodies being more proactive. Within the UK planning process, the introduction of Design and Access Statements provides the opportunity for designers to define

and explain how 16 different design aspects, including accessibility, will be incorporated into a proposed development at a concept stage when there is still a chance to make improvements to the design. This poses questions as to how many Design and Access Statements are thoroughly thought through from one project to the next? How will local authorities ensure that they reject proposals for development which show a lack of consideration for access issues? Perhaps more importantly, how will the submitted Access Statement be reviewed by the Building Control officers when the design is developed further and submitted for detailed approval?

Guidance documentation has improved greatly for detailed building design with Approved Document M of the Building Regulations (2000) in England and Wales, and the Scottish Technical Standards (2011) benefitting from cross reference to guidance in British Standard BS8300:2009 +A1 2010 and research undertaken on access issues. However, there appears to be far less guidance on outdoor environments, the reliance being on some aspects of the Department for Transport Manual for Streets (DfT, 2007a; DfT, 2010), an increasingly outdated Inclusive Mobility (DfT, 2002), and specialist guidance such as the IDGO Design of Streets with Older People in Mind (2007).

3. Tensions in implementing inclusive design – case study example of tactile paving at road crossing points

3.1 Background to the case study

One of the key areas in which current best practice in environmental design may present contradictions for different users is in the design, siting, laying and use of tactile paving. This widely used system (based on textured ground surfaces) provides guidance for visually impaired people at critical warning points on streets. It is designed and laid in accordance with UK Department for Transport guidance and British Standards BS7997:2003 and BS7533-11:2003. The benefits of tactile paving for blind and visually impaired people have been well established yet the system is not without its issues. Level or flush access is essential for the majority of wheelchair users. Such access, either by dropped kerb or raised road crossing should be provided in a number of places including at road crossing points (DfT, 2002). However, this creates a tension because a visually impaired person is no longer able to navigate effectively because their navigation aid (the kerb) has been removed at critical points where personal safety may be compromised. The tactile walking surface has therefore been developed for visually impaired people in order to a) lead visually impaired people to the crossing point itself, and b) provide hazard warning and guidance as to where the footway ends and the carriageway begins through the use of a stem design.

3.2 Essential elements of blister tactile paving

At the developmental stages of the tactile paving guidance, alternative approaches to the installation of a tactile surface were suggested, most notably, the concept of creating a lower height kerb with a small upstand which would both allow access for wheelchair users and provide a warning for visually impaired people. This idea was not accepted because no optimum upstand could be identified which could meet effectively the needs of both groups of people (DfT, 2007b).

Within the context of road crossings, there is extensive guidance on the design, siting and laying of tactile paving (BS 7997: 2003; BS 7533: 2003; DfT, 2002; DfT, 2007b). Two key requirements are colour and blister design. Red tactile paving is used to indicate a controlled (formal) crossing point, and buff or similar contrasting colour is used to indicate an uncontrolled (informal) crossing point; blisters should be flat topped, 5mm high (±0.5mm). This blister profile is crucial to its effectiveness as a warning to visually impaired people (detectability). At 4.5mm (the lower tolerance) the surface will still be effective. If the blisters fall below 4.5mm, the effectiveness of the surface will be significantly reduced and will ultimately become undetectable below 3mm. Above 6mm and walkability across the paving is compromised.

3.3 Nature of the study

Tactile paving is not without its issues, and two in particular emerge from a report by the UK Health and Safety Executive (Loo-Morrey, 2005), which suggests that there is a need to better understand the extent and implications of incorrectly designed and laid tactile paving, and the toe clearance of an individual in negotiating paving 'blisters' and potential slip hazards. This was confirmed by the first phase participants on the I'DGO project, typical comments from people aged 65+ being:

"It's really uncomfortable....you feel as though you are going to twist your ankle on it...I prefer to walk around them...I don't feel safe, I feel I might trip and they hurt my feet...they are fine providing they are in the right place and right angle but so often they are not...if they are sloping and wet they are dangerous and look horrible...they are a waste of time, I don't know any older person who likes them."

In response to this, the case study had three core objectives:
1. To examine how blister and corduroy tactile paving is designed, sited and laid;
2. To identify older people's perceptions and approach to using tactile paving;
3. To quantify the relationship between the tactile paving design parameters and the biomechanics of ambulation and risk of falling.

To assess these objectives, a complex range of research methods were used both at road crossing sites around the UK (involving +2000 participants, 4500 on-site behaviour observations, and on-site measurements), and in a simulated road crossing laboratory environment at the university (involving 32 participants). Full details of these methods can be found on the I'DGO website.

3.4 Initial findings from the 48 UK road crossing sites

- Steep slope of the dropped kerb is an issue especially for people with mobility aids, and this difficulty is compounded when the slope has a tactile surface;
- Pedestrians' view on what makes a good crossing is one that is safe to walk across and at which the traffic will stop. If the tactile paving is potentially a hazard (e.g. poorly maintained) then this is not a significant factor in how the pedestrian perceives the crossing because they feel safe overall;
- A pedestrian will feel unsafe if the tactile is laid sloping (regardless of level of maintenance – good or bad) and/or perceived as slippery and at this point, the height of the blister is more of an issue;
- Pedestrians perceive that tactile paving may cause them to fall but only a small number of outdoor fallers have actually fallen on tactile paving;
- There is a range of 'potential for slip' of tactile paving materials, so some materials are potentially more slippery than others when wet (tested with a Stanley Munro pendulum friction tester, and a Mitutoyo surface roughness tester);
- Highway construction operatives are not trained in the subtleties of tactile paving so there is a lack of onsite clarity as to how it should be laid. Similarly highway maintenance officers have limited training so a maintenance check focuses on whether it is in need of repair, rather than if is it designed, sited and laid correctly.

3.5 Initial findings from the laboratory work

- Gait analysis of the 32 healthy older adults who took part in our laboratory experiment has shown that tactile, as compared to smooth, paving increases the variability in timing of 'foot placement' by 20%. This indicates a disturbance of participants' rhythmic gait pattern, meaning that the older people we studied had to adjust the way they normally walked, and work harder to maintain their balance, when walking on the tactile paving slabs in our laboratory (a simulated crossing site).
- Toe clearance – how much one lifts up one's feet − during the 'swing phase' of walking increased by 7% on tactile paving, suggesting that the participants were over compensating (lifting their toes up more than they needed to) when negotiating paving blisters; potentially in response to a perceived risk of falling.
- The ability to stop on cue in response to a 'red man' traffic signal was compromised on tactile paving.

4. Key concluding points

- An accessible design approach seeks to develop specialised solutions that suit an individual's needs, but it tends to create a negative overall impact due to the stigmatising effect of highlighting the person as being different. This contrasts with the inclusive design approach where diversity is celebrated through equal and attractive alternatives if one universal solution is not practicable. Inclusive design solutions are integrated into the core of the design and therefore do not appear as added-on elements that detract from the original design ethos.

- An accessible design solution constructed and used within a public environment poses potential challenges for all users of that environment, as evidenced through the case study of tactile paving described above, particularly within the context of the 48 road crossing sites where we find that a system design for one group of users has wider implications for how other users both perceive and experience them.

- The case study laboratory results (Thies et al, 2011) need to be viewed under the consideration of limitations associated with studies in a controlled environment (including the use of a safety harness). In the future, they may form the basis for a useful 'real world' comparison. The results from the laboratory pick up on findings emerging from our current 'real world' work, where people we have observed and/or interviewed have clearly felt the time allowed for crossing at a given site was insufficient when our researchers measured it as being acceptable. It would also be useful, in the future, to work in the laboratory with older participants with mobility or other health problems, including visual impairment.

- The issue of the management of the environment has to be considered since the most inclusively designed environments can be made inaccessible by thoughtless changes and poor maintenance. It is important that all those people involved in the design and construction process and the day-to-day running of the environment are fully aware of the effect their contribution can make towards creating a socially inclusive world.

- The altruism of an environment that accommodates everyone is a goal designers should aspire to, but there is a need to temper this with the reality that today's best practice will be out of date in ten years time. However, that should not deter us from attempting to infuse inclusive design at the outset of any design project, and every member of the design team can play their part in seeking to achieve this. There is a need to move beyond addressing minimum standard requirements and develop exciting solutions that inspire designers to respond with other alternative designs. Inclusive design is no more than good design, but until educators instil this into all their design exercises and projects, then the next generation of designers will continue to see making environments that work, as subsidiary to making environments as art. Designs in the real world are for real people, and they are more diverse than coffee table art books portray.

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Spaces to flourish? An investigation of the role of gardens in older people's lives

Abstract

There is increasing recognition of the role of the built environment in people's health and wellbeing but to date, little research has explored the relationships between objectively-measured characteristics of housing and the wellbeing of inhabitants. This presentation will report findings of the second phase of I'DGO work, undertaken by the WISE research unit at the University of Warwick.

The study involved a survey of over 2500 people living in different regions of the UK, in a range of settings from urban to rural. Their wellbeing was measured in terms of their satisfaction with life, enjoyment of life, self-rated health and perceived community spirit. Physical characteristics of each participant's housing environment were measured objectively using remote digital sources (digital maps and Google Earth).

These characteristics included: the form, age and density of housing; the amount, type and form of garden (residential outdoor) space; and the extent of greenery and/or tree coverage.

Multi-level modelling was carried out to investigate the links between wellbeing and physical housing characteristics. The presentation will outline those characteristics most strongly linked with wellbeing, after controlling for other key influences. From this, it will suggest implications for policy and practice.

Keywords:
built environment, housing, wellbeing, community, health, gardens, residential outdoor space

Theme: *physical environment, health and wellbeing; age friendly built environments from childhood to old age*

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Catherine Millington
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Keywords:
older adults; neighbourhood environment; quality of life; parks; residential streets

Theme: *physical environment, health and wellbeing; age friendly built environments from childhood to old age*

"I'd go outdoors if I could; wouldn't you?" - Age-friendly neighbourhoods and quality of life

Abstract

Research with older adult participants, undertaken as part of the UK-based I'DGO project – Inclusive Design for Getting Outdoors – has explored the contribution that accessible environments close to home make to quality of life. The project findings contribute to a better understanding of barriers and attractors to older people's access outdoors. Examples from OPENspace studies with participants aged 60 to 97 years include choice-based conjoint analysis to assess the relative importance of environmental features in preferences for neighbourhood parks. This innovative method offers tools of considerable practical value to open space planners. Emerging findings from a separate, longitudinal study of outdoor activity and quality of life for older people (aged 65+) living in contexts of deprivation include data on participants' perceptions of the environment, satisfaction with life, and frequency and purpose of going outdoors, as well as accelerometer-based measures of physical activity and independent, systematic behaviour observations of street use.

1. Background

The UK-based I'DGO project – Inclusive Design for Getting Outdoors – has involved a consortium of researchers from the Universities of Salford, Oxford Brookes, Warwick, Edinburgh, Heriot-Watt and Edinburgh College of Art, funded by the Engineering and Physical Sciences Research Council. Since 2003, I'DGO has focused on researching effective ways to ensure that the outdoor environment is designed inclusively, to improve quality of life for older and disabled people. We have particularly focused on those features of the environment that facilitate or enhance the experience of getting outdoors and undertaking outdoor activities, and those features that act as barriers to this. This paper covers aspects of I'DGO research undertaken at OPENspace research centre, to illustrate certain, innovative ways that we have sought to gain an understanding of the issues and the implications of the findings for older people's quality of life.

Recent evidence suggests three principal ways that neighbourhood outdoor spaces can contribute positively to people's health and quality of life: through support for physical activity such as walking; through support for mental health by offering restorative experiences and engagement with the natural environment; and through opportunities for positive social interaction (de Vries, 2010).

For older people, access to attractive outdoor places in the neighbourhood environment is associated with multiple benefits (Sugiyama and Ward Thompson, 2007a) including more walking (Li et al., 2005; Sugiyama and Ward Thompson, 2008), which is known to enhance health and functioning (Simons and Andel, 2006; Weuve et al., 2004), and longevity (e.g. Takano et al., 2002). At the same time, the combination of decreasing functional capability and barriers in the environment may act as a deterrent to outdoor activity for older adults (Lawton, 1986). It is therefore important to understand what aspects of the outdoor environment help or hinder, attract or deter people in getting outdoors; we conceptualized this

in terms of environmental supportiveness – the degree to which the quality of the environment makes it easy and enjoyable to be outdoors (Sugiyama and Ward Thompson, 2007b) – and this concept underlies all of our work in I'DGO. We also recognise the diversity in people's needs and aspirations, as well as in their functional capabilities and living arrangements. Bearing this in mind, our research has used a multi-method approach in identifying the qualities of the outdoor environment that are relevant to our participants (Sugiyama and Ward Thompson, 2007a).

The two studies described below (phase 1 – 2003-2006; phase 2 – 2007-2011) look at two particular elements of neighbourhood outdoor space – the local park and the residential street environment – and use distinctive methods to explore how they may affect older people's activities, perceptions and quality of life.

2. Assessing the relative importance of environmental features in preferences for neighbourhood parks

An early stage of OPENspace research involved exploration of people's 'personal projects' (Little, 1983), their importance, and the degree to which their local environment makes it easy or difficult to carry them out (Sugiyama and Ward Thompson, 2007a). Alongside this, we developed a multi-attribute neighbourhood open space scale, drawing on the literature and on focus groups with older people in a range of urban, suburban, and rural geographical contexts, to explore environmental attributes that seemed important and frequently highlighted in relation to their getting outdoors. A self-administered questionnaire was designed to collect data from different UK locations on older people's health, satisfaction with life, walking levels, and on the supportiveness of the local environment for their personal projects, as well as on the quality of their environment using the neighbourhood open scale (Sugiyama and Ward Thompson, 2007c).

The findings underlined the importance of access to aesthetically pleasing, natural open spaces in the neighbourhood to support outdoor activity in the older population. However, they did not indicate in detail where investment in the environment might have the biggest impact. To address this, conjoint analysis, a discrete choice methodology recommended in health research on quality of life, was used in a further survey of 237 older people, (aged 60 to 79), drawn from the same locations across Britain as the first I'DGO study (Aspinall et al., 2010). The 15 attributes selected for conjoint analysis were derived from the earlier I'DGO project work as the most likely to be important to older people's outdoor activities, health and quality of life. The questionnaire presented different combinations of attributes relating to options for getting to a local park, and the qualities of the environment en route and within the park, in a paired comparison format (Alves et al, 2008). Socio-demographic, functional mobility and health variables were also recorded, as with the first survey.

The individual utilities, or comparative importance of each attribute, generated using a Hierarchical Bayesian approach, were used as the basis of several forms of analysis (for further details of the analytic procedures, see Aspinall et al., 2010). Across all participants, the top six attributes out of the 15 examined were, in rank order of importance: nuisance (signs of

vandalism, dog fouling, youngsters hanging around); facilities (café, toilets); trees and plants; traffic levels; 'things to watch'; and levels of maintenance (Alves et al, 2008; Aspinall et al., 2010).

Comparisons can be made between levels within each attribute and between attributes, to understand the relative importance of changing one versus another.

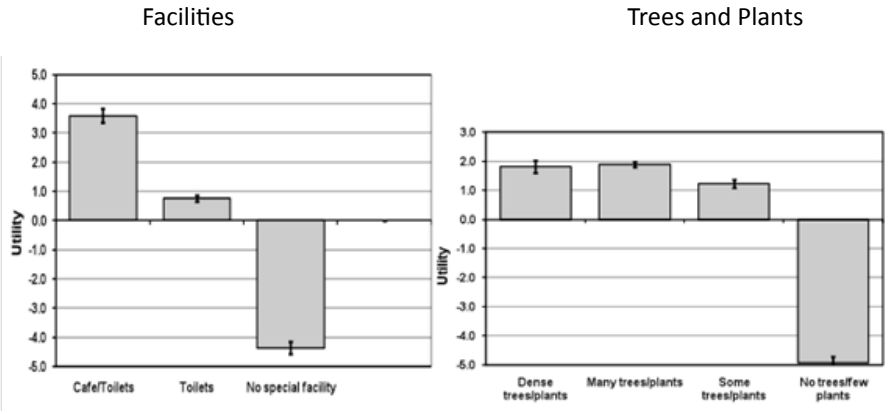

Figure 1: comparison of levels and attributes – facilities versus trees and plants

For example, in Figure 1 we can see that the addition of toilets in a park currently without them, valued though that is, is less important than adding trees and plants if there are no trees and few plants in the park at present. On the other hand, adding more trees and plants has only marginal additional utility, whereas adding a café adds noticeable utility even if toilets are already provided. Yet, we can note that the presence of trees and plants is more than twice as valued as having a café facility added.

Further analysis of the data has also allowed sub-groups to be identified within the sample according to similarities or differences in how they rate the importance of attributes. The two significant individual characteristics influencing conjoint preference are whether someone lives alone or with someone else and the degree of difficulty they have in getting around. The negative importance of nuisance factors and of heavy traffic relate to personal safety – an issue on which there is conflicting evidence from other studies on parks and open space (Sugiyama et al., 2009) - while facilities such as toilets may be considered part of what makes an outdoor environment supportive for older people's use (Sugiyama and Ward Thompson, 2007b). The new contribution to understanding contributed by the conjoint analysis allows scenario modelling to test what changes to the outdoor environment will have the greatest impact on patterns of preference for participants and for sub-groups within the sample (Aspinall et al., 2010).

3. A longitudinal study of outdoor activity and quality of life for older people in relation to their residential street environment

In a separate study under l'DGO, we have been undertaking a longitudinal research project to compare the use of outdoor space in residential streets before and after environmental

changes, based loosely on 'Home Zone' principles (DfT, 2005), whose aim is to provide shared spaces for more integrated pedestrian and vehicle use. As we have noted above, declining physical mobility as people progress through old age is typically marked by a reduction in physical and social activities; the interest in Home Zone principles is because a local street environment which favours outdoor activities and supports social engagements could potentially reduce or moderate inactivity and social isolation (Sugiyama and Ward Thompson, 2007a).

The research design takes advantage of a 'natural experiment' where a number of Home Zone type environmental interventions have been planned for residential streets, predominantly in areas of high deprivation, through a pilot programme under Sustrans (a sustainable transport charity). As these interventions are developed with community involvement, the programme is called 'DIY Streets' (Sustrans, 2010). We initially identified eight sites in England and Wales where DIY Streets projects would take place, and matched them with eight control sites in the same communities, where no interventions were planned, in order to undertake pre- and post-intervention data collection (we subsequently added a Scottish site where there are new-build Home Zones). The mixed-method approach combines objective and subjective, qualitative and quantitative methods. It includes interview-based questionnaires that use the personal projects measures and the neighbourhood open space scale developed earlier in I'DGO, as well as health (Euroqol), quality of life (CASP-19) and frequency of outdoor activity measures; accelerometer-based measures of physical activity, combined with diaries to record outdoor activities during a seven-day period in the summer months; and objective records of behaviour observations in the study streets, as well as an audit of their physical characteristics based on the SWAT walkability assessment tool developed by OPENspace (Millington et al., 2009).

The research is designed to explore the influence of the DIY intervention on older residents' frequency of going outdoors, time spent outdoors, social connectedness and quality of life. Findings to date on the longitudinal study are only provisional as delays in implementation of some of the DIY Streets projects mean that data collection is ongoing. Initial indications (n=47) suggest that, where these environmental interventions have taken place, there is an increase in time spent outdoors by older people (aged 65+), compared with those in control streets, but other indicators point to a decrease in frequency of going outdoors after the intervention and an increase in loneliness/lack of companionship as well, so the results at this stage are equivocal. The nature and scale of the interventions needs to be examined further, and additional data gathered before any full interpretation can be made. One interesting finding to date, however, is a very significant increase in the number of personal projects identified by participants in intervention sites compared with control sites, suggesting that the intervention has perhaps raised awareness of opportunities for using the environment around the home in new ways.

The questionnaire data from the first wave of data collection (baseline, 2008) in the longitudinal study, administered by interview with participants who are predominantly living in contexts of high deprivation, has allowed a comparison with the findings on neighbourhood outdoor space from our earlier study (a postal survey across many different locations in Britain).

Our quality of life measures have changed between the two surveys: in 2005 (n=271) we used the Satisfaction With Life Scale (SWLS), in 2008 (n=102) CASP-19. However, it was still of interest to compare which elements of the neighbourhood open space scale (simplified via

factor analysis) predicted better quality of life on each outcome measure, using a series of regressions (Ward Thompson et al, in preparation). In 2005, three factors - pleasantness of the local open space (good for children's play, for chatting, different activities, facilities such as toilets and many trees and plants); perceived safety (safe to walk after dark and free from crime) and distance - were predictors of satisfaction with life. In 2008, one factor - ease of use of the local park (paths to park easy to walk on, enough seats in the park, and ease of walking, cycling or other activity in local neighbourhood and street) - predicted quality of life. When we compared predictors of outcome measures related to walking levels (for any purpose) (hours per week (2005) or frequency (2008)), we found some overlap with quality of life outcomes. In 2005, one factor - good paths to the local open space (easy and enjoyable to walk on, with no obstacles) - predicted walking. In 2008, two factors – pleasant local park (clean and well-maintained, attractive water feature, good for children's play, many different activities) and social opportunities (interact with different age groups, chatting with people in home street) – predicted walking.

In summary, the aesthetic and social qualities of the local park or neighbourhood open space, and of routes to it, consistently predict aspects of quality of life and levels of physical activity across the two studies. Opportunities for social use of open space are clearly particularly important. Concerns about aspects of safety were only significant in the second study and may reflect the fact that these participants are predominantly from comparatively deprived communities (based on Indices of Multiple Deprivation in England and Wales), in some cases from the top 15% most deprived communities. When we look at 2008 data only from communities in the top 40% most deprived communities (n=85), an additional factor predicts quality of life – obstacles such as busy roads – and health (measured by EQ5D) is predicted by being able to park outside one's house.

Further analyses of this and other data from the phase 2 study, including accelerometer and diary records of physical activity and behaviour observations of street use, will be undertaken in the coming months and add further insights to our understanding of the role of the outdoor environment in older people's quality of life.

Key concluding points.

- A supportive environment, that makes it easy and enjoyable to get outdoors, is important for older people's quality of life
- Some of the attributes of local open space that matter most to older people, in the British context, are: nuisance (signs of vandalism, dog fouling, youngsters hanging around); facilities (café, toilets); trees and plants; traffic levels; 'things to watch'; and levels of maintenance
- The importance of these attributes varies according to individual circumstances, including ease of mobility and living arrangements
- The aesthetic quality of local open space, how easy and safe it is to access, and the opportunities it offers for social interaction are important predictors of quality of life and levels of physical activity (walking in particular) for older people
- For people living in deprived contexts in Britain, aspects of safety, personal transport and traffic levels may be more important for health and quality of life.

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Workshops and site visits

Walking environment workshop and walkabout

Facilitator: Keith Irving MA MSc, Living Streets Scotland Manager

Date: Tuesday 28th June, 2011

Time: 4.30 pm – 6.15 pm

Format: Discussion and walkabout

The first strategic objective of the Scottish Physical Activity Strategy is "To develop and maintain long-lasting, high-quality physical environments to support inactive people to become active". This workshop will discuss and identify priorities to help improve the local physical environment to make walking and active travel the natural choice for short journeys at different stages and abilities of life. The walkabout will range from the extinct volcano of Arthur's Seat to the World Heritage Zone, a cycle tunnel to busy mixed use routes and planned area-wide 20mph limit to major sporting facilities.

Developing shared space on the ground

Facilitator: Dr Ian Wall FRICS HonFRIAS, Former Chief Executive of PARC Craigmillar URC.

Date: Tuesday 28th June, 2011

Time: 4.30 pm – 6.15 pm

Format: Presentation, discussion and site visit to Craigmillar

Craigmillar is a neighbourhood just over 2.5 miles east of Edinburgh city centre. A thriving working class community of some 25,000 people in the 1970s, its population rapidly declined in the '80s and '90s following deindustrialisation and steadily falling standards of housing, facilities and amenities.

In 2002, an Urban Regeneration Company was established which, with central and local government funding, was tasked with rebuilding the physical fabric of a new community; supplying – not only 3,200 new homes – but schools, parks, sports and social facilities with access to improved public transport.

This talk considers the changes in Craigmillar's public realm from the 1930s to the present day and offers the chance to explore the new 'shared space' streets that are intended to knit together the revived urban fabric.

Experimenting with digital media in research with children and young people.

Sharing views and experiences on how we can use new digital and ubiquitous technology in youth-led research

Facilitator: Dr Penny Travlou, Research Fellow, Edinburgh College of Art

Date: Tuesday 28th June, 2011

Time: 4.30 pm – 6.15 pm

Format: Presentation and discussion

The aim of this workshop is to explore the use of digital methods in engaging children and young people in research. The workshop will outline a range of digital methods and include a discussion on the similarities and differences between traditional research and using digital media. One of the key questions that this workshop will investigate is whether digital methods can adequately elicit the voices of youthful research participants. There will also be an open discussion with the audience on a number of key ethical issues in using such digital methods, including informed consent, child protection and internet safety.

Royal Botanic Garden tour

Facilitator: Royal Botanic Garden Tour Guide and Dr Lynette Roberston, Research Associate, Edinburgh College of Art

Date: Tuesday 28th June, 2011

Time: 4.30 pm – 6.15 pm

Known locally as the 'Botanics', and established way back in 1670, Scotland's premier botanic garden is one of the world's finest, welcoming over 660,000 visitors each year. This guided tour of the garden will refresh your senses and allow you to explore the riches of its green kingdoms: journeying through the Chinese hillside, the rock garden and the warmer climes of the glasshouses. You will enjoy seasonal highlights, discover hidden treasures and hear tales of the intrepid adventures behind the plants on display in "Scotland's largest living encyclopaedia of plants". The garden also includes exhibition areas and contemporary art at Inverleith House.

Parallel sessions - Theme 1:

Inclusive design and sustainable community planning

Craig Childs and Nick Tyler
University College London

Tactile surfaces: the successor to Blister Paving

There is a trend to make more streets into 'shared surfaces' by removing kerbs and other street furniture. This has raised the question of what surface could replace the kerb and still provide a warning for blind and partially-sighted people that they are entering an area that may have moving vehicles. Although the surface needs to be detectable, it should not be an obstacle to other pedestrians; an issue that Thies et al. (2011) have started to quantify. Gallon et al. (1991) showed that blind or partially-sighted people could distinguish between, and remember, the meaning of seven tactile surfaces. Consequently, there are currently seven different tactile surfaces in the Inclusive Mobility Guidelines (Department for Transport, 2003). Before looking to introduce a new type of tactile paving for this application, we need a better understanding of currently applied designs. We need to understand more about what makes a design reliably detectable and what manner of obstacle it poses.

We tested the detectability and ease of passing over 24 different configurations of tactile paving. Fifty-nine blind and partially-sighted participants were asked to walk at their normal pace over the test space, where they either encountered the test surfaces or standard paving. They were asked to stop if they detected a change in surface and then to rate their confidence that the change was intended to indicate something. Forty-six participants with mobility impairments were asked to travel over the test surfaces and to rate their level of discomfort. We will present the results showing which configurations performed well for both groups of participants. From this we will discuss the difficulty in finding a surface that is both reliably detectable whilst not being a hazard, or unduly uncomfortable, to other pedestrians.

Keywords:
tactile paving, detection, discomfort

Theme:
inclusive design and sustainable community planning

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Lesley McIntyre, Jeanette Paul and Jennifer Harris
University of Dundee

Non-visual way-finding hot-spots in 'approach': scenario-based findings and framework of design considerations from stages of a way-finding journey

Barker et al. (1995) and Jokiniemi (1998) have highlighted that the built environment is failing people with visual loss. The task of way-finding within a building is raised as a particular problem by Arthur and Passini (1992). Goldsmith recognises this as a form of architectural disablement (Goldsmith, 1997; 147-158). This doctoral research, based within the discipline of architecture, coins and defines the term 'way-finding hot-spot'. It explores the events and occurrences (both positive and negative) which are experienced and therefore influence and impact on a 'journey' (Myerson, 2001; 88-94). Participant evidence along with innovative methodology has been essential in highlighting the importance of way-finding design within the external curtilage of a building – the approach stage of a way-finding journey. Ten participants (with varying degrees of visual ability, different ages and with other forms of disability) undertook a 'way-finding scenario'. This was composed of a purposeful conversation (Burgess, 1982; 107-110) and a context-specific way-finding task. This paper illustrates the design considerations regarding the 'approach stage' of a way-finding journey. It will discuss the logistics of this research and will present narrative, logs and trace from way-finding scenarios through visualisations of the fundamental results. It creates a case for the application of this knowledge in professional practice across the disciplines of architecture and design as well as in areas of the medical profession, policy-making and academia. With comprehension of a way-finding journey, design considerations can contribute to the safety, wellbeing, independence and joy of visitors who have a visual impairment and benefit those who have a sensorial or cognitive impairment, other types of disability, the young, elderly, people with language barriers and many more.

Keywords:
way-finding journey, visual ability, architectural model of disability, architecture, participatory research

Theme: *physical environment, health and wellbeing; age friendly built environments from childhood to old age*

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An insight into the visually impaired: improving design guidelines for designers

Ji Wei Wu and Alastair S Macdonald
Glasgow School of Art

An increase in visual impairment (VI) will accompany the rapidly ageing demographic. An inappropriately designed environment is disabling, making visually impaired people (VIP) feel frustrated and emphasising the difference between sighted and non-sighted people. This leads not only to physical navigation problems but also to psychological issues with a loss of independence and feelings of isolation. Most VIP are not totally blind and still retain some residual sight. Our research has established that visual capabilities and coping strategies vary not only with age but when and how VI occurred. Although current research in this field has demonstrated a notable use of lighting and colour design to acknowledge residual vision and use of senses other than vision, existing tools and guidelines do not help designers to fully understand the complexity of VI issues and different coping strategies. For example, simulation glasses, which help designers to understand some aspects of vision loss do not help designers understand how to exploit other attributes which VIP have developed. Describing and categorising these diverse abilities may offer designers more scope when they design the built environment, e.g., a VI child may use body-centred coding strategies when in a small space; working-age adults may cope with VI by becoming more outgoing, relying more on other senses; passive, interpersonal, and emotional-focused coping strategies are used among those with VI in old age. This research aims to develop a deeper understanding of the varied nature of the VIP's coping strategies. The paper illustrates the emergence of a matrix derived from a review of literature and guidelines and its potential to be used as the basis for developing improved guidelines to assist designers to distinguish different types of VI problems that people may have, and to better exploit these coping strategies in their designs.

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Keywords:
visual impairment, coping strategies, design guidelines

Theme:
inclusive design and sustainable community planning; physical environment, health and wellbeing; age friendly built environments from childhood to old age

Accompanied walk: a different viewpoint for those who can't see

Miguel Dolny, Camilla Ghisleni, Milena Brandão, Vera Bins Ely and Marta Dischinger
Universidade Federal de Santa Catarina, Brazil

This paper aims to present some results found when an accompanied walk was undertaken, a method proposed by Dischinger (2000), to evaluate access conditions in the interior space of the Federal University of Santa Catarina's Central Library. The walk took place on a recently installed tactile tiles route, which connects important places for visually impaired people. The Central Library is a main building frequented by many students every day, some of whom have physiological disabilities. These, when combined with the specific spatial characteristics of the library, means they have difficulty in comprehending, moving around, communicating and participating in the usual activities that are essential for easy spatial accessibility, according to Dischinger, Bins Ely and Piardi (2009). A tactile tiles route was designed and implemented with the intention of facilitating visually impaired people's access to the library's Braille set, (Bins Ely et al, 2010). Once in situ, a university student was invited on an accompanied walk in the library, taking her usual route while being asked what information was important for her to be spatially oriented in the places she walked by – she has only 30 per cent vision in her left eye and no vision in the other one. For example, at the front door of the library, the student said that the reflexive glass panels made her confused as to whether she was outside or inside the building. Similarly, when walking by a ramp inside the library, she said that the transparency of another glass panel could mean a visually impaired person might walk into it. An accompanied walk provides information from people who do not have vision as their main spatial orientation source and, in a society overwhelmingly dependent on visual faculties (Howes, 1991), it is really important for accessibility to be a priority in any architectural projects.

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Keywords:
tactile tiles accessibility accompanied walk

Theme: *physical environment, health and wellbeing*

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Play behaviour of children with visual impairments: The effects of social and physical environments

Play would appear to be an uncontestable feature of a healthy childhood. It has been well established in the literature that play has a positive impact on multiple developmental areas, such as the advancement of social, emotional, linguistic and cognitive competencies (1).

Children with visual impairments face several challenges in their attempts to engage in play activity which can place them at a stultifying and unhelpful remove from the beneficial effects that play is capable of yielding. Yet only a quarter of schools in Scotland claim to take the needs of pupils with disabilities into account when developing their outdoor play areas, with the figure for secondary schools being 19% (2). This presentation suggests that the resolution of this regrettable state of affairs requires the negotiating of two separate but interrelated balances: a) that between concerns for safety and the optimisation of opportunities to indulge the appetite for play that is integral to childhood; and b) that between the instilling of routine and order and the cultivation of a capacity for the occasional deviation from this order through free-play and other spontaneous undertakings.

Observations are structured around a combination of a review of existing literature on the impact of environmental features and attitudinal barriers on the play behaviour and social competence of children with visual impairments, practice- based observation and public consultation (3). The presentation describes a collaborative V.I. Scotland/Grounds for Learning initiative through which children in Scotland with visual impairments are being involved in the exploitation of the traditionally untapped resource of outdoor play environments and outlines the manifold benefits associated with this involvement.

Keywords:
visual impairment, children, play, environment

Theme: *physical environment, health and wellbeing*

1. See, for example, Tait, P.E. (1972) 'A descriptive analysis of the play of young blind children', in Education of the Visually Handicapped, 4, 12-15; Schneekloth, L.H. (1989) 'Play Environments for Children with Visual Impairment', in Journal of Visual Impairment and Blindness, 83, 196-201; Preisler, G.M. (1993) 'A descriptive study of blind children in nurseries with sighted children', in Child: care health and development, 19, 295-315.
2. McKendrick, J.H. (2005) School Grounds in Scotland Research Report Summary, Scottish Poverty Information Unit, p.11.
3. Questionnaire disseminated among parents of children on the V.I. Scotland database (2010).

Inclusive design for sustainable communities in downtown Tel Aviv: The case of Sheinkin Street in light of consumer culture and current economic trends

Tal Alon-Mozes and Shirily Gilad
Technicon – Israel Institute of Technology

The face of Sheinkin Street, one of downtown Tel¬ Aviv's liveliest streets, is changing; global brands are replacing local shops; the street's public garden – once a centre for community gatherings - stands empty, and the municipality is about to implement a new design scheme. Once a uniquely symbolic residential enclave, Sheinkin Street has lost its identity and its community. What is the role of the planning authorities in these processes? What is the role of current economic trends? What is the meaning of inclusive design for sustainable communities in intense commercial urban centres?
Our research explores these questions from two perspectives: 1) The theoretical - analysing the conflicts between the two paradigms that are dominating the current urban discourse: sustainability and consumer culture; and 2) The practical - ¬between the two opposing forces that are shaping urban space: everyday life and design processes and schemes.
This yearlong study is based on: interviews with key actors from the local community and professionals, participatory observation of the street's everyday life and events, analysis of design schemes and of complementary information from the municipal archive, the written press, etc.

For our analysis, we define sustainable communities as those which maintain cultural and social diversity, a strong local identity and which are a product of participatory and democratic processes (Dobson, 1996; Giradet, 2004). The findings show that in spite of the municipality's rhetoric for promoting sustainability and the street's own physical, social and cultural potential, we have identified the adverse impacts of consumer culture. These erode the street's community, as suggested by Mitchell (2003) and Zukin (1998), and influence the design process.

Finally, we conclude that in order to achieve inclusive design for sustainable communities, we need to revise the design discourse on urban sustainability, so that it acknowledges the effects and consequences of globalisation, consumer culture and local power relations.

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Keywords:
sustainable communities, inclusive design, public urban space, consumer culture, everyday lives

Theme:
inclusive design and sustainable community planning

Nicole Porter
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From ideal landscape to inclusive landscape? How community engagement is defining a 'future scenario' for Canberra's open spaces

Canberra, Australia's 'bush capital', is blessed as well as burdened with its distinctive open space system. One hundred years after Griffin designed the 'ideal city' (NCA, 2004), the government is prompting citizens to articulate their own future scenario for Canberra, generating public debate about how to manage a highly valued but unsustainable landscape. This paper reviews 'Time to Talk Canberra 2030', a recent programme aimed at engaging the community in an inclusive conversation about the city.

Over several months in 2010 -11 'Time to Talk' employed online chat rooms, Twitter, public forums, random surveys, school workshops and other diverse activities to find out what different Canberrans value about their city. Responses revealed that many value Canberra's open spaces, 'Where I can still have the great outdoors just outside my own front door'. The outdoors, however, come at a price: suburban sprawl, car dependence, housing pressures, an unsustainable ecological footprint and an urban park maintenance bill which is incommensurate with its revenue base (Bull, 2009; Time to Talk, 2010). Citizens expressed a love of tree¬-lined suburban streetscapes, alongside frustration with a public transport system which struggles to service a low density urban structure. 'Time to Talk' asked Canberrans to debate the trade¬offs necessary to deal with these tensions (should Canberra be higher or wider? Who pays?). Importantly, the debate was informed by an accessible evidence base, with original research papers, snapshots and statistics on the web.

The Canberra example illustrates that broad and deep community engagement can – indeed, must, address qualitative landscape values alongside other planning issues, and that these values are an integral part of strategic decision making. Although the full effects of such engagement are yet to be realised, this appraisal concludes that inclusive conversations may also empower individuals to make informed choices and assist in realising sustainable change.

Keywords:
landscape values, community engagement, Canberra

Theme:
inclusive design and sustainable community planning

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The use of public open spaces in Lisbon by immigrants – a cross-cultural comparison

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Migration is a phenomenon of contemporary societies and it is a major political issue. However, while immigrants are becoming a noteworthy part of our society and cities, there has been little discussion as to how their presence affects the urban fabric, especially the use of public open spaces and even less is known about how, and in what way, such spaces may have an impact on immigrants. Authors such as Finney and Rishbeth (2006), Rishbeth (2001), Low et al. (2005) and Dines (2002) are key references in the study of this phenomenon.

This research has been undertaken to increase, and then present, a better understanding of how public open spaces are being used and immigrants' experiences of them. The case study focus is Portugal, with a particular research emphasis on the experience of immigrants from the three biggest communities: Brazil, Cape Verde and Ukraine. Quantitative methods (questionnaires) have been used to gather information directly from these three immigrant communities. The collected data set aimed to explore users' preferences, activities, recreation patterns, experiences, barriers, favourite places and perceptions regarding public open spaces. This paper will present key findings from the questionnaires, focusing on cross-cultural differences and unveiling significant findings, such as: how nationality seems to affect frequency of use; gender differences; what the main barriers are that deter immigrants from visiting outdoor spaces regularly; immigrants' favourite places in Lisbon, and their landscape preferences, with a particular focus on the importance of the presence of music being played outdoors. These findings add to existing knowledge of public open space usage by providing greater in-depth cross-cultural analysis of particular immigrant communities of which little has been known, up to now.

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Keywords:
immigrants, minorities, public open spaces, Lisbon, cultural differences

Theme:
inclusive design and sustainable community planning

Greenspace is great, but I'd rather be safer – a study on residential location preferences in seven European cities

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This presentation results from work within the PLUREL project, from the EU-funded Sixth Framework Programme Priority 6.3 - Global Change and Ecosystems. It involved identifying and operationalising indicators that would reflect how land use change affects residents' quality of llfe (QoL). We focused on pre-existing, sustainable indicator lists, selecting a limited set from them. Residential location preferences, by different resident types in urban, peri-urban, and rural areas, were viewed as a means to assess the possible impact of QoL changes. People's preferences depend on various factors, mostly connected with what they **perceive** each place offers for their QoL. From a given set of QoL indicators, each is valued differently, depending on individual life circumstances, personal preferences and habits. One given place would afford different things to different people, which suggested 'affordances' was the appropriate theoretical basis for this study. Studying preferences, which presented predicting choice behaviour possibilities, according to changes likely to arise from different scenarios, was the adopted procedure. This approach has been used in applied psychology which, along with mathematical modelling, has yielded a powerful marketing tool and many other applications: Conjoint Analysis (CA). It relies on people choosing more efficiently when making relative rather than absolute judgements. A CA study requires definition of the components of choice scenarios in terms of *attributes*, e.g. 'air quality', and attribute *levels*, e.g. good, fair, etc. Eight QoL indicators were selected as attributes: air quality, access to green spaces, access to public transport, neighbourhood shopping facilities, noise pollution, dwelling suitability, safety & security, and waste collection.

The presentation explores the results obtained for seven European city regions, Manchester, Tallinn, Lisbon, The Hague, Koper, Leipzig and Warsaw, from a sample of 1175 respondents, collected between May 2009 and October 2010. Conjoint relative importances attributed to each of the eight indicators studied are compared between locations and among subgroups. QoLSim, a user-friendly tool based on the statistics of the conjoint study, allowed preferences for different scenarios to be examined for the full sample or for different subgroups. The results show that, in general and within the given set of indicators, respondents found safety and security, followed by dwelling suitability, the most important aspects; the least important were availability of shops and access to greenspaces.

Keywords:
conjoint analysis, residential choice, conjoint simulation, greenspace

Theme:
inclusive design and sustainable community planning; physical environment, health and wellbeing

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Curtin University, Australia

Health and the nature of urban green spaces: Is useability a key to better health for people and places?

Much research explores human health benefits derived from contact with nature, with emerging evidence demonstrating synergistic physical and mental health improvement through participation in 'green exercise' [1]. Stronger feelings of reflection, relaxation and emotional attachment (all associated with better mental health) have been recorded by visitors to green spaces with greater biodiversity and species richness, suggesting that bushland conservation may significantly enhance human wellbeing [2]. However, management of urban bushland and other larger natural environments in Australia is primarily focused on maintaining ecological integrity, with human visitation often perceived as a threat or disturbance [3]. This approach does little to recognise the realities of human use [4].

Selected findings of a PhD study completed in 2009 will be discussed, particularly those relating to perceptions of green space 'useability', including common characteristics of 'useable' spaces. Residents in four neighbourhoods in Perth, Western Australia were asked about their health, attitudes to natural environments, proximity and diversity of local green spaces, perceptions of green space quality and neighbourhood attachment. Data from 440 surveys and 25 interviews were analysed.

Retention of larger green spaces and bushland, proximity to parks and social green spaces, perceptions of green space useability and caring about environmental issues were all associated with better self-reported health and wellbeing. Using logistic regression analysis and controlling for key socio-demographic and other variables, perceptions of nearby green spaces being 'useable' proved to be a significant factor in predicting better self-reported general health. People who recorded high scores for green space useability were twice as likely to report better general health as those with low scores (OR=2.08, p=0.013).

Keywords:
tactile tiles, accessibility, accompanied walk

Theme:
inclusive design and sustainable community planning; physical environment, health and wellbeing

It is important that natural resource managers acknowledge connections between better human health and use of urban bushland. To optimise health benefits, management of urban conservation reserves must engage communities in assisting to protect places with high ecological values [4] as people who enjoy positive experiences are more likely to become interested and involved in caring for local bushland [5].

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2. Fuller, R.A. (2007) 'Psychological benefits of greenspace increase with biodiversity', in Biological Letters, 3(4), 390-394.
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1C: urban outdoor spaces

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Sustainable city: indicators for the metropolitan green

In recent years, various terms have been used to describe the future city, such as compact city, sustainable city, global city, organic city, livable city, ecocity, creative city, smart city, fair city, and finally, cool green city. Implicitly, all these terms contain green as an important component of the urban quality. The latest research on the role of urban green spaces in health (Maas, 2008) and climate regulation (Bowler et al., 2010) has shown that although there are many indirect benefits that urban green spaces bring to the city, there is no evidence of a direct positive impact. But asssessing perceptions of green research shows that the majority of Dutch people consider green spaces as very important (MNP, 2006; de boer en de Groot, 2009; VROM publieksenquête, 2005, Het Grote Groenonderzoek, gemeente Amsterdam, 2008).

More than half of the population in the Netherlands lives in cities. Indicators for monitoring urban green spaces show that due to urban densification, the amount of green per capita has decreased in the last few years (Raad voor Landelijk Gebied, 2005; Leefomgevingscompendium.nl). One of the reasons for this is the limited realisation of green plans, especially in urban networks where the pressure on spatial developments is high. So-called 'green plans' are often too ambitious, and the economic situation limits their realisation. 'Green' elements are seen as a cost, compared with housing or offices, which are seen as gaining profit, weakening the relative position of green,

despite the fact they are often concurrent. Hence, in this situation, there is a need for both central and local government to protect existing green spaces and to support the development of new green areas in cities. Therefore, despite the lack of evidence of their direct benefits, urban green spaces are an important issue in the academic and policy-forming debates in the Netherlands.

Spatial planning in the Netherlands has a long tradition, and the attention given to the development of green areas and nature has always played an important role in national spatial policies. The engagement of the national government was mainly focused on nature and green in rural areas. For those areas, several 'hard' instruments have existed, such as rules and regulations and national subsidies. Conversely, the instruments to implement 'green' policy in the cities were much more 'soft'. Over time, different norms for the quantity of urban green space have been used; the latest one is guidance of 75m2 of green space per dwelling in newly built housing areas, which was proposed in the last National Spatial Strategy (2006). How this number came into existence is very dubious and not scientifically proven. The research shows (Nuijten, 2008) that most of the 30 largest Dutch cities have not been implementing this rule in their planning practice. Such a general norm has many deficiencies and in recent years, has often been criticised. The criticism is that 75m2 per household has no relation to the different character, social composition, position in the city and other lifestyle aspects of the different city districts. For instance, areas with many children or older inhabitants need more green than city centres, where mainly young single people or couples without children choose to live. Another important issue is that quantity is not enough to provide optimal use and perceptions of green space. An example that can be cited here are the green spaces between postwar housing blocks that have no function other than to provide a so-called 'view green' or green spaces that are not well maintained.

In this research, 'metropolitan green' is a common name for a system of public green spaces that belong to the Randstad region, characterised by being fringed by four large cities and with a green heart in the middle. The system consists of:

1. large public recreational and natural areas between the cities
2. urban public green spaces.

Green spaces are seen as an integrated part of spatial and urban planning which combines and interweaves them with other spatial functions such as housing, working, infrastructure and water.

This presentation will show how several quantitative and quantitative indicators that were selected from a wide range of sustainability and amenity indicators which are present in the literature (Bell et al., 2000; Herzele en Wiedemann, 2003; URGE, 2001; Rodenburg et al. 2002; CABE, 2009) were combined to evaluate green spaces. The indicators were applied to analyse provision of green spaces in the metropolitan region of Randstad and the city of Amsterdam.

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Keywords:
green, indicators, Amsterdam

Theme:
inclusive design and sustainable community planning

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Varied outdoor neighbourhood space and flourishing: A comparison of Accordia and Castle neighbourhoods in Cambridge

This paper presents the findings of a PhD pilot study. The purpose of the research was to contrast the impact of strong and relatively poor, walkable and varied outdoor neighbourhood space provision on behaviours associated with positive mental health. The stronger neighbourhood provision is that provided by the Stirling Prize-winning masterplan – Accordia, in Cambridge (UK). These residents benefit from nine typologies of open space – as defined by UK Planning Policy Guidance Note 17 - including allotments, amenity space, parks and gardens, green corridor, semi-natural green space, civic space and children's play. Whereas, the second neighbourhood in north Cambridge, – Castle – offers three walkable space typologies. The two neighbourhoods share analogous socio-demographic characteristics: both comprising predominantly white, well-educated and middle-to-high income residents. Density, land-use, housing tenure characteristics and connectivity are also closely comparable.

The research question is: to what extent does increased provision of varied typologies of open space within a 10-15 minute walk enable and motivate different types of behaviour associated with flourishing? An objective definition of flourishing is taken from So & Huppert (2010) which has been proposed as the opposite of internationally agreed operational criteria for common mental disorders (DSM and ICD classifications). Flourishing is considered the opposite of the symptoms of those disorders. Within the UK, 18% of the population is thought to have mental health that is positive enough to be defined as flourishing (Huppert & So, 2010). Target behaviours associated with flourishing are defined via a literature review and semi-structured individual and group interviews - with local residents in both neighbourhoods (n=19).

The study also included behaviour mapping – utilising a bespoke coding instrument and observations three times per day in both neighbourhoods, at two-hour intervals, and within 20 minutes of each other. Owing to low daytime and winter evening usage, observations were conducted on three consecutive weekends in January 2011 (n= 563). Interviews were held within the same period. Preliminary descriptive statistics have shown that the range of positive behaviour types is similar in both neighbourhoods, with Accordia supporting a proportionately larger volume of activity. The highest percentage of Accordia's play, strolling, talking and listening behaviours were observed within the streets and amenity greenspace. The significant majority of all activity in Castle was concentrated within a recreation ground - which provides a diverse variety of child and teenage play equipment. Further inferential tests are planned to find relationships between behaviours, age groups and outdoor space types. Interview findings reinforce the observation data and disclose in-depth insight regarding episodic usage, changes in direction and intensity of choice and the local outdoor activities that instill residents with a sense of wellbeing.

Keywords:
flourishing, positive mental health, neighbourhood, walkability

Theme:
inclusive design and sustainable community planning; physical environment, health and wellbeing

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Nature contact and design of urban outdoor environments

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Empirical evidence highlights the positive effects of natural experiences on health, wellbeing and restoration, particularly in urban areas. To adequately design urban natural spaces according to people's needs, it is essential to know what concepts of nature people have in mind and what motivates them to spend time outdoors. How should contemporary sustainable outdoor environments in urban areas be designed to optimally foster health and wellbeing? To answer this question, two psychological studies were carried out in the Vienna region, a qualitative (n=133, 52.6% female, mean age 34.9 years) and a quantitative one (n=120, 62.5% female, mean age 39.9 years).

In the qualitative study, participants answered questions in an open response format concerning their inner conceptions of nature (e.g. 'What comes to your mind, when you think of nature?'). Responses were analysed using qualitative content analysis (Mayring, 2007). In the quantitative study, participants were asked to choose their motives for spending time outdoors from a list of items. In the qualitative study, most responses were in favour of unspoilt natural habitats (landscapes unaffected by the influence of humans, wilderness areas). Also, wellbeing and recreation played a major role in respondents´ mental representation of nature. In the quantitative study, participants´ motives for spending time outdoors differed significantly according to the participants´ level of connectedness with nature (CN; CNS: Mayer & Frantz, 2004). While participants low on CN spent time outdoors for utilitarian or social reasons, those high on CN went outdoors mainly for restorative reasons, such as 'to recover from stress' or 'to contemplate life'.

Results from our analyses highlight the need for urban outdoor environments associated with (1) wild nature and (2) wellbeing. These environments should provide users with the opportunity to have positive experiences with nature, to relax and refresh body and mind in a healthy way. Spending time outdoors contributes to individuals´ recreation and wellbeing, especially for those high on CN. Therefore, we recommend introducing spaces supporting these needs wherever possible.

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Mayring, Ph. (2007) Qualitative Inhaltsanalyse. Grundlagen und Techniken. Weinheim: Beltz UTB.

Keywords: *wellbeing, urban design, green space, mental representation, motiv*

Theme: *inclusive design and sustainable community planning; physical environment, health and wellbeing*

Space and time uses in Barcelona: Three urban parks and their diverse realities

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Parks are physical settings, as well as spaces that elicit diverse experiences arising from their use (i.e., the activities that people undertake while visiting them). In the Barcelona case, its extensive network of parks and gardens has grown significantly, due to urban renewal that has addressed the need to create greener public space. In fact, in 2009 there was 10,771,312 m² of green urban space (approximately 6.6 m²/per person, according to the Barcelona Parks and Gardens Institute).

Drawing on this data, this paper examines users' experiences in three urban parks in Barcelona city: Joan Miró, Pegasus and Estació del Nord (they are all similar in terms of surface, the facilities and equipment they provide, and their closeness to housing and school facilities). Three hundred park users (100 per park) answered a questionnaire about frequency of, and time spent, visiting the parks, the activities they undertook there, a space evaluation and their general satisfaction with the parks. The final sample consisted of 130 men and 167 women, ages 16-¬91 (M = 43.17; SD = 17.56 —three cases were discarded because the information was incomplete).

The results show significant differences for each park studied. Joan Miró's was evaluated most positively for its environment, preservation, design, facilities, as well as offering the possibility to meet different groups. Pegasus was visited more by men than women; moreover, its frequency of visits is the highest of the three parks, and it is assessed as the best park to go to with children or to meet other people. Finally, Estació del Nord was valued for its lighting, being the park that was preferred for walking, resting and dog¬-walking activities. The discussion addresses the parks' characteristics that may have influenced these differences and the potential of place attachment in explaining site-use patterns. Future directions are also pointed out; an understanding of the foundations of place attachment may allow urban park managers to begin to manage settings in ways that are consistent with the meanings users associate with the setting.

This contribution comes from 'Uses, perceptions and conflict in urban public spaces: Identity, interaction, insecurity' (reference PSI2010¬21214¬C02¬02), research which has been supported by the Ministry of Science and Innovation in Spain.

Keywords: *parks; time uses; Barcelona city; park users; satisfaction*

Theme: *physical environment, health and wellbeing*

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The impact of urban woodland improvements on use by low-income communities - a longitudinal study

Green space in the residential environment is associated with a wide range of health benefits, including improved 'walkability' of a neighbourhood (Humpel et al 2002), but there is very little longitudinal evidence showing how an environmental intervention to improve the quality of, and access to, a nearby green space can impact on physical activity, use patterns (e.g. frequency of use), or overall perceptions of quality of the neighbourhood environment over time. This paper presents the results of a pilot study involving a natural experiment. A longitudinal research project studied perceptions and use of local urban woodlands pre and post an environmental improvement programme (Woods In and Around Town (WIAT)) in a low-income area of high deprivation in Glasgow, Scotland. The intervention involved physical changes such as path improvements and vegetation management to enhance the quality of a woodland within 500m of local residents, accompanied by community-based activities to promote woodland use. A key component of the study methodology was the inclusion of a Glasgow control site, matched in terms of poverty and deprivation but whose local green space did not include woodland or woodland improvements, in order to detect any changes in attitudes, perceptions and values over time (2006 to 2009) that might reflect broader societal influences or other interventions within the general urban area. Results for patterns of activity and frequency of use in the woodlands indicate statistically significant positive change over time in the intervention site, compared with negative or no change over time in the control site. The research also found substantial positive change over time in the intervention site in relation to how people felt about the quality of life within their local neighbourhood. We conclude that environmental interventions in deprived urban locations can positively impact on physical activity, use patterns and quality of life variables.

Keywords:
woodlands, urban green, low-income, activity levels, frequency of use

Theme: *Physical environment, health and wellbeing*

Humpel, N., Owen, N., and Leslie, E. (2002) 'Environmental factors associated with adults' participation in physical activity: a review', in Am J Prev Med, 22, 188-99.

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An innovative technique for predicting behaviour within contemporary urban open spaces, taking into account the multisensory character of human-environment relations

Despite widespread attempts to generate people-friendly urban open spaces through the implementation of urban projects, cities are still commonly characterised by noise, atmospheric pollution and other sorts of intrusive sensory information, which is likely to lead their inhabitants to become more impulsive, impatient and irritated, as well as more likely to make errors (Kaplan and Kaplan, 1989). The contemporary condition, therefore, raises issues regarding the effectiveness of some urban design proposals in contributing to the generation of healthier urban open spaces (CABESpace, 2009; Jackson, 2003), and calls for new approaches to design in cities.

To address the research question, 'How can designers feel more confident that their design proposal will contribute to the generation of healthier urban open spaces?', this paper presents an innovative methodology for identifying user preferences, assumed to reflect conditions conducive to wellbeing (Kaplan and Kaplan, 1989), through an analysis of the interrelationship between design, the multisensory character of perception, and activities in small-scale urban open spaces. The robustness of the technique presented here, which draws on a combination of behaviour mapping, sketch maps and structured interviews, as well as ArcView GIS software for digitalizing and processing data, is illustrated by means of application in three central urban squares located in a Brazilian city. The paper demonstrates how design guidelines can be developed through analysis of the patterns revealed in composite maps, which combine information assembled from users' cognitive maps as well as behavioural data.

The value of this innovative perceptual-behavioural mapping technique is in supporting an evidence-based approach to the multisensory design of urban open spaces that are responsive to user needs and wants. This, in turn, it is hoped, will guide best practice in the design of healthier small-scale urban open spaces.

Keywords:
urban design, sketch map, structured interviews, behavioural mapping and GIS

Theme: *physical environment, health and wellbeing*

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Access of ethnic minority groups to natural areas: A review of policy and research in four European countries

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Sandra Gentin,
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This paper presents a recently carried out review of research and policy on access to natural areas for ethnic minority groups in four Western European countries: the United Kingdom (UK), the Netherlands, Germany and Denmark. Migration and the ethnic diversity of the European population raise questions about the provision of various resources for different groups of citizens. This concerns also the provision of natural resources such as access to outdoor spaces for recreation. The different European countries seem to deal differently with these issues at policy and management level. Additionally, research is developing in Europe which focuses on the participation of ethnic groups in outdoor recreation, but to what extent do the various policy contexts affect such research? Conversely, what is the impact of research on inclusion policies and management? The purpose of this paper is, firstly, to give a comparative overview of policy, management and research related to the inclusiveness of natural areas in the four countries mentioned above. Based on this comparison, secondly, it aims to analyse the relationship between policy and research and its implications for managing natural areas. The review identifies the main findings of current research in the four countries concerning the use and perception of natural areas by people from different migrant and ethnic groups (see e.g. Ethnos, 2005; Buijs et al., 2009; Jay and Schraml, 2009; Gentin, 2010; Peters et al., 2010; CABE, 2010; Morris et al., in press). It further outlines the interplay of policy and research in highlighting differences between the countries: in the UK and the Netherlands, a considerable number of studies were carried out and practical implementation and a political or partly legal framework are present, while in Denmark and Germany, comparatively little attention is paid to issues of inclusiveness in research, policy and nature management. Lastly, appropriate inclusion policies and management actions are discussed.

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Keywords:
outdoor recreation; natural areas; inclusiveness; European comparison

Theme:
inclusive design and sustainable community planning

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Local parks: common grounds for cohesive inner-city communities

The ongoing socio-¬spatial polarisation of British cities results in a concentration of poor and culturally diverse communities in inner¬city neighbourhoods (Healey, 1997). In these places, due to a variety of social problems and little commonality between people, community cohesion is often low (Laurence and Heath, 2008). Open spaces are thought to provide an opportunity for social interactions (Gehl, 1987), and therefore help to build ties between people (Kuo et al., 1998). This paper investigates the role of local parks in building stronger inner¬city communities. Three inner¬city neighbourhoods in Greater Manchester, UK, characterised by high levels of material deprivation and/or cultural diversity, were considered. A mail¬-administered questionnaire survey (n=239), supplemented by focus group discussions, was used to analyse the associations between the use of local parks, and the number of friends and acquaintances in the neighbourhood and attachment to place declared by the respondents. The frequency of visits to local parks was positively associated with the number of friends. The respondents whose visits lasted longer and involved pleasurable activities had more acquaintances. Both the frequency and duration of the visits correlated with positive perceptions of the neighbourhood and the unwillingness to move out. Thus, local parks seem to have the potential to facilitate cohesive urban communities, formed by residents attached to their neighbourhood. Yet, the pattern of visits and social interactions was found to be strongly dependent on both the social dynamics of the wider neighbourhood and the characteristics of the local parks. Currently, good¬ quality green spaces in the UK are disproportionately concentrated in wealthier areas (CABE, 2010), and social problems continue to plague inner¬city areas. Thus, in reality, the role of local parks in improving the cohesion of inner¬city communities may be limited.

Keywords:
local green space; park; community cohesion; pattern of visits; social interaction

Theme:
inclusive design and sustainable community planning

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University of Warwick

What is this space for? Shared residential outdoor spaces in British cities: their usage and benefits and how these are influenced by their design and management

Research suggests that access to outdoor space provides people with physical, mental and emotional benefits (Korpela & Hartig, 2001; Kaplan, R., 2001; Kuo & Sullivan, 2001). There is little research into whether access to private outdoor space brings additional benefits, though the benefits of gardening have been explored (Milligan et al, 2004; Soderback et al, 2004). Residential developments often provide no individual, private outdoor space. Instead outdoor space is shared and may be semi-public; often it is a 'prairie expanse'. This paper discusses how over 1000 residents of 52 towns and cities in Great Britain, who responded to a postal questionnaire in 2008, use their shared, private, residential outdoor spaces. It considers what features of these spaces support or inhibit their use and enjoyment. One of four case study developments, which were surveyed in detail and where a small number of residents were interviewed, is discussed. Each interviewee sketched a plan of the space and its key features. At the end of the interview, they were asked to show the researcher around the space. Initial results show that the main activities of residents who use their shared space at least weekly in warm weather are hanging out washing and sitting and relaxing. Other frequent activities are talking to neighbours and feeding birds. Inhibitors of use are the weather, unattractiveness of the space, poor maintenance, its smallness, lack of privacy and noise. Interviews show that some residents are unsure of what they can do in the shared space, are worried about offending neighbours and dislike being overlooked. Responsibilty for maintaining spaces is often unclear and in some situations depends on a resident taking 'ownership' of the space, which discourages other residents from using it.

Keywords:
outdoor space, urban, shared space, design, management

Theme: *physical environment, health and wellbeing*

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Outdoors for all? Exploring barriers to the use of open spaces by British Black & Ethnic Minority young people - Sheffield: a case study

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This paper offers insight into BME young people's perceptions of British outdoor environments. It explores issues of understanding the processes through which they perceive the landscape, urban or rural, and therefore how they value outdoor environments. However, as corroborated by research undertaken by the Open Air Laboratories' (OPAL) Explore Nature project, there is a clear disconnection from nature of many social groups including even white British. It is suggested, therefore, that there are deep-rooted issues which influence the relationships between people and nature. Furthermore, these probably impact on how green open spaces are valued, and they may include particular issues of concern for BME communities. A need for inclusive design of open green spaces, doorstep provision with networks of accessible, safe and attractive playgrounds, green grass, and proactive instead of reactive engagement to raise awareness and promote social integration has been identified. This has led to DEFRA's Outdoors for All? - Draft Diversity Action Plan (2006). Produced in partnership with Natural England, it aims to improve opportunities for the diverse British population to access open green spaces and the natural environment. However, Ayamba and Rotherham (2003 & 2009), and work with the Sheffield Black Ethnic Minority Environmental Network (SHEBEEN) and the Black Environment Network (BEN), have found that there exist some major barriers to the achievement of these aspirations.

The severance between nature and people separated from their immediate homeland through migration, both economic and political, has rarely been considered in the UK. For those whose cultures of origin were inherently close to nature, and particularly when they come from rural subsistence communities, the move to, or if they were born into a Western European urban setting, is very significant. This cultural transformation has great implications for their connections with nature past (in their homeland) and nature present (for example, immigrants in England). The consequence of such severance has had implications for the involvement of generations of both older and younger BME people, in the use of English open spaces for leisure and recreation. An often overlooked issue at the core is the transformation in human-nature relationships, which in many countries of BME origin, connections with nature are often long-established and deeply philosophical. These cultural ties may be poles apart from the leisure and recreational relationships associated with nature and therefore, green open spaces in a modern, post-industrial English society. This severance is complete as it is impossible to transpose the experience of life in, say, rural West Africa to the suburbs of an English city. These are matters that have often been unrecognised, overlooked or ignored. This paper explores some of these issues and the underlying factors to help identify a need for future investigation. This led to undertaking a case study with forty BME children aged 13- 16 years, from diverse ethnic backgrounds in Sheffield. The work involved action research, stakeholder analysis, focus groups, face-to-face interviews and oral data gathering. The research found that there are significant barriers, including psychological and spiritual, once relocated or born in England. These are impacting on human-natural relationships and therefore, how green open spaces are viewed. The direct correlation between nature/culture is often overlooked, especially for those living in largely artificial, human-made environments quite remote from nature. This is caused by the separation from nature/culture which is not optional but part of a vicious circle. The findings highlight the fact that outdoor recreational and park providers may have little or no insight into how to deal with such barriers. These were issues that came across quite strongly, necessitating a need to raise awareness among local authorities and other recreational providers.

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Keywords:
minorities, young people, nature, inclusion, culture, outdoors, barriers

Theme:
inclusive design and sustainable community planning; physical environment, health and wellbeing; age friendly built environments from childhood to old age

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Dog walking as a catalyst for getting people out and about and strengthening social connectedness

'Taking the dog for a walk' draws many a dog owner out of their home into local neighbourhoods, parks and public open spaces. Beyond the physical activity benefits of dog walking for both owners and their dogs [1], there is also growing interest in the role of pets and dog walking in facilitating social interactions and more broadly, a sense of community [2].

This presentation is based upon findings from qualitative and quantitative research undertaken over the last seven years at the University of Western Australia relating to the potential role of pets and dog walking in building social connectedness in local communities. In addition, it draws on some recent 'real world' case studies that illustrate ways in which dog walking has facilitated local community involvement and civic mindedness [3]. Discussed findings include:

- associations between pet ownership and social interactions, local friendship formation and sense of community
- the importance of parks and open space as settings for dog walking and associated social interactions and generation of social support
- the need to consider pets and pet owners in urban, park and open space planning given the high rates of dog and pet ownership in many countries
- the role of social capital in facilitating community-based solutions if pet-related problems arise

The connection between pets and social connectedness suggests that the domain of a pet's influence can extend beyond its immediate owner and home turf, to have a positive ripple effect on the broader community. Given growing concerns in many countries regarding the erosion of community and social capital, pets are emerging as valuable and positive features in getting people outdoors and engaged in community life.

Keywords: *social connectedness, dog walking, sense of community, parks and open space, social capital*

Theme: *inclusive design and sustainable community planning*

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Heriot-Watt University / OPENspace Research Centre, Edinburgh College of Art

Understanding how urban green space can support health and wellbeing in white and minority ethnic populations from deprived urban communities.

In the last decade the UK has witnessed substantial increases in the percentage of young people from black and minority ethnic (BME) backgrounds and, in particular, from mixed-race families. It is known that deprived and BME groups suffer from health and environmental inequalities, and recent research has indicated this also extends to poorer access to urban green space (Comber et al, 2008). It has also been shown that access to urban green space can help reduce health inequalities between deprived and wealthier communities (Mitchell and Popham, 2008) but, as yet, there is little evidence on how quality of urban green space affects wellbeing and health in BME groups living in deprived, urban communities.

This study explored the quality and availability of green space in deprived, multi-ethnic communities in key urban areas in England, and the relationship between urban green space and wellbeing for both white majority and BME groups. Methods included focus groups, environmental quality audits and a household questionnaire survey (n=523). Six case study areas were chosen using English national-level data on deprivation, ethnicity, etc., to identify urban locations where the population fell within the most deprived 20% of neighbourhoods, with substantial proportions of minority ethnic groups, and with varying quality green space provision.

Findings from the questionnaire survey will, firstly, show how the relationship between green space and wellbeing compares to other environmental factors (such as air pollution, access to shops, etc). Secondly, we will report on wellbeing in relation to current use of green space, perceived quality of green space and potential interventions that might change behaviour in relation to wellbeing, showing how patterns and preferences between ethnic groups differ.

Keywords: *ethnicity, deprivation, green space, health, wellbeing*

Theme: *physical environment, health and wellbeing*

Comber, A. J., Brunsdon, C. and Green, E. (2008) 'Using a GIS-based network analysis to determine urban greenspace accessibility for different ethnic and religious groups', in Landscape & Urban Planning, 86, 103–114.
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Parallel sessions - Theme 2:

Physical environment, health and wellbeing

Hospital landscape design in Denmark - staff experiences in using the garden

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University of Copenhagen

Healthcare occupations, traditionally, are stressful because they involve an overload of work demands and stress from rotating shifts. However, numerous studies have shown that gardens in healthcare facilities used by staff give positive outcomes in terms of restoration and recovery-relief from work-place stress. This study investigates hospital landscapes in five acute-care hospitals located in the region of the capital, Copenhagen, Denmark. It aims to identify how the landscapes are used by the staff and their experiences of restoration while they are in the garden. The Perceived Restorative Scale (PRS), ranging from 0 (no) to 10 (completely), was used in the questionnaires and Nvivo 8 was used to organise and evaluate the interview results. A total of 183 staff answered the questionnaires and 15 staff (three from each hospital) were selected for an in-depth interview. Preliminary findings show that hospital staff, due to the nature of their work, have limited time to spend in the hospital garden. The duration of time spent in the garden ranges from five to ten minutes. The results also indicate that the two most frequent activities that the staff are involved in while in the garden are having lunch and smoking. Gardens were also utilised as a quick passing-through location between buildings. The majority of the staff mentioned that hospital landscapes should be designed giving priority to the needs of patients before their own. The results also indicate that due to the time limitation in which to take breaks while at work, the gardens are underutilised by staff. Recommendations such as easy accessibility of the gardens from staff work stations and views of the garden from work windows should be considered for the Danish hospitals.

Keywords:
landscape, health design, hospital staff, restorative landscape, stress relief

Theme:
physical environment, health and wellbeing

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Therapeutic green spaces as inclusive and multifunctional environments

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Therapeutic green spaces have developed over decades using diverse operational models. The more conventional are designed as places with specific clinical or rehabilitative functions, often within the boundaries of hospitals or health centres. This approach is limiting and restricts their potential as multifunctional and accessible outdoor environments for everyone. Recent research (Burls, 2010; Stigsdotter et al, 2010; O'Brien et al, 2010) has shown how supportive green environments can be in terms of offering therapy for individuals with specific needs, whilst also functioning as accessible and attractive green spaces (Natural England, 2006) for people of all ages, backgrounds and abilities.

Two case study models in the UK, located in London and Essex, have shown that individuals who become active in these therapeutic green spaces manifest their eagerness to contribute to their community's quality of life, defying their 'disadvantaged' label. These two projects, cumulatively, provide ongoing support for up to 60 individuals at any one time. The personal benefits they derive are emotional support, meaningful daily activities, socialisation, skills development, work re-integration and recovery from illness. However, the personal growth that users derive from their therapeutic activities, facilitated by practitioners, has become the foundation for a newfound understanding of their connection with the green environment. The key element is that this leads to them becoming active agents. As citizens, they demonstrate their own self-driven social inclusion and skills development by directly liaising with the immediate community. Together with practitioners, they encourage the public to become involved in 'greening' their community and thus become role models, working in, and for, their community and directly communicating the benefits of engaging with nature. These social outcomes are user-focused. Whilst opening up powerful channels of communication, their actions contribute to creating caring, supportive and inclusive environments; promoting healthy living, enhanced health and wellbeing for the community and promoting healthy urban environments and design (WHO, 2009). Research outcomes from these two case studies have led to the development of higher education provision for practitioners in the new field of ecotherapy and ecohealth. However, the main emphasis is on recommendations for practice which will enhance the multifunctional value of the model of therapeutic public green spaces.

This paper will present, briefly, the outcomes in therapeutic terms and discuss the wider parameters of public and ecosystem health.

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Keywords:
therapeutic, public, health, community, inclusion

Theme:
physical environment, health and wellbeing

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The design of clinical gardens supporting health and wellbeing

The positive effects of recreation in nature on health and wellbeing are well documented. For the design of green spaces, people's experiences are of vital importance. This is valid for all kinds of urban green spaces but particularly for clinical gardens. Users of healthcare facilities notably benefit from the positive effects of nature on health and wellbeing.

The aim of our study was to assess individuals´ impressions of green spaces, independent of the physical appearance of the green space. We used the scaling method of classical semantic differential (CSD, Osgood, Suci & Tannenbaum, 1957) to carry out a pre-and post-occupancy evaluation of a clinical garden. First, mental conceptions of ideal hospital gardens with optimal conditions for therapeutic activities were examined (N = 104) to assess its characteristics. Second, the CSD was rated (N = 67) to analyse the development of a hospital garden in a therapeutic clinic in Vienna, Austria. The patterns of the three CSDs (ideal, before and after improvement) showed that the garden after improvement is similar to the ideal garden, in contrast to the garden before improvement. An additional factor analysis of the ideal garden CSD revealed three factors. The scales of reference were: mood, control and activity. The garden before improvement differed significantly from the ideal garden for each scale, whereas the garden after improvement did not. The garden before improvement also differed significantly from the garden after improvement.

Results clearly demonstrate the positive effects of garden redesign on individuals´ evaluations. The design of clinical gardens is very important for people's recreational experiences and hence for the healing processes. The differentiated and elegant method is seen as a psychological addition to the evaluation tools used by landscape architects and planners.

Osgood, C.E., Suci, G.J. and Tannenbaum, P.H. (1957) The measurement of meaning. Urbana: University of Illinois Press.

Keywords:
clinical garden, classical semantic differential, evaluation, redesign, impression

Theme: *physical environment, health and wellbeing*

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Gardens at shelters for battered women and children in Denmark

Staggering numbers of women and children are exposed to violence in the home. Domestic violence is not limited by geography, ethnicity or status; it is a global problem of enormous proportions. Women and children who are exposed to domestic violence live with an extreme level of stress. The health consequences are many and include both serious physical and mental harm. All around the world, shelters offer counselling and accommodation to battered women and their children. The primary function of the shelter is to be a safe and supportive environment that can help the women and children to start a new life without the violence. This ongoing study takes as its starting point the fact that more and more research studies show that the experience of a natural environment is connected to well¬being and lower stress levels. The study is based on the theories and research results of Rachel and Stephen Kaplan (Kaplan & Kaplan, 1989), Roger S. Ulrich (Ulrich, 1999), A. Jean Ayres (Ayres, 1984), Ben J. Refuerzo and Stephen Verderber (Refuerzo & Verderber, 1993), Patrik Grahn and Ulrika K. Stigsdotter (Grahn & Stigsdotter, 2010).

The study includes a questionnaire sent to all 41 members of the Danish National Organization of Shelters for Battered Women and their Children. The results of the survey provide an overall indication of the extent, appearance, use and level of satisfaction with the shelter gardens. On the basis of the results, three cases were selected to be studied in ¬depth. This multiple case study explores the design and use of the gardens as well as users' attitudes to it. It is based on interviews, landscape analysis and observations of physical traces. The research outcome is an identification of the needs and preferences from the garden experiences and activities of the different user groups at the shelter.

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Keywords:
domestic violence, shelter for battered women and children, green outdoor environment, landscape architecture, environmental psychology

Theme:
physical environment, health and wellbeing

Preferred qualities in a therapy garden that promotes stress restoration

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Patrick Grahn
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According to the World Health Organization, it is estimated that by the year 2020, the second largest health problem in the world will be stress-related illnesses (WHO, 2011). Stress is not an illness but prolonged stress due to the lack of opportunities to rest and recover is harmful to health (Aldwin, 2007; Atkinsson et al., 1996). Research suggests that nature, the environment, parks and gardens have beneficial effects on people's recovery from mental fatigue and reduce their stress levels (Björk et al., 2008; Grahn et al., 2010; Nielsen & Hansen, 2007; Ulrich, 2006). Studies have shown that people perceive outdoor environments in terms of quality dimensions, so-called Perceived Sensory Dimensions (PSD) (Grahn et al., 2005; Grahn & Stigsdotter, 2010). Further, it is suggested that there is a beneficial relationship between PSDs and a person's perceived level of stress (Grahn & Stigsdotter, 2010). The aim of the study was to identify which PSDs patients perceived as supportive and restorative in a therapeutic garden. Forty patients, all diagnosed with stress-related illnesses, were recruited after undergoing a 12-week rehabilitation programme in the therapy garden. Methodological triangulation was used including a one-hour interview with each person, location mapping of supportive and restorative locations in the garden and a questionnaire on PSD qualities for the same locations. The quantitative results identified four PSDs that are perceived as supportive and restorative: Refuge; Nature; Serene; Rich in species. From interviews, the clients identified what is a merger of the two PSDs, Nature, and Rich in species, referred to as Wild. This dimension was considered the most important for perceived stress restoration. Also, the results indicate that individuals suffering from stress-related illnesses are very sensitive to stimuli and frequently avoid public green places with many different stimuli and impressions. In order to meet the needs of a fast growing group of users, we recommend the dimensions Refuge, Nature, Serene and Rich in species to be included in the design of public green spaces since these dimensions offer possibilities for restoration.

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Keywords:
inclusive design, stress-related illnesses, public green spaces, health promotion

Theme: *physical environment, health and wellbeing*

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The Woodland Trust

Woods for People: Trends in access to woodland, the effectiveness of current delivery mechanisms, and future needs

Links between access to open greenspace, health and wellbeing are well documented, as summarised with a focus on woodland in O'Brien (2005). In the UK forestry strategies in each country – for example, Defra (2007) –clear aims for increasing woodland access are set out, and there are incentives designed to encourage woodland owners to enable access to their sites. This paper investigates whether available woodland access is increasing in the UK, and discusses whether current mechanisms designed to facilitate this are working.

Spatial and quantitative data on accessible woodland has been collected across the UK for five years through the 'Woods for People' project, a partnership between the Woodland Trust and Forestry Commission. Recent analysis of this data (Woodland Trust, 2010), in conjunction with data on population, shows changes in the degree of available access to woodland across the UK during this period, broken down by country, region and local district. While access to woodland has increased, it still falls far short of the ideal 'Woodland Access Standard'. This paper discusses possible factors influencing trends in availability of access, including the effectiveness of incentives for access, for example, as discussed by Church et al. (2008) and for woodland creation, as discussed by Lawrence et al. (2010) and looks at regional differences in accessibility in the context of regional and national differences in strategies. It concludes that changes are needed in policy and delivery mechanisms to increase the availability of woodland access. The paper also discusses the potential to develop Woods for People into a more sophisticated tool to measure quality of access provision, and level of take-up in the future.

Keywords:
woodland, access, health, policy, incentives

Theme: *physical environment, health and wellbeing*

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Using logic modelling to identify and highlight the components of action on open space which are required to deliver priority health outcomes

Deryck Irving
Greenspace Scotland

In 2009/10 research was carried out to develop and publish an outcomes framework exploring the role of greenspace and open space in the delivery of national and local health priorities. An outcomes framework is a linked series of logic models which draws on available evidence to demonstrate the connection between planned actions and desired outcomes. We considered three health outcomes - increased levels of physical activity; enhanced mental health and wellbeing; reduced health inequalities - which partners felt could most easily be linked to open space. These were derived from the Dundee and Glasgow Single Outcome Agreements (SOAs are agreements between the Scottish Government and Community Planning Partnerships which set out how each will work in the future towards improving outcomes for local people within the context of the Government's national outcomes and purpose).

Our research methodology involved the identification and analysis of five greenspace or open space 'interventions' which were being planned in the two cities (Dundee and Glasgow). The theory of change behind each intervention was explored and
articulated and then tested against professional experience and the existing evidence on health benefits. This allowed the research team and participants to identify key dependencies and elements which were essential to delivering health outcomes.

The research allowed us to draw a series of conclusions:

- People need to use and/or value spaces to derive the maximum health benefits.
- Simply creating or preserving spaces is not enough - health benefits are only realised if we have the right distribution and mix of spaces.
- Delivering health benefits is dependent on how we manage spaces; inappropriate management often excludes people from spaces and fragments communities.
- Promotion of healthy uses for spaces is essential.
- Many of our 'target audience' do not have a culture of using spaces; it may be necessary to combine management of spaces with targeted support for use.
- Simply improving spaces will not reduce health inequalities. Those who are most disposed to use open space will use it more while many of those experiencing health problems will not. This will widen health inequalities. There is a need, therefore, to actively target our actions either on specific geographical areas; specific communities or people experiencing specific health conditions.
- Benefits will only be maximised if the planning, creation, management and promotion of open space and the promotion of healthy uses of open space are coordinated.

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NICE (2008) Public Health Guidance 12: Community Engagement to Improve Health. London: National Institute for Clinical Excellence.

Keywords:
health outcomes; logic modelling; action planning; health inequalities; coordinated action

Theme:
physical environment, health and wellbeing

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Are Swiss forests compatible with visitors' recreational motives and preferences? A Swiss nationwide survey study

In attention restoration theory, one of the four dimensions on which attention restoration is based is compatibility (Kaplan, 1995; Nordh, Hartig, Hagerhall, and Fry, 2009). It can be defined as the fit between a person's needs and intentions with the environmental conditions and behavioural opportunities offered by an environment (e.g. Kaplan, Kaplan, and Ryan, 1998). Following this approach, we analysed whether the motives for recreation and the recreational opportunities provided by the environment are compatible for people who visit forests. Additionally, we analysed if – and which – restoration-hindering deficits were perceived. In a Swiss-wide survey study, we assessed motives for recreation, forest-related preferences, perceived behavioural opportunities of environments as well as the recreational benefits and perceived disturbances of restoration of N = 3022 participants (mean age: 52.9 SD 15.97, 51.9% female). Data was elicited using computer-assisted telephone interviews and a web-based survey. Results showed that the Swiss sample would visit a forest mostly for walking and just to be there. They preferred when it smelt like a forest and when they could perceive a typical forest soundscape. The main motives for visiting forests were to enjoy the fresh air and to observe nature. Forest visits were rated as resulting in strong restorative effects. Bikers and people who walked their dogs were perceived as the most disturbing elements. We concluded that the majority of our sample was satisfied with the recreational opportunities that Swiss forests offer. However, some elements were perceived as disturbing and the data provided an indication of how the recreational benefit of forest visits might be enhanced. Further results and conclusions will be discussed at the conference.

Keywords:
recreation, forest, restoration, preferences, motives

Theme:
physical environment, health and wellbeing

Kaplan, S. (1995) 'The Restorative Benefits of Nature: Toward an Integrative Framework', in Journal of Environmental Psychology, 15, 169-182.
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Heriot-Watt University, UK

Open space in business & science parks: the potential benefits of restorative outdoor environments at knowledge-sector workplaces

In recent years there has been a proliferation of research into the role of green space in public health. A significant amount of this has focused on the psychological 'restorative' benefits of contact with natural environments (including viewing nature from indoors) and green exercise, which have been shown to have value for reducing stress and enhancing cognitive functioning. Relatively few studies have addressed the role of these green space functions in the context of the workplace environment. This is perhaps surprising given that it is at work that many of us experience the greatest stress and cognitive demands. The few that have indicate that there is significant potential for green space at workplaces to influence wellbeing and perhaps even productivity. This paper reviews these studies, which have shown links between contact with nature and measures of physical and mental health, job satisfaction, task performance, moods and social interactions, and have pointed to the role of green space in buffering the negative effects of work stress in general (Kaplan, 1993; Leather et al., 1998, Stigsdotter, 2003; Hartig et al., 2006; Kweon et al., 2008). Business and science parks have become favoured vehicles for regional economic development. In theory, these models of business development, with their urban-fringe location and significant open space, offer great potential for knowledge-economy workers to benefit from access to outdoor restorative environments at work. The question is - does the planning and design of these settings capitalise on this potential in practice? This paper suggests that more research into the value of restorative outdoor environments at work is warranted. In particular, future research should address the benefits of taking breaks in green spaces as opposed to nature in office window views, and should examine the problem from the context of UK regional economic development strategies.

Keywords:
restorative environments; open space design; occupational health; business parks; science parks.

Theme: *physical environment, health and wellbeing*

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Experiential mapping: an evolution of professional planning and design tools through community participation

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Whilst communities' everyday environments are increasingly subjugated to the will of professional trends and tools, concern arises as to the potentially damaging impact of the experientially sterile spaces that result (Habraken, 1998; Dovey, 2010). People with learning disabilities (PWLD) are amongst some of our most excluded communities, for whom environmental change has a heightened impact and who are rarely included in design decision-making (Mathers, 2010). As identified by Hall (2010), in order to address the imbalance in professional control, we must seek to transform the processes that facilitate current inequality. In the field of landscape architecture, Experiential Landscape (EL) has developed mapping tools and training workshops to aid understanding of individual/collective experiences in environmental planning and design (Thwaites and Simkins, 2007). Previous use of these tools has focused upon professional employment; therefore, to assess their effectiveness for community use, a knowledge transfer partnership was formed with a local vocational training centre for PWLD. In 2010, a four-month qualitative study was carried out with centre trainees and staff. The EL mapping toolkit was employed to reveal existing and aspirational site experiences, facilitated through use of complementary visual, auditory and kinesthetic communication methods. A number of community benefits arose from this process including empowerment of the involved PWLD and development of their environmental awareness (the fieldwork experience activated the participants to create a self-organised, conservation group to tackle environmental issues of key significance such as littering and site-specific garden development). Academic outputs included the advancement of a jargon-free professional mapping technique and the development of action-generating research. In addition, Sheffield City Council has selected this project for the Sheffield Showcase in order to publicise good practice in community participation.

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Keywords:
experience mapping, learning disability, inclusion, community participation, accessible environments

Theme:
inclusive design and sustainable community planning

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Linking play and place: Identifying spatial patterns in children's outdoor activities using diaries, accelerometers, and GPS

Traditionally, neighbourhood environments have been influential settings in the daily lives of school-age children, serving as a primary arena for both the socially and physically active recreational pursuits that facilitate their ongoing development and wellbeing (1-3).

Parental concerns for safety, changes in the built form of communities, and the increasing draw of indoor sedentary activities such as watching television and playing video games, have been cited as among the factors which may be not only changing, but significantly restricting, children's outdoor play and overall mobility (4-7).

A deeper understanding of children's contemporary patterns of activity and movement in their neighbourhood environments is key to appreciating the factors which may be contributing to alarming increases in childhood obesity and other indicators of poor health and wellbeing. Recent advances in the accuracy and portability of digital tools such as global positioning systems (GPS) and wearable accelerometers (which measure the intensity of activity) are opening up new opportunities for more directly measuring and assessing children's outdoor activity patterns. This paper outlines results from a recent study where children from both an urban and a suburban neighbourhood (n=70) wore portable GPS units and accelerometers, in addition to completing a daily activity diary, for five consecutive days in order to directly track their neighbourhood mobility and recreational activity patterns. The merged data provides a rich snapshot of children's neighbourhood activity domain, as well as their engagement in active recreation, including the environmental context and conditions that support or restrict these outdoor activities considered keyto a healthy growth and development.

Keywords:
children's geographies, neighbourhood environments, child health and wellbeing, play, behaviour measurement and tracking, GPS

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

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‘Physical environment, health and wellbeing’: Inclusive adventure by design

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Equal Adventure, UK

This paper addresses the creation of opportunities for participation in adventure sport. This research took place against a backdrop of national events and developments, notably, changes in UK access legislation (DRC, 2002), outdoor safety campaigns and legislation, drives to make the UK’s population active (Sport England, 2002).

The multidisciplinary approach is in line with international disability sport research priorities (Doll-Tepper, 1994). The methodology utilises desk-based research, field-based short and longer expedition settings. The design process utilises existing user-centred staged design approaches to explore methods for wider application. A new postural support was designed for use by intermediate-level sea kayakers with SCI. The research has informed the creation of twelve tools to support practitioners. They provide a common interdisciplinary language to help educate and inspire each person to understand the true nature of the problem, improve the shared understanding within the team, and thereby reduce the stickiness of the information. The effect on the development of new equipment is to improve focus and user participation, so making it easier to work within the social mess (Ritchey, 2007).

The research has shown it is possible to increase the performance level of disabled athletes in paddlesport through the development of appropriate adaptive equipment, promote inclusion and broaden opportunities.

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Keywords:
disability, design, adventure, interdisciplinary, methodology

Theme:
physical environment, health and wellbeing

The impact of the outdoor preschool environment upon children’s physical activity, sun exposure, general health and stress

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Margareta Söderström, University of Lund, University of Copenhagen; **Fredrika Mårtensson**, Swedish University of Agricultural Sciences; **Brad Bieber, Nilda Cosco and Robin Moore,** North Carolina State University, USA; **Peter Pagels and Anders Raustorp**, University of Kalmar; **Ulf Wester**

The point of departure for development of the Kidscape project was consideration of the outdoor preschool environment as a potential trigger of health-promoting outdoor stay and play. Its combined impact upon spontaneous physical activity, sun-protective behaviour, general health, stress and quality of play has been studied in various climates and landscapes at different latitudes. Preschool environments were scored and classified with reference to space, vegetation, topography and integration of nature in playspace. Behaviour mapping was applied, as sky view imaging to determine the fraction of free sky from defined play locations (behaviour settings). Pedometry, accelerometry and UV dosimetry were applied. A study from Stockholm (59N, rocky topography, pine forests, cold climate) demonstrated an increase in physical activity by 21%, suberythemal sun exposure during prolonged outdoor stays, and fewer attention disorders in high-score environments (1, 2). In 2009, physical activity and sun exposure was studied in Raleigh, NC (36N, lush deciduous vegetation, subtropical climate) and Malmö (55N, agricultural landscape, and temperate maritime climate). In Malmö, stress levels were measured too (saliva cortisol). Results from Stockholm were confirmed in Malmö (3), though stress levels were higher in high-score environments (4). In Raleigh, sun exposure was low, and so was physical activity, possibly due to safety policies (3). Physical activity was increased outdoors at both locations and for both genders (5).
Though the issue of stress levels needs further exploration, space, vegetation and playspace integrated with nature increases physical activity without sunburn risk, in spite of long spells of free play outdoors, irrespective of climate, landscape or latitude, and additionally, helps to maintain health.These aspects should be considered in the planning or upgrading of preschool outdoor environments, as many children spend most of their waking hours at preschool sites.

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Keywords:
children, preschool, outdoors, environment, health

Theme:
physical environment, health and wellbeing

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Håvard Tveite

Environmental correlates of physical activity in adolescents: tracking leisure time activity patterns in 14-year-old children

Introduction- The research project, 'How the environment affords physical activity in adolescents?', aims to explore 14-year-old youngsters' everyday physical activity behaviour and to highlight how the urban landscape contributes to it. Studies of young schoolchildren have shown correlations with their activity levels and environmental settings (Fjørtoft et al., 2009). This study focused on environmental facilitation in terms of how environments promote physical activity in 9th graders in two different neighbourhood settings.
Methods- Neighbourhood facilities for PA were described and identified through orthophoto maps. The children's movement patterns and activity levels were measured during an afternoon by applying a GPS Garmin Forerunner 305 with combined heart-rate monitoring. The recorded data were transferred to, and structured in, a Microsoft Access database and further exported in dbf format to an attribute table in ArcInfo (ESRI). Spatial reference data were converted to a projected coordinate system and geocoded in ArcGIS using metric units. Heart-rate variations in the two neighbourhood areas were analysed in a 20 x 20 metre grid (Fjørtoft et al., 2010).
Results- Movement patterns in the neighbourhood areas were identified along routes and at their respective 'hot-spots', with higher activity levels recorded along the routes. Generally, low activity levels (mean HR<120 bpm) were registered for both neighbourhoods, but this varied individually. Eleven youngsters (6 boys, 5 girls) met the recommendations of PA during an afternoon of free-living activities, all with movement patterns along the routes.
Conclusion- Activity along the routes was correlated to higher activity levels than at the 'hot-spots'. These findings add new knowledge to former research in this field (Jones et al., 2009; Page et al., 2010).

Keywords:
physical activity, adolescents, environments, GPS, HR

Theme:
physical environment, health and wellbeing

Cooper, A.R.et al (2010) 'Patterns of GPS measured time outdoors after school and objective physical activity in English children: the PEACH project', in International Journal of Behavioural Nutrition and Physical Activity, 7 http://dx.doi.org/10.1186/1479-5868-7-31
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How do urban landscapes afford physical activity in adolescents? Activities, use and experience

The main aim of the project is to explore adolescents' everyday physical activity behaviour and point out how the urban landscape contributes to it based on three main topics: 1) physical activity patterns and levels, 2) the adolescents' use/experience of the landscape, 3) the influence of the landscape. The theoretical frame is given by Gibson's affordance concept (Gibson, 1977).
The project uses comparative case study design: two schools and their neighbourhoods in different landscapes in Fredrikstad-Norway were selected and 9-10th grade pupils were involved in the study.

Students' movements were tracked by using GPS and heart rate monitoring to measure levels of physical activity, in order: 1) to analyse pupils' physical activity patterns in the school yard (Fjørtoft, Löfman & Thorén, 2010) and in the neighbourhoods; 2) to study that the adolescents' use/experience of the landscape is based on multiple data sources, including GPS-data, children's tracks, photos/descriptions, essays and field studies; 3) to study the influence of the urban landscape on the physical activity/experience uses mentioned in previous data, in combination with different approaches to landscape analyses methodology.
This presentation focuses on the study of the adolescents' use/experience of urban landscapes. Preliminary analysis shows that:

- Movement patterns are neighbourhood-oriented, mainly within a radius of 2.5 km.
- Boys and girls have equal preferences for sites and activities, and it is most important to meet friends and hang around.
- Informal areas linked to urban centres, retail and petrol stations are ranked number one. Few specific facilities for physical activity are in the boys' and girls' top 10 lists.
- Boys are more active in specific areas (school playgrounds, sports facilities, playgrounds). Girls are more active along paths and roads.

Keywords:
adolescents, physical activity, urban landscape, affordances

Theme:
physical environment, health and wellbeing

Fjørtoft, I., Löfman, O. and Thorén, A.-K.H. (2010) 'Schoolyard physical activity in 14-year-old adolescents assessed by mobile GPS and heart rate monitoring analysed by GIS', in Scandinavian Journal of Public Health, 38(5), 28-37.
Gibson, J.J. (1977). 'The theory of affordances', in Shaw, R. and Bransford, J. (eds.) Perceiving, Acting, and Knowing. Toward an Ecological Psychology. New Jersey: Lawrence Erlbaum Associates, pp. 67-82.

How do urban landscapes afford physical activity in adolescents? Physical activity habitats

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The research project entitled, 'How the environment affords physical activity in adolescents' aims to explore 14-year-old youngsters' everyday physical activity behaviour and highlight how the urban landscape contributes to it. The research focuses on three main topics: 1) the physical activity patterns and levels, 2) the adolescents' use/experience of landscape, and 3) the influence of the landscape. The theoretical framework for the project is provided by Gibson's affordance concept (Gibson, 1977) (see Fig.1).

The project uses comparative case study design: two schools and their neighbourhoods in different landscapes in Fredrikstad, Norway were selected. In total, 121, 9-10th grade pupils were invited to participate in the project.

In the first stage, the students' movements were tracked by using GPS with simultaneous heart rate monitoring in order to measure the level of physical activity for subsequent analysis of the pupils' physical activity habitat. Then the data collection focused on the children's own perceptions of the neighbourhood environment, using multiple data sources including digital mapping, photos, descriptions and essays. In the next stage, the work involved field observation in order to collect complementary information about neighbourhood usage and to support the landscape analysis.

In the first analytical phase, the children's school day movement patterns and physical activity were studied, based on the GPS and heart rate data (Fjørtoft, Löfman & Thorén, 2010), followed by a neighbourhood-level analysis. Next, the pupils own understanding of the landscape was examined. This presentation shows the results of the third main topic of the project: affordances in the landscape that promote or hinder young people going outdoors and what stimulates their physical activity. The school neighbourhoods were analysed using two scales with different landscape analysis methods and the outputs were combined with previous results: the physical activity patterns and levels and the pupils' own landscape values (Fig.1).

Fjørtoft, I., Löfman, O. and Thorén, A.-K.H. (2010) 'Schoolyard physical activity in 14--year-old adolescents assessed by mobile GPS and heart rate monitoring analysed by GIS', in the ScandinavianJournal of Public Health, 38 (5), 28-37.
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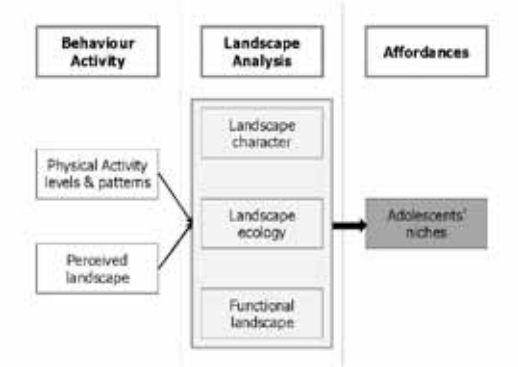

Fig.1: Adolescents' physical activity habitat

Keywords:
adolescents, physical activity, urban landscape, affordances

Theme:
physical environment, health and wellbeing

Health-promoting effects of visits to green space – case studies in Kuala Lumpur and Kuching, Malaysia

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Major Malaysian cities such as Kuala Lumpur (Peninsular Malaysia) and Kuching (Sarawak) have been experiencing rapid development. The importance of green spaces as contributors to a better quality of a resident's life has been recognised, though data on the use of green spaces and its resulting benefits are still lacking. This paper presents results from a comparative study on the use of green spaces and visitor preferences for five selected parks that are located in Kuala Lumpur and Kuching. The study comprised, among other methods, a survey which was conducted with residents living within a two-kilometre radius of the parks' boundaries.

Part of the survey focused on the health-promoting aspects of urban green spaces. Questions related to self-reported health status were asked, enabling, for example, a comparison between visitors and non-visitors to the nearby parks in terms of how they perceived their own health. Moreover, respondents were also asked what activities they would recommend to their close friends or family members in cases where they were experiencing stress or anxiety.

A total of 1692 respondents answered the questionnaire. Results show that most of the people who spent time visiting their neighbourhood park claimed to be in good health, compared with a larger number of people who did not spend time visiting the park and who self-reported as being in poorer health. Respondents living within 300m of a park reported being in better health than those respondents living further away from it.

Among 'health improving' recommendations made to close friends and family members, going on vacation or getting involved in sports/outdoor activities were ranked highest by respondents. But visiting a park was also among the most frequently mentioned recommendations. This research has confirmed the results of other studies regarding the positive impacts of use of green space and (self-assessed) health, although results were perhaps less convincing than studies in, for example, Europe. However, the study does highlight the importance of green spaces for promoting human health and wellbeing, a finding important to decision makers and green space managers.

Keywords:
health and wellbeing, self-reported health, urban parks

Theme:
physical environment, health and wellbeing

Grahn, P. and Stigsdotter, U.K. (2010) 'The relation between perceived sensory dimensions of urban green space and stress restoration', in Landscape and Urban Planning, 94, (3-4), 264-275.

Stigsdotter, U.K. et al (2010) 'Health promoting outdoor environments – Associations between green space, and health, health-related quality of life and stress based on a Danish national representative survey', in Scandinavian Journal of Public Health, 38,411-417.

Urban design, mental health and wellbeing: three case studies in Belo Horizonte, Brazil

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Despite many attempts to enhance the quality of urban life through urban design, now considered a key tool in the generation of health¬-giving urban open spaces (CABESpace, 2009; Jackson, 2003), the experience of urban environments around the world has still too often exacerbated the need for respite. Regardless of the pressing need to better understand the role played by design in the generation of people--friendly urban open spaces, the majority of studies connecting health and the environment have focused on the restorative benefits of natural environments (Kaplan, 1995; Kaplan and Kaplan, 1989).

To address the research question, 'What are the fundamental urban design elements most likely to support stationary social activities in central urban squares within large cities, while enhancing user mental health and wellbeing?', an extensive empirical study, using structured interviews, unstructured observation, behavioural mapping, sketch maps as well as GIS software techniques of visualisation, was carried out in three central urban squares in Belo Horizonte (Brazil).

The findings of this research suggest that an approach to urban design, which takes into account the multisensory aspects of urban open spaces, alongside user needs and wants, is feasible and holds the promise of guiding best practice in the generation of health¬-giving urban open spaces, likely to attract and retain people within them. The seven urban design elements which emerged from this study can be applied in the design of most urban open spaces intended for gatherings.

CABESpace, (2009) Future health: sustainable places for health and well¬being. http://www.cabe.org.uk/files/future¬health¬full¬report_0.pdf [Janeiro 2011]
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Kaplan, R. and Kaplan, S. (1989) The experience of nature: a psychological perspective. New York: Cambridge University Press.

Keywords:
urban design, stationary social activity, central urban square, user needs and wants

Theme:
physical environment, health and wellbeing

Associations between use, activities and characteristics of the outdoor environment at workplaces

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Today, office work in western societies is more sedentary and more mentally demanding than ever before. This way of working plays a role in the increase in lifestyle diseases related to sedentary routines and stress (European Agency for Safety and Health at Work, 2011; World Health Organization, 2011). Green outdoor environments have been found to motivate individuals to engage in physical activity, and to buffer the negative effect of stress (Stigsdotter et al., 2010; van den Berg et al., 2010). However, research into Workplace Outdoor Environment (WOE) is still limited.

To investigate the use of the WOE, four research questions were developed. They addressed the user, the activities performed, the perceived encouragements and impediments for going outdoors, and if there is a relationship between types of activity and the Perceived Sensory Dimensions (PSD) in the WOE. PSDs is a classification of how humans perceive and process sensory information in a natural environment (Grahn and Stigsdotter, 2010).

The study has a case study design comprising six Danish know-how-producing, project-organised companies, and is based on a questionnaire completed by 402 office workers.

The results showed that 37.8% of the respondents spent time outside during their workday, and that men had 2.08 times higher odds of spending time outside than women. Three important factors for spending time outside were 'encouragement by colleagues', 'no experience of impediments', and 'distance to the canteen'. A significant relationship between the outdoor activities and self-reported PSDs of the outdoor environment was found, indicating that the PSDs 'serene', 'space', 'nature' and 'refuge' influence six of the eight outdoor activities.

European Agency for Safety and Health at Work (2011) Stress. http://osha.europa.eu/en/topics/stress [March 2011].
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Keywords:
case study, green environment, office worker, outdoor activities, perceived sensory dimensions

Theme:
physical environment, health and wellbeing

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Planning restorative places: The potential of agricultural and derelict land

The increasing density of European cities has led to a growing pressure on public natural environments; fewer natural environments need to serve more people seeking restoration. Innovative planning concepts are required, supporting health by enhancing people's psychological wellbeing, physical activity and social contact (Bauer & Martens, 2010). Close-to-urban agricultural and derelict urban areas were the focus of two complementary studies, questioning their restorative qualities.

An experimental design compared the effect of extensively and intensively managed agricultural land, serving biological or conventional food production. Video presentations of both types and an individual walk on a treadmill served as the treatment. A representative sample of Zurich residents (n = 138) was randomly assigned to watch either a film, or to a control group, watching no film. Standardized mood scales assessed wellbeing in a pre-post design. An explorative case study design focused on an intercultural temporary community garden on a piece of derelict land for residents from different cultural backgrounds (n = 18). Perceived restoration was assessed three times over the 1.5 year time span.

Agricultural land serves restoration and wellbeing better than the control conditions. The comparison between extensively and intensively used agricultural areas showed differences in aesthetical assessment, but no differences in restoration. This indicates a rather general positive effect of the natural environment, independent of the management strategy. The intercultural garden showed a strong overall endorsement by all participants. Exposure to nature and physical activity through gardening seemed key factors. Perceived restoration was stable during the 18 months, even though the physical characteristics changed enormously. Thus, subjective factors, such as the meaning of place need to be integrated in future research as well as in planning procedures for the urban environment (Bonaiuto et al., 2003).

In conclusion, the studies analysed the concept of restoration in relation to the physical characteristics of the environment. The results contribute towards designing health-supporting outdoor environments for the population.

Keywords:
wellbeing, restoration, agricultural land, derelict land, intercultural garden

Theme:
physical environment, health and wellbeing

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Nature's health service: creating opportunities in woodlands for improving wellbeing across different social groups

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This presentation draws on a body of well¬being research related to woodlands. The research questions addressed include: a) What are the well-being benefits that people gain from accessing woodlands? b) What factors motivate different kinds of people, enable access and sustain activity? c) How can managers design and manage programmes to encourage and sustain the use of woodlands for well¬being?

The research has been undertaken in the context of a contemporary policy focus on health and well¬being as it relates to social equality and diversity, and concerns that access to woodlands and their benefits are unevenly distributed across society (Marmot, 2010; 240). The methods used in these studies included in¬-depth interviews, accompanied site visits, focus groups, photo elicitation and quantitative surveys. Results outline that people gain a wide range of well¬being outcomes from engagement with woodlands. Important outcomes include the benefits of shared experiences with friends and family, engagement of the senses, mental relaxation, and opportunities to learn and develop new skills (Edwards et al., 2009; 190). The ways in which people gain well¬being from contact with woodlands is related to childhood experiences, memories, and interest in woodlands (Milligan and Bingley, 2007; Ward Thompson et al., 2008). Motivations for using woodlands for well¬being include opportunities for escape and freedom from everyday life and the chance to socialise.

The results also highlight that outreach, led activities, and carefully designed and targeted projects can be successful in engaging, 'hard-to¬-reach' audiences. This approach will often require an adaptive approach to project design and delivery, involving working in partnership with organisations that are attuned to the needs of particular groups. Investing in training and skills in outreach and partnership working is important. We conclude that promoting the well-being benefits of woodlands across the social gradient requires managers to look beyond issues of physical design and management and to tailor projects to the needs of specific individuals and groups.

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Ward Thompson, C., Aspinall, P. and Montarzino, A. (2008) 'The childhood factor: adult visits to green places and the significance of childhood experiences', in Environment and Behaviour, 40, 111¬-143.

Keywords:
woodlands, diversity, health, wellbeing, outreach

Theme:
physical environment, health and wellbeing

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Interpreting traces of use by applying forensics as a new method to provide user insights and gain knowledge within participatory design

The paper deals with the evaluation of new developed practice-led inclusive methods linked to `forensic photography´ and participatory design and assumes that a combined iterative use provides value user behaviour insights. A combination of methods used in`forensics´ and qualitative research is applied to the subject of man-made design built-in to public parks.

The question is whether communal and community gardens provide appropriate inclusive solutions in terms of spatial access without physical and psychological barriers for the majority of their users. The researcher assumes that people seeking to improve health, social performance and quality of life encounter difficulties from restricted, and limited access to public gardens. The new practice-led method developed by the researcher can be summarised as involving an initial strategy of collecting data and gaining knowledge through examining traces of use and human occupation. The investigative method is then used to collect user behaviour data through interpretation of temporary and permanent traces, marks and prints on objects. Digital ethnographic methods are applied further to observe, capture and understand user behaviour in terms of coping strategy, problem-solving and confrontation with barriers within task-oriented activities and actions in public gardens. `Extreme´ users are approached to provide provoking and divergent input to define the research objectives and reveal the real user population involving participants, old and young alike, mother and child and pregnant women.

The researcher´s intention is to compare and discover correlations between the findings from close investigation of traces of use caused by human occupation, and their validation through findings from an in-depth engagement with people is likely to be one key research result. This would confirm the validity of the researcher´s assumption that interpreting human traces through qualitative methods and interviews is an unconventional but invaluable method in generating knowledge.

This paper evaluates and validates the process of mixing initial assumptions about human interaction originated by the interpretation of human traces with conventional methods of qualitative research. It proposes a strategy of a concurrent and coherent stream to cross-validate data in order to use the knowledge within an inclusive design process.

Keywords:
social innovation, environmental psychology, inclusive design, knowledge transfer, exclusion

Theme:
inclusive design and sustainable community planning

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Parallel sessions - Theme 3:

Age friendly built environments,
from childhood to old age

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Preference and fear. The importance of place experiences in children and young people's use of parks

An increasing body of research within geography, environmental psychology and landscape architecture focuses on how the interests, needs and well¬being of different age groups in society can be brought into the planning and maintenance of urban spaces (Cele, 2006; Percy Smith, 2010). Often this means that the needs of different groups such as children, young people or the elderly are discussed without there being a focus on how the needs of these different groups can be brought together and also harmonised with other efforts to increase urban social sustainability.

This research paper focuses on the experience, maintenance and planning of an urban park. The aim is to analyse how the park is understood as a physical, social and emotional place (Sack, 1997) by children, aged 8-11, and young people, aged 15-17, in order to highlight the similarities and differences in place experiences between these groups. The paper also focuses on how efforts made to increase urban safety, such as changing lighting and pruning greenery, affect how these groups use and experience the park (Ke-Tsung, 2009). Qualitative participatory research, consisting of interviews, observations, walks and photographs, was conducted to understand how children and young people experience and use the park before and after an urban safety programme was carried out in the park.

The study reveals how the complexity of children's and young people's place experiences often are ignored and trivialised in planning and maintenance, and in projects focusing on the needs of these groups, but also how routine solutions to increase safety in urban parks risk that the park's overall qualities decrease without achieving increased feelings of safety for its users. It is suggested that a focus on the complexity of place experiences will benefit our understanding of how urban open spaces can be planned and maintained.

Keywords:
children, young people, place experience, park, safety

Theme:
age friendly built environments from childhood to old age

Cele, S. (2006) Communicating Place. Methods for Understanding Children's Experiences of Place. Stockholm: Almqwist & Wiksell International.
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Schoolyards as a case study of universal design in São Martinho da Cortiça (Portugal)

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'Universal design means products and buildings that are accessible and usable by everyone, including people with disabilities' (Steinfeld, 1994). This suggests that 'designing special facilities for people (in this case, children) with special needs is not necessary' (Fisman, 2001), and that the solution lies in the diversity of experience offered in school playground spaces. 'Diversity in a schoolyard is an important element in promoting inclusion of children with special needs' (Fisman, 2001). Based on the principles of universal design and a multidisciplinary approach including landscape architecture, environmental psychology and concrete experiences of design for children with special needs (i.e. cerebral palsy), a primary schoolyard, in São Martinho da Cortiça (Portugal) was designed. The aim in planning this space was to meet the specific human needs that research has shown exist, in an informal manner, in schoolyards, such as: the promotion of social interaction and cohesion, intra and intergenerational interaction, inclusive contexts (e.g., Patrício, 2002), the restorative effect of nature (Kaplan and Kaplan, 1995), promoting place identity and social identity (e.g., Kim and Kaplan, 2004); or environmental education and pro-environmental behaviour.

This study reports on the different stages of the process (i.e. planning, construction and operation) in coping with the designer's interests and the useability of the area for the target-public. The main objective of the first stage was for the design to keep in mind users' needs, and the second stage was a post¬occupation by the users, which addressed both their perception of, and satisfaction with, the space as an assessment of its use. The main findings are related to an assessment of how different users feel and use the outer space, the shortcomings found, and the positive and negative aspects of the designer's involvement in the various stages of the process. Finally, these findings may benefit future, similar projects in other schools.

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Keywords:
universal design, place identity, social identity, inclusive contexts, environmental education

Theme:
age friendly built environments from childhood to old age

Getting children outdoors: factors influencing children's use of public parks

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Keywords:
public parks, children's health, environmental equity, accessibility, park quality

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

Access to high-quality recreation spaces is an established predictor of children's engagement in physically-active play (Sallis et al, 2000; Tucker et al, 2008). The availability of publicly-provided play spaces within walking distance of home is particularly important for low-income children, who are less likely to have access to private recreation spaces and arguably, have fewer transportation options (Gilliland et al, 2006). This paper examines relationships among the accessibility, quality, and use of publicly-provided parks and recreation spaces for children in a mid-sized Canadian city (London, Ontario). Accessibility was determined by mapping every city park (n=208) and comparing the spatial distribution against the characteristics of neighbourhood populations. To evaluate park quality, comprehensive environmental audits were conducted at every park (n=208) to assess elements such as safety features, playground equipment, sporting facilities, and aesthetics. Park use by children (18 years and under) was estimated by conducting user counts at a sample of similarly-sized parks (n=30), stratified by quality and neighbourhood need. Park quality was a more important determinant of park use than accessibility; interviews with parents (n=90) accompanying young children (12 years and under) to parks, as well as with children (aged 11-14) provided additional details on specific factors which attract park users. Although there was no obvious socio-spatial inequity with respect to the distribution of public play spaces, there are several areas in the city where children do not have easy access to formal play spaces. This study suggests that public policies and resources should be targeted at improving poor quality parks in older high needs districts, rather than building entirely new parks in suburban districts without established need.

Gilliland, J. et al (2006) 'Environmental equity is child's play: Mapping public provision of recreation opportunities in urban neighbourhoods', in Vulnerable Children & Youth Studies, 1(3), 256-268.
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Children and a healthy urban environment: the impact of land use on activity levels

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The built environment has become increasingly 'obesogenic' and contributes to creating inactive lifestyles (Hill et al, 2003; Papas et al, 2007). Previous studies suggest that an individual's propensity to be physically active is influenced by the street layout, the mix of land use, and the connectivity of streets (Greenwald and Boarnet, 2001; Puncher and Dijkstra, 2003; Lee and Moudon, 2004; Goldberg et al, 2007). Frank et al (2007) highlighted that the built environment may affect physical activity in different ways for each individual. The underlying mechanisms behind this effect remain unclear. This paper aims to explore in detail the relationship between the built environment and an individual's physical activity in the case of children aged between 8 and 11 years old. We tracked 82 children's daily movements on foot using Global Positioning Systems and simultaneously recorded their physical activity levels using accelerometers.

We found that where children had physical contact with higher amounts of natural green space in their daily life, this was significantly associated with higher levels of energy expenditure. This behaviour pattern was less likely for above-normal weight children, as the mere presence of natural green space did not necessarily translate into higher energy expenditure for them. Secondly, restricted areas such as roundabouts and landscaped areas did not increase activity. It was the actual physical contact and access that mattered, encouraging normal weight children to run around and use the space. Thirdly, children also used more energy in the vicinity of main roads where, although channelled into narrower spaces, they walked faster than normal. The results suggest that land use near to pedestrian routes to schools should be specifically planned to encourage healthy activity. Approaches such as active transport could be effective policy tools. We conclude with suggestions for a framework to assist land-use policy development, particularly to encourage children to be more physically active and fully involved with their local urban environment.

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Keywords:
physical activity, land use, children, walking behaviour

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

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Use and preferences at six public park playgrounds in Denmark and the US

Introduction: Public urban green spaces are places that provide many benefits for people living in cities but children's access to these areas is increasingly restricted, partly because of societal changes but also because of parental fear of children getting hurt in traffic (Clements, 2004; Veitch et al., 2006). Thus children have become more dependent on their parents' motivation to visit public open spaces such as park playgrounds (Veitch et al., 2006). The aim of this case study is to find motivational factors among accompanying adults for use of public playgrounds in urban green space and to examine the relationship between use and preferences and the location and design of the playgrounds.

Methods: Two cases were selected in the US and four in Denmark to explore possible cultural differences/similarities. All playgrounds were located in urban green spaces in similar socio-economic status areas, and they were built in the period from 2000-10. The methods used were onsite self-completion questionnaires (N 261) distributed among accompanying adults. All questionnaire items were pre-coded, most often with multiple-choice options, however, with an opportunity to make individual comments. In some of the questions, the adult was asked to answer on behalf of the related child(ren).

Key results showed that for frequent visits to urban green spaces, in general, and for longer visits on weekdays, short distances are important to the Danish respondents. At weekends, a variety of play equipment and access to loose material at the playground implies extended stays. For the US respondents, social aspects and the child's ability to be physically active are important issues. Location in a refuge-like and safe environment is appreciated in general. These findings suggest that certain aspects of playground design and location may increase adults' motivation for visiting park playgrounds with their children.

Keywords:
accompanying adults; affordances; children's play; loose material; playground design

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

Appleton, J. (1996) 'The experience of landscape', Revised ed. John Wiley & Sons.
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Developing age-friendly spaces in unfamiliar environments

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Anglia Ruskin University

Studies of the ways in which place conditions and contributes meaning to everyday life have tended to focus on people's relationship with familiar spaces. This is particularly relevant in studies of older people's attachment to place where meaning and a sense of place have developed through a lifetime of memories and associations. Increasingly older people are experiencing the unfamiliar - either through increased travelling as tourists and visitors to other towns and cities or through redevelopment of town centres. What was familiar can also become unfamiliar through cognitive decline. This raises questions such as how do older people make initial sense of unfamiliar outdoor environments and create meaning in them? What particular features of the environment convey a sense of meaning to older people? What are the lessons for planners in designing places where older people can feel comfortable, secure and confident?

This presentation addresses these questions by drawing on a research study of Older People's Use of Unfamiliar Space (ESRC OPUS1).The presentation investigates how older people gain a sense of place and meaning in relation to unfamiliar space. This involved forty-four older people exploring their experiences of familiar and unfamiliar spaces, together with interviews with planners and local residents. The study found that the attractiveness of the built and physical environment conveyed through distinctive and historic buildings, and the ease with which a town is accessible, were two crucial features in developing a sense of place. The findings uniquely suggest that spatial planners can take advantage of older people's memories and biographies in providing information on the environment to tourists and visitors to unfamiliar areas. The key issues for planners addressed in the final section of the presentation points to the importance of preserving references to the heritage and historic town fabric, while making the townscape accessible and pleasant, enabling older people to participate fully as citizens and consumers, tourists and residents. The paper will also address the concept of 'unfamiliarity', providing new insights into how older people perceive such environments.

Keywords:
unfamiliar environments, older people, urban spaces

Theme:
age friendly built environments from childhood to old age

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What is an 'age friendly' urban environment for older Australians? Insight from daily diaries, interviews and GIS trackers

Introduction: With population ageing frequently described as one of the greatest challenges of our time, an urgent question that needs attention is how the built environment impacts the ability of older people to stay engaged and remain active in their community. Thus, this presentation explores the impact of the environment on community liveability and active ageing, focusing on a qualitative case study of older residents living in inner-urban Brisbane, Australia.

Method: The daily life activities of 12 participants (55 years and older) living in Brisbane, Australia was explored using GPS tracking (747 A+ logger, one week per person), daily diary entries and a two-hour qualitative interview. The participants marked areas of interest in terms of safety, accessibility and affordability via the GPS unit and in their diaries. The data was used to produce interactive maps (Google Earth), which were discussed during semi-structured in-depth interviews with the participants in their own homes.

Results: Older Australians described how the characteristics of the local environment impacted upon their lifestyles and decision-making process significantly, particularly for those over 70 years. Most participants reported being very dependent on their ability to drive and were concerned about their future mobility options – how would they remain active and engaged, 'leading their lives' without independent transport? They described how the design of the environment impacted on their daily activities, identifying 'spatial hindrances' in the physical environment – the busyness of roads, lack of lights, narrow pavements - which made pedestrian movement extremely difficult.

Discussion: Older people are often a very heterogeneous group in terms of experience of life, activity, health and daily activities, but much of their community engagement depends on the environment to support them. Features such as noisy roads, lack of shade or seating, narrow pavements and intimidating urban space stop older Australians from fully participating as much as they would like. By understanding the facilitators and barriers within the local built environment, communities will be able to create supportive programmes and environments that encourage active participation and engagement by older people of all ages.

Keywords:
age-friendly environments, urban planning understanding barriers/facilitators to engagement, GIS

Theme:
age friendly built environments from childhood to old age

Cattan, M., et al (2005) 'Preventing social isolation and loneliness among older people: A systematic review of health promotion interventions', in Ageing & Society, 25, 41-67.
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This paper reports on research funded by an Australian Research Council Linkage Project: 'The neglected dimension of community liveability: Impact on social connectedness and active ageing'.

Age-friendly outdoor spaces in a purpose-built retirement village

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Purpose-built retirement communities have existed in North America and Europe for over sixty years, but it is only recently that Britain has experienced a similar growth (Bernard et al., 2004; Evans, 2009). These environments are boundaried physical places designed specifically to meet the needs of older people living there and to foster the development of sustainable communities (DCLG, 2008). Research evidence suggests that the design of spaces in retirement communities can impact on residents' sense of community, and enable them to remain independent (Evans, 2009; Evans and Means, 2007). While we know that the built environment is an important factor in physical, social and emotional wellbeing, we know relatively little about how residents' everyday lives are connected with these environments, and even less about their experiences of the outdoor spaces within them. This paper explores how outdoor spaces at Denham Garden Village (DGV; a purpose-built retirement community in Buckinghamshire), including the village green, memorial garden and 30 acres of woodland, impact on residents' everyday lives. Findings from observations and qualitative interviews conducted as part of the Longitudinal Study of Ageing in a Retirement Community (LARC) will be discussed. In particular, residents' conflicting responses to the use of outdoor spaces by other residents, and by members of the public, will be highlighted. Tensions around parking, the built environment immediately surrounding DGV, younger people, and the use of outdoor spaces for activities will be outlined. Some of the design features of these spaces that appear to have created or intensified issues will be considered, as will features of the outdoor spaces that have a positive impact on residents' lives. Conclusions will be drawn about the need to fully consider the needs and expectations of residents and the local community when designing age-friendly outdoor spaces within environments such as retirement communities.

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Evans, S. and Means, R. (2007) Balanced Retirement Communities? A Case Study of Westbury Fields. Bristol: UWE.

Keywords:
retirement community, outdoor space, older people, age-friendly

Theme:
age friendly built environments from childhood to old age

Healthy ageing and outdoor lifestyle activities

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Outdoor physical activities are thought to have notable benefits for health and wellbeing. Attention Restoration Theory (Hartig et al., 2003) suggests that natural settings, which confer a sense of 'being away' from things, have a restorative impact on psychological resources. Contact with nature has also been linked to stress reduction (Nielsen & Hansen, 2007), and it has been argued that exercise in natural environments may buffer against the effects of stress on health (Van Den Berg, et al, 2007). Outdoor activities often provide social contact, which is a known stress buffer (Sugiyama & Thompson, 2007). This study defines stress as the feeling of not having sufficient resources to cope with a situation that is appraised as threatening or demanding (Cohen, et al., 1983).

As it is not fully understood how aspects of different outdoor activities may contribute to stress reduction, a cross-sectional study and semi-structured interviews were conducted with physically active members of indoor or outdoor activity groups who were aged over 50 (N=93). The activity groups studied were selected based on the extent to which they provided exposure to nature and social interaction opportunities. Allotment-gardening provides outdoor activity and interaction with nature in a social environment, home-gardening also provides interaction with nature but without a social environment. Walking groups provide outdoor activity in urban and natural environments, as well as social interaction opportunities. Finally, indoor exercise groups also offer social interaction opportunities but without any exposure to nature. It was confirmed with all participants that this was their main form of physical activity and that they did not partake in any of the other activity types. Health and wellbeing were indexed using objective physiological measures and standardised psychometric tools, including a measure of weekly physical activity levels.

The psychometric tools used were: Perceived Stress Scale (10-item), Social Provisions Scale, International Physical Activity Questionnaire (short-form), and SF-36. The objective physiological measures collected were: Systolic and diastolic blood pressure, body mass index, lung function (FEV1 and FVC), and grip strength. A three-way ANOVA revealed a main effect of activity type on levels of perceived stress. Specifically, older adults who took part in allotment gardening reported significantly lower levels of stress than the other participants. There were two potential confounding variables that differed between the groups: socioeconomic status and sex, these were included in the ANOVA analysis (no significant main effects or interactions of these variables were found). There were no significant differences between the groups on reported levels of social support or weekly levels of physical activity. Possible explanations for the findings include a stress reduction benefit in getting away from the home environment and 'escaping' or 'retreating' into natural environments. As this study is cross-sectional, cause and effect relationships between activity type and stress levels cannot be determined. The allotment group also reported more favourable scores in several of the other measures but these values did not reach significance in the statistical analyses, thus a larger sample size would have helped to determine any significance.

Keywords:
wellbeing, nature, gardening, ageing, stress

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

Cohen, S., Kamarck, T. and Mermelstein, R. (1983) 'A global measure of perceived stress', in Journal of Health and Social Behaviour, 24, 385-396.
Hartig, T., et al (2003) 'Tracking restoration in natural and urban field settings', in Journal of Environmental Psychology, 23, 109-123.
Nielsen, T.S. and Hansen, K.B. (2007) 'Do green areas affect health? Results from a Danish survey on the use of green areas and health indicators', in Health & Place, 13, 839-850.
Sugiyama, T. and Ward Thompson, C. (2007) 'Outdoor environments, activity and the wellbeing of older people: conceptualising environmental support', in Environment and Planning A, 39, 1943-1960.
Van Den Berg, A.E., Hartig, T. and Staats, H. (2007) 'Preference for nature in urbanized societies: Stress, restoration, and the pursuit of sustainability', Journal of Social Issues, 63, 79-96.
Van Den Berg, A.E., et al (2010) 'Green space as a buffer between stressful life events and health', in Social Science and Medicine, 70(8), 1203-1210.

Knowing where to 'go'

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Help the Aged (2007) and disability theorists Kitchen & Law (2001) have argued that public toilet provision is central for maintaining independent living. Access to suitable facilities when away from home increases wider mobility for people of all ages and abilities, and fosters inclusion in activities for leisure, work and civic participation.

This paper will report on current research funded by the New Dynamics of Ageing programme that challenges the environmental barriers to continence management, namely, access to publicly available toilets. Building on a previous study that looked at the design of the publicly available toilet cubicle, this research incorporates inclusive design methods such as interviews and participatory design games, to further explore how an inclusive public service may be offered.

The paper describes how the number of varied providers challenges current UK public toilet provision. Greed (2003) argues that this 'fracturing' of provision prevents consolidation of information about publicly available toilets from being produced. The paper will highlight how, through work with users, the researchers developed personas to communicate user concerns with providers. In bringing user needs to the forefront of provider participation in the project, the researchers were able to identify a core theme of shared interest into a design brief that is currently being developed. This design brief will be showcased in its current form at the presentation, for conference participation feedback and comment.

Greed, C. (2003) Inclusive Urban Design: Public Toilets. Oxford: Architectural Press, Elsevier.
Help the Aged (2007) Nowhere to go. London: Help the Aged.
Kitchen, R. and Law, R. (2001) 'The Socio-Spatial Construction of (In)accessible Public Toilets', in Urban Studies, 38(2), 287-298.

Keywords:
ageing, public toilets, inclusive design

Theme:
age friendly built environments from childhood to old age

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Amelia Lake
Northumbria University

Parks, young people and the peripheral food environment: a cross-seasonal case study of two urban parks (in Newcastle upon Tyne)

The prevalence of overweight and obesity in UK young people is at epidemic levels (NHS IC and LS, 2010). The associated co-morbidities cause significant social and health problems at the individual and societal level. Policy has focused on improving eating patterns and increasing physical activity (PA), i.e. redressing the imbalance in the energy balance equation.

The aim of this interdisciplinary study was to assess physical, food and social environments accessible to young people (11-20 years) using a detailed case-study approach in two socially disparate areas of Newcastle-upon-Tyne. A two-point cross-seasonal, mixed-method research design was used to examine and evaluate attributes of two urban parks and their peripheries which influence eating and activity behaviours.

Healthfulness of the food environments (P= 0.001) and provision of food outlets (P= 0.002) were significantly different between the two areas. The food environment was more obesogenic (promoting overweight) in the area of greater deprivation in line with deprivation amplification (Macintyre et al., 2008). Neither park was shown to be superior, according to all the determinants of park quality and PA drivers. There were, however, more social and physical incivilities observed in the area of greater deprivation and more high quality features in an area of greater affluence, in line with the theory of Environmental Justice (Coen and Ross, 2006; Macintyre, 2000). Limited significant findings regarding park usage and PA correlates are suggestive that no single variable principally or consistently attracts young people to parks. Disparity in park usership favouring the area of high affluence is suggestive of socio-economic influence.

Despite the small sample size, the health-promoting capacity of case study urban parks and peripheral food environments were shown to be equitable according to deprivation, largely favouring the area of greater affluence. This inequity is consistent with deprivation amplification and Environmental Justice and is incompatible with national and local strategy for health equity.

Keywords:
obesogenic environment, food environment, urban parks, physical activity, environmental justice

Theme:
age friendly built environments from childhood to old age; physical environment, health and wellbeing

Coen, S.E. and Ross, N.A. (2006) 'Exploring the material basis for health: Characteristics of parks in Montreal neighbourhoods with contrasting health outcomes', in Health & Place, 12(4), 361-371.
Macintyre, S. (2000) 'The social patterning of exercise behaviours: the role of personal and local resources', in British Journal of Sports Medicine, 34(1), 6.
Macintyre, S., Macdonald, L. and Ellaway, A. (2008) 'Do poorer people have poorer access to local resources and facilities? The distribution of local resources by area deprivation in Glasgow, Scotland', in Social Science & Medicine, 67(6), 900-914.
NHS IC, National Health Service Information Centre and LS, Lifestyle Statistics (2010) National Child Measurement Programme: England, 2009/10 school year.

Campus as an integrated learning environment: learning in campus open spaces

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Recent research conducted into campus learning environments suggests that students are seeking alternative learning spaces. Researchers agree that more learning is taking place outside of class time than ever before. With an increased emphasis on collaboration and group projects, students are learning in small groups outside of the classrooms as they accomplish work related to their courses. Literature defines these experiences as 'informal learning'. Campus open spaces are one of the major areas where students prefer to partake in informal learning.

The research posed three questions:
1) how is learning experienced in campus open spaces?
2) what are the spatial design indicators of learning in public spaces on campus open spaces?
3) do the spatial design indicators of formal academic spaces (indoor spaces) affect learning in campus open spaces?

The study attempted to answer these questions through in-depth interviews supported by a questionnaire with 60 students. Interviews were conducted in the Middle East Technical University, whose intake consists of the top 10% of students who pass the national university selection examination and who are then enrolled at the university.

This study pursued both exploratory and quasi-experimental research approaches. The exploratory part of the study revealed the learning activities that are experienced in campus open spaces, and the perceived attributes that influence students' learning experiences in these spaces. In the exploratory part, by using content analysis, the researcher derived the meaningful categories of students' perceptions of learning in campus open spaces. In the quasi-experimental part of the study, the researcher did not manipulate or control any variables, and only investigated the effects of identified predictor variables on the criterion variable. It was assumed that naturally occurring variables co-vary. The model itself and the occurrence of some significant variables explained that these variables clarify learning as much as the value that they present. In a multiple regression model, the rest ratio remained from adjusted R square also clarified by the other variables that affect learning.

This research validated that learning is experienced not only in formal learning spaces but also in informal open spaces where students are able to move easily and freely. The results of the study also indicated that the spatial design of campus open spaces has some influence on students' learning experiences.

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Ataöv, A., (2007) 'Continuous Learning Processes in Creating the Public Realm', in Proceedings of the Institutions of Civil Engineers, Municipal Engineers 60, September 2007, Issue ME3, pp. 135-143.
Kolb, A. D. and Kolb, A. Y., (2005), 'Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education', in Academy of Management Learning and Education, 4(2), 193-212.
Oblinger, D. (2005), 'Leading the Transition from Classrooms to Learning Spaces', in Educause Quarterly, 1, 14-18.
Terenzini, P. T., Pascarella, E. T. and Blimling, G. S. (1999) 'Students' out-of-class experiences and their influence on learning and cognitive development: A literature review', in Journal of College Student Development, Sep/Oct 1999.

Keywords:
learning spaces, campus open space design

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

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Activity-promoting neighbourhood characteristics for children – used and useful concepts for research and practice

Children's everyday mobility is critical for sustainable development. Outdoor play affords health-promoting physical activity (Mårtensson, 2009; Telford, 2007) and moving on foot, bike or in lines, and the like, are sustainable modes of travel. The concept of sustainable everyday mobility has been developed as a frame of reference for existing knowledge of children's outdoor play and travel within the interdisciplinary Swedish research programme 'Children on foot'.

Other characteristics of urban environments may be vital for children's than for adults' health and wellbeing. A large variety of environmental structures, features and elements at various scales such as safe play areas, regulation of traffic and access to greenery, are discussed and associated with children's levels of physical activity (Boldemann et al., 2006; Johansson, 2006; Krahnstoever et al., 2006). The ways to characterise, categorise and analyse urban environments supporting physical activity seem, however, to be diverse and less systematised. The objective of this review is to systematise what characteristics of urban outdoor environments, shown in research to be related to children's physical activity, seem useful for systematic investigations and planning practice.

The review draws on searches of various scientific databases including APA, WorldWideScience and Web of Science with the aim of capturing studies in various disciplines, such as urban design and planning (e.g. Pluhar et al., 2010), health education (e.g. Haug, 2010), environmental research, (e.g. de Vries et al., 2010), and environmental psychology (e.g. Johansson et al., 2010).

Methods for assessing environmental characteristics are compared and scrutinised for application to the Nordic childhood context of urban development. The results are discussed in relation to the international scientific arena and the possibilities of developing a common framework for future research endeavours on health-promoting planning practices.

Keywords:
children´s health, landscape architecture, physical activity, urban planning, urban design

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

Boldemann, C. et al, (2006) 'Impact of preschool environment upon children's physical activity and sun exposure', in Preventive Medicine, 42(4), 301-308.
Haug, E. et al. (2010) 'The characteristics of the outdoor school environment associated with physical activity', in Health Education Research, 25(2), 248-256.
Johansson, M. (2006) 'Environment and parental aspects as determinants of children's leisure travel', in Journal of Environmental Psychology, 26, 156-169.
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Pluhar, Z.F. et al. (2010) 'Representations of the relationship among physical activity, health and perceived living environment in Hungarian urban children's images', in Landscape and Urban Planning, 95(4), 151-160.
Telford, R.D. (2007) 'Low physical activity and obesity: Causes of chronic disease or simply predictors?', in Medical Science of Sports and Exercise, 39, 1233-1240.
de Vries, S.I. et al. (2010) 'Built environmental correlates of walking and cycling in Dutch urban children: Results from the SPACE Study', in International Journal of Environmental Research and Public Health, 7(5), 2309-2324.

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May Carter
Playscape, Australia

Keywords:
outdoor play, playgrounds, parks, adolescents/ teenagers, children's viewpoints

Theme:
inclusive design and sustainable community planning; age friendly built environments from childhood to old age

'But that's just for little kids': meeting the needs of older children and adolescents in parks and playgrounds

Older children and adolescents ('tweens' and teens) are often overlooked in typical park and playground design and infrastructure, and much of the literature and community consultation relating to park features and planning is 'through adult eyes' (1). Moreover, adolescents are sometimes intentionally designed out of parks and open space, due to societal misperceptions about the presence of teenagers in public places (2). Yet while the nature and terminology of 'play' may change as adolescence approaches, interactional and recreational spaces for young people of all ages are just as important for their mental and physical wellbeing (3). They still need places where they can socialise, be physically active, have fun, 'hang out', experience nature, escape from indoors, or just be free from the encumbrances of an increasingly adult world (1).

This paper presents findings from 'Child's Play', a recent Western Australian study exploring child, parent and stakeholders' perspectives about parks, playgrounds and outdoor play spaces. In particular, the presentation focuses on:
• the views of older children (10 years upwards) and adolescents regarding parks and outdoor play;
• the perspectives of those involved in designing and maintaining parks and playgrounds, including barriers (real and perceived) to catering for older children and adolescents in parks and public open space, and some strategies for overcoming these;
• emergent discrepancies between child/adolescent and parent/stakeholder views and preferences;
• advocacy and community collaboration as strategies for promoting the recreational, social and play needs of older children and adolescents.

1 ARACY (2009) Parks and open spaces: for the health and wellbeing of children and young people. Australian Research Alliance for Children and Youth (ARACY).
2 Owens, P. (2002) 'No teens allowed: The exclusion of adolescents from public spaces', in Landscape Journal , 21(1), 156.
3 Kelty, S.F., Giles-Corti, B. and Zubrick, S.R. (2008) 'Physical activity and young people: The impact of the built environment in encouraging play, fun and being active', in Beaulieu, N.P. (ed.) Physical Activity and Children: New Research. Hauppauge, NY: Nova Publishing, pp.7-33.

Karen Martin
University of Western Australia

'All they need is grass': Developing physical environments to support children's physical activity

Play spaces for children are not all created equal, and when exploring the environments provided for children in local communities it is quickly evident that there is a broad spectrum available; from the good; the bad; to the ugly!

This presentation presents results from The ACTIVE Schools Project1, a Western Australian study which gathered children's play perspectives using surveys as well as objectively measured physical activity data using accelerometers in over 400 grade six children at 27 schools in Perth, Western Australia.

Characteristics of the school physical environment identified by children as being important for supporting their play included:

• having sport apparatus (e.g. football goals, basketball hoops)
• good amount of space and grass
• access to natural play areas
• good variation in playground equipment (climbers, monkey bars, etc)
• more markings on hard courts and walls
• good school design

Keywords:
children, physical activity, environments, parks, playgrounds

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

Multilevel modelling using the accelerometry and objectively measured school environment data indicate that grass and sporting apparatus were important supports for children's physical activity.

Counter to these findings, however, are worldwide examples of removing or reducing grass and playground equipment in response to concerns about cost, risk, safety and environmental sustainability. This presentation will provide some strategies for optimising physical environments for children's physical activity while taking into account such broader contextual issues.

Martin, K.E. (2010) 'School, classroom and child-level correlates of children's class-time and recess physical activity', PhD thesis. Perth: School of Population Health, The University of Western Australia.

Are our feet too big for outdoor steps?

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SURFACE Inclusive Design Research Centre, University of Salford

During the 1980s an Australian survey of high-rise office building occupants showed that they were satisfied with steps between 250-290mm wide after the completion of a trial evacuation exercise (MacLennan et al, 1989). Respondents were observed going down the stairs 'sideways' to gain a footing on each step. Recommendations from the Building Research Establishment (Roys, 2006) are for a minimum width of step or 'going' of 300mm which is the mean length of a male foot in the UK. Was this the same for existing outdoor steps in the UK with a comparison with two representative sites from Sydney, Australia? Eighteen representative sites were selected in the UK with two sites in Sydney. A user survey was conducted at each site, together with observations of user behaviour and characteristics over a set time period. Step dimensions and other essential elements (e.g. handrail height, illumination, degree of maintenance, etc.) were also recorded. The results are interesting:

- Mean shoe length = 300mm.
- Mean step width = 313mm.
- Step width for 9 sites = 300mm.
- Minimum step width (one site) = 280mm.
- Two Australian sites > 300 and < 360mm.
- Remaining sites < 300mm and > 280mm.
- Maximum step width (one site) = 460mm.

The survey results show agreement with other studies of the distribution of shoe lengths for males. The relationship of the size of our feet and the width of outdoor steps is also supported by a strong and highly significant relationship between the degree of confidence that respondents had after climbing the steps and their perception of the width of the step. A weak and yet significant association was established between their reported shoe size and their level of confidence. The maximum shoe size could also be accommodated on the maximum recorded step width of 460mm, but this width can create problems for others in terms of 'stepping'. These findings correspond with recent guidelines on accessible steps (Alderson, 2010).

Alderson, A. (2010) Stairs, ramps and escalators: Inclusive Design Guidance. London: RIBA Publishing.
MacLennan, H.A., et al (1989) Evacuation Times from High Rise Office Buildings, Research Data. Sydney: University of Technology.
Roys, M. (2006) 'Steps and Stairs', in Haslam, R. and Stubbs, D. (eds.) Understanding and Preventing Falls. Abingdon, Oxon: Taylor and Francis, pp. 51-68.

Keywords:
design guidance, outdoor steps, shoe size

Theme:
age friendly built environments from childhood to old age

Research on social opportunities offered by urban lawns in Lund, Sweden

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Since the 19th century, the lawn has gradually become one of the main greening forms for many cities in the world. The research on planting technology, maintenance techniques, the environmental impact from maintenance and biodiversity protection of historical lawns has become increasingly sophisticated. However, so far, the understanding at city scale of how the urban lawn offers social opportunities for citizens is limited. This study aims to explore the social service function and efficacy of lawns in the city of Lund. The study attempts to classify the city's lawns into six types according to the context of land use: urban park lawns, neighbourhood park lawns, lawns around public buildings, lawns surrounding residential buildings, lawns along bicycle ways and lawns along motor vehicle ways. Based on this new classification, open-ended questionnaires were conducted and analysis was carried out. The study found that the social service function and efficacy of lawns significantly differed between the six types of lawns; these differences were mainly governed by land use, planting and the service facility context of lawns. The ANOVA test found that the level of usage of lawns among working people is far below that of students. This study also found that the social service function and efficacy of lawns is not related to users' background. This is a different conclusion from some past studies which found that people's outdoor activities were influenced by their upbringing and everyday habits. This result is expected to be explained in further studies.

Attwell, K. (2000) 'Urban land resources and urban planting-case studies from Denmark', in Landscape and Urban Planning, 52, 145-163.
Golicnik, B. and Ward Thompson, C. (2010) 'Emerging relationships between design and use of urban park spaces', in Landscape and Urban Planning, 94, 38-53.
Robbins, P. and Birkenholtz, T. (2003) 'Turfgrass revolution: measuring the expansion of the American lawn', in Land Use Policy, 20, 181-194.
Scott, P.B., Henderson, N.H., Perkins, M.N. (1998) 'Residential lawn alternatives: a study of their distribution, form and structure', in Landscape and Urban Planning, 42, 135-145.

Keywords:
urban lawn, residents, social opportunities, Lund

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

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Keywords:
action research, social design, open spaces, long-term care institutions, environmental gerontology

Theme:
age friendly built environments from childhood to old age

Participatory planning of open spaces in long-term care institutions

Even though previous studies have addressed the planning of open spaces in long-term care institutions from the users' standpoint, there are few examples in the literature showing older adults playing more active roles in the planning process. We conducted an action research to use the concept of social design suggested by Sommer (1983) to plan a small garden in an institution. We conducted interviews and observations to analyse the use of the outdoor areas available at the institution. We also held meetings to choose an area and build a garden and to develop a method to engage older adults in the planning process. These meetings were attended by eight volunteers (all women, whose ages ranged from 68 to 101 years) from the 22 older adults living at the institution and members of an interdisciplinary team comprising three researchers. The meetings resulted in a 200m2 garden project (a place for contemplation and vegetable growing) and, in a method that involved the older adults in the planning process. This method was assessed at the end of the study by the older adults by means of interviews, which were qualitatively analysed using meaning condensation (Kvale, 1996). In general, the interviewees showed satisfaction with the method for four reasons: a) the possibility of creating their own territory at the institution; b) the possibility of playing an active role at the institution; c) acquisition of new knowledge; d) promotion of social relations.

These results suggest that direct involvement in the planning of outdoor areas can be beneficial in terms of environmental dimensions and relationships between older adults and the institutional settings, allowing for a deeper theoretical link between the references of environmental gerontology (Lawton & Nahemow, 1973) and studies of people-nature relations (Ulrich, 1999).

Lawton, M.P. and Nahemow, L. (1973) 'Ecology and the aging process', in Eisdorfer, C. and Lawton, M.P. (eds.) Psychology of adult development and aging. Washington, DC: American Psychological Association, pp.619-674.
Sommer, R. (1983) Social design: creating buildings with people in mind. Englewood Cliffs, NJ: Prentice-Hall.
Ulrich, R.S. (1999) 'Effects of gardens on health outcomes: Theory and research, in Cooper-Marcus, C. and Barnes, M. (eds.) Healing gardens: Therapeutic benefits and design recommendations. New York: John Wiley & Sons, pp.27-86.

Urban decay and trajectories of mobility disability among community-dwelling older Americans

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Uneven or discontinuous sidewalks, heavy traffic, and inaccessible transportation can create barriers to independence, especially among older adults with underlying health problems. We investigated the relationship between urban built environment characteristics and trajectories of mobility disability using a combination of quantitative multilevel methods and geographic information systems (GIS). Using an enumerative database of persons enrolled in Michigan's community-based long-term care program (2001-06), we focus on a sample of 2269 older adults (mean age=77.5±8.7 years; mean number of health problems=6.6±2.1; 52.2% have less than high school education) living in Detroit, a city that has undergone rapid economic and structural decline. Following earlier work, built environments were assessed using the 'street view' feature of Google Earth where a trained rater did a 'virtual' walk around each residential block and documented street characteristics using a standardised audit instrument. Less than half (45%) of the streets had continuous sidewalks; 43% had obstructions on the sidewalks (e.g. telephone poles); bus stops were present on only 23% of the streets; 39% had visible crosswalks. Growth mixture models were used to examine the effect of these street characteristics on trajectories of outdoor mobility disability (assessed on a six-point scale every 90 days over a 15-month period). The majority (82%) of the sample exhibited steadily increasing mobility difficulty over time. The remainder exhibited more gradual increases in disability. Controlling for sociodemographic and health risk factors, individuals with steadily increasing trajectories were more likely to live in areas with poor quality streets and sidewalks ($p<.01$) and were more likely to be admitted to a nursing home over time ($p<.05$). With explicit deliverables to the Michigan Department of Community Health, this research aims to understand how hazards in the built environment prevent independence in later life and ultimately increase the risk of nursing home admission.

Clarke, P. and George, L.K. (2005) 'The role of the built environment in the Disablement Process', in American Journal of Public Health, 95(11), 1933-1939.
Clarke, P., et al (2008) 'Mobility disability and the urban built environment', in American Journal of Epidemiology, 168, 506-513.
Fries, B.E., et al (2002) 'A screening system for Michigan's home- and community-based long-term care programs', in The Gerontologist, 42, 462-474.
Clarke, P., et al. (2010) 'Using Google Earth to conduct a neighborhood audit: Reliability of a virtual audit instrument', in Health and Place, 16, 1224-1229.
Muthen, B. (2004) 'Latent variable analysis: Growth mixture modelling and related techniques for longitudinal data', in Kaplan, D. (ed.) Handbook of Quantitative Methodology for the Social Sciences. Newbury Park, CA: Sage, pp 345-368.

Keywords:
ageing, disability, built environment, urban decay

Theme:
physical environment, health and wellbeing; age friendly built environments from childhood to old age

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A creative practice of urban interventions designed for older age

Method: This paper explores how a developing area of creative design and performative arts practice based on the playful-constructive practice of urban 'intervention' (Thompson and Sholette, 2004) might be used as a creative, methodological tool to better enable older people to lay claim to public, open spaces through informal, direct action intervention. Part of an ongoing series of small-scale, temporary interventions that are being acted out as part of PhD by design research in the 'in-between' public spaces of Newham (in east London), this paper focuses on one intervention in particular, the development of a playful-portable cushioning system designed for a series of roadside bollards (that are used by local elders as ad hoc seats wherever standard street furniture provision is lacking).

Analysis: Based on a series of unstructured interviews in a local elders' club. the project: a) maps out alternative sitting spots used by elders in the borough (low walls, roadside bollards), collating and presenting these in an alternative street furniture catalogue format; and b) goes on, through an artist's commission, to develop a bespoke cushion for one of these sites (the roadside Abacus® bollard). The creative construction of this (non-ergonomic cushion) becomes a playful way of making space symbolically, as much as literally, for the 'comfortable' accommodation of older people into an otherwise unaccommodating streetscape.

Findings: Considered within the context of a 'critical spatial practice' (Rendell, 2006), this creative practice of playful-provocative intervention is enacted in order to open up critical questions around notions of open space access in older age beyond questions of physical access. The findings of this creative research project are, thus, not solutions driven but driven instead towards a process of critical reflection – where the findings of the intervention exist as a series of questions to ask public professionals: can playful design solutions suggest alternative, sometimes non-instrumental ways of inhabiting public space in older age? Is there a way of building on and valuing existing ways of using public space in older age, and amplifying these through discreet urban design solutions, retrofitting the urban environment to meet elderly needs within a minimal economy of means? What if the needs of access to open space were to move beyond physical needs and involve the non-physical dimensions of appropriating public spaces in older age – through resistance and play?

Rendell, J. (2006) Art and Architecture: A Place Between. London: IB Tauris.
Thompson, N. and Sholette, G. (eds.) (2004) The Interventionists: A Users' Manual for the Creative Disruption of Everyday Life. Cambridge, Mass.: MIT Press.

Keywords:
urban intervention, critical spatial practice, participative design, accessibility, play

Theme:
inclusive design and sustainable community planning; physical environment, health and wellbeing; age friendly built environments from childhood to old age

Poster abstracts

Brian Ashley
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A project to establish a playground for all – an inclusive playground

After an elapse of a number of years, a summary evaluation is presented of a one-year project. This was to plan and establish an all-inclusive playground in a small community outside Stockholm. One objective was to promote the use of the unit by all types of users from the various special services devoted to helping those (mostly children & young people) who had difficulty in participating in normal provision for outdoor activity. A worker was appointed to facilitate and report usage.

A project leader carried out regular observational visits, including video recordings, in order to evaluate the total experience. This presentation will describe the successful usage of those who participated but also the lessons learned of the difficulty of achieving the objective of extending usage and provision of all-inclusive services of this kind.

Keywords:
play, playground, experimental all-inclusive project

Theme:
age friendly built environments from childhood to old age

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Perceptions of public transportation with a focus on older adults

Question- What are older adults' requirements for accommodation and assistance when using public transportation? By 2050, there will be an immense increase in the number of adults aged 65 and older. These individuals are generally very active and outgoing. However, as people get older, their senses and reflexes diminish, which makes it harder and dangerous for them to drive. This study focuses on the needs and expectations of older adults when using public transportation. I hope to encourage them to use this system; to help build their self-confidence, regain their independence and stay in their own homes and communities.
Methodology- This study took place in Columbus, Ohio. The only public transportation currently present is the COTA bus system (Central Ohio Transit Authority). The study started with a questionnaire that was completed by 45 older adults about their use of public transportation. This was followed by one-on-one interviews with six active older adults and four professionals working for either COTA, in gerontology or a private transit system. These interviews covered apparent problems and potential solutions concerning the public transportation system.
Results- The analysis resulted in a series of specific physical and conceptual problems with possible solutions. For example, some older adults questioned traditional conventions of public transportation. They suggested including entertaining elements and activities at the bus stop and inside the buses. They also suggested ideas of what these activities might be. The results of this study suggest improvements to social sustainability and an enhancement of Universal Design concepts. Giving considering to older adults' problems, and implementing their ideas, may benefit, relatively, all generations using public transportation.

Andrews, G.A. and Phillips, D.R. (2005) Ageing and Place Perspectives, Policy, Practice. London: Routledge. "… For the individual, healthy aging means having a sense of well-being, the capacity for independent activity, meaningful involvement, supportive environments and positive attitudes. Being healthy is seen as having the resources for an everyday life that is satisfying to self and others… (p. 101)."
Findlay, R.A. (2003) 'Interventions to reduce social isolation amongst older people: where is the evidence?', in Ageing and Society, 23, pp 647-658. "… Most research indicates that engagement in social interaction is far more beneficial for health and wellbeing of older people (Bower, 1997; Fratiglioni, 2000; Moyer et al., 1999; Pennington, 1992; Victor et al., 2000; Wenger et al., 1996).
Fisk, A.D. (2009) Designing for Older Adults: Principles and Creative Human Factors
Approaches. Boca Raton, FL: CRC.
Preiser, W.F.E. and Ostroff, E. (2001) Universal Design Handbook. New York: McGraw-Hill, ["… Chapter 7"]
Projected Future Growth of the Older Population, by age: 1900-2050, persons 65 and older http://www.aoa.gov/AoARoot/Aging_Statistics/future_growth/future_growth.aspx#age [August 2008]
Thomas, W.H. (2004) What Are Old People For? How Elders will save the World. Acton, Mass.: VanderWyk & Burnham.

Keywords:
older adults, public transportation, social sustainability, quality of life, universal design

Theme: *physical environment, health and wellbeing; age friendly built environments from childhood to old age*

Woodland as working space: where is the restorative green idyll?

Amanda Bingley
Lancaster University

Much has been written on the beneficial, restorative qualities of 'natural'(non-built) rural or urban 'green' space, including woodland, in promoting mental and physical health when accessed for leisure, sport and education (O'Brien, 2008). In contrast, with the exception of rural health studies, thereis relatively little debate about the health benefits of 'green space' as workplace, especially in woodland and forests. In the UK, this apparent gap in theliterature may be due to the invisibility of a tiny percentage of the workforcenow employed in forestry. However, in recent years there has been a small,though significant, resurgence in the number of people seeking opportunities to train and work in woodlands using traditional, sustainable managementsuch as coppicing (Oaks & Mills, 2010), and an exploration of the health issues ofwoodland work is timely.

As a health geographer, interested in the relationship between health andplace, I explore some ideas around healthy working in green space by applying key concepts of Attention Restoration Theory (ART) (Kaplan, 1995) (change, compatibility, fascination, extent and diversity) to a narrative analysis of secondary data (published oral histories and written narrative accounts) by local people employed in the coppicing industry in NW England. In discussing my findings, I look at the reasons people seem to seek woodland work; the extent to which woodland as working space is perceived as a restorative green 'idyll', when it is also the arena of running a viable business; and challenges to the idea of woodland as restorative when, due to complex working conditions, it may cease to be a healthy working environment and become, in part, detrimental to wellbeing. Finally, I explore how woodland may be felt by coppice workers to contribute to maintaining and sustaining health when used as working space, leisure and/or educational space.

Kaplan, S. (1995) 'The restorative benefits of nature – toward an integrative framework', in Journal of Environmental Psychology, 15, 169-182.
Oaks, R. and Mills, E. (2010) Coppicing and coppice crafts: a comprehensive guide.
Ramsbury: Crowood Press.
O'Brien, L. (2008) 'An increasing focus on health and well-being and the contribution of trees and woodlands to this agenda', in A World of Trees, 16, 34-35.

Keywords:
health, wellbeing, woodland work, ART, narratives

Theme:
physical environment, health and wellbeing

Landscaping project in an open area within the Federal University of Santa Catarina: 'The Universal Garden'

Vera Helena Moro Bins Ely, Márcio Thomasi da Silva and Vanessa Goulart Dorneles
Universidade Federal de Santa Catarina, Brazil

The campus of the Federal University of Santa Catarina (UFSC) has few public open spaces for use by its community. The few that exist have maintenance problems, are unsuitable for appropriation and for the development of leisure activities. To overcome this problem, a proposal was suggested for a landscaping project for an important plaza of the university, a place of great population flow on campus. This extension project for the plaza was developed by the group PET, which was undertaking the Architecture and Urbanism course at UFSC, and it was called 'Universal Garden'. The key project objective was to transform a rundown area into a place of recreation and social living, where students, employees, and the campus community around UFSC could have a plaza rich in sensory experiences, thanks to its landscaping.

In order to achieve the best designed space possible for all, universal design principles were applied, that is, the design philosophy that aims to meet the needs of the widest possible range of people. Furthermore, the design of the 'Universal Garden' is a reference to the application of universal design in public spaces in the city of Florianópolis. This paper will present the project development stages, as well as its outcome. The preliminary stage includes a survey of existing vegetation, the current flows of people, a study of the shade offered in the area throughout the year, the most suitable coating materials for accessibility and, above all, a study of the various sensory attributes of vegetation that can stimulate individuals' different senses, regardless of their physical and cognitive needs. The final project will present the universal design strategies, and also the proposed vegetation and recreation spaces for appropriation.

Keywords:
universal design, project for all, landscape project, universal garden, outdoor areas.

Theme:
physical environment, health and wellbeing

Mel Burton, Nicola Dempsey and Nigel Dunnett
University of Sheffield

The power of flowers: improving landscapes for the long term in socially deprived neighbourhoods

This presentation focuses much-needed attention on place-keeping, that is, the management of open space which maximises social, economic and environmental benefits. Without place-keeping, public spaces can fall into a downward spiral of disrepair where anti-social behaviour takes over, residents feel unsafe and choose to use other spaces. The economic and social costs of restoring such spaces can, therefore, be considerable.

This presentation calls on a research project conducted in summer 2010 by researchers at the University of Sheffield. The project was designed to find out what residents think about the land management technique, Pictorial Meadows, in five sites located in Sheffield, Leeds and Wakefield.

Here, Pictorial Meadows has been used as a method of temporary land management on 'cleared sites' in socially deprived neighbourhoods: sites where housing had been demolished leaving bleak landscapes of poor quality green space (and/or rubble) with associated anti-social behaviour and misuse. The Pictorial Meadows technique was employed to improve the spaces visually by providing a colourful alternative to mown grass. This is through the use of colourful annual flower seed mixes which have an extended flowering season to create dramatic and dynamic flowering meadows with benefits for biodiversity.

The presentation will show the extent to which residents agree that installing the Pictorial Meadows has made their areas/housing estates visually more attractive, safer for users and that it contributes to their individual wellbeing. While open spaces that include trees and grass are popular with residents, the research shows that the flowers – and the benefits residents believe they bring – are most strongly appreciated in these neighbourhoods.

Keywords:
Pictorial Meadows, flowers, landscape, place-keeping, wellbeing

Theme:
physical environment, health and wellbeing

Camilo Calderon
SLU - Swedish University of Agricultural Sciences

Participation in the context of conflict, difference and power – A case of participatory urban open space planning in Barcelona

As cities are becoming increasingly multicultural and pluralistic, participatory processes are needed that can cope with the multiple and often conflicting economic, socio-political and symbolic interests/views of those involved in decision-making processes. As such, this paper highlights the need to better understand the conflicts and power relations that can arise when trying to involve local communities in the planning of urban open spaces; and it aims to contribute to knowledge that can help to address such issues.

The first aim was achieved by exploring the challenges that arose in the planning of open spaces in a highly dense, deprived and multicultural neighbourhood of Barcelona called "La Mina". In this project, open spaces were considered to be a key feature in the overall transformation of the area, thus a participatory process was implemented which aimed to produce a holistic plan that would result in physical transformation, and social and environmental programmes. Despite the great efforts and resources put into the project, the analysis of its process and outcomes show the conflicting interests and interpretations of the neighbourhood's problems and solutions, as well as uneven power distribution in the final decisions. This is evident in the contrasting views of the evaluation of the project; whilst the project has won national and international recognition, the local community still considers that their main needs and problems have not been resolved.

Building on the results of the study and on agonistic pluralism theories, the paper concludes by laying the theoretical foundation for processes that place the question of conflicts, differences and power at its very centre. This is considered to be essential given the need for participatory processes that identify and provide for the different and contrasting needs and desires of "all" in the diverse and complex mosaic of our cities.

Keywords:
urban open spaces, participatory planning, conflicts in planning, agonistic pluralism, deprived neighbourhoods

Theme:
inclusive design and sustainable community planning

Planning of public space as a contribution to social cohesion

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Institute of Sociology of Spatial Planning and Architecture, Vienna University of Technology

Keywords:
social cohesion, participation, self-organisation, social area analysis

Theme:
inclusive design and sustainable community planning

The idea of urbanity in the 'European city' is strongly related to both democracy and equal rights, on the one hand, and to public spaces where nobody is excluded and which is open for meetings of different kinds of people, on the other. There are increasing hints of the challenge of achieving social cohesion in European cities due to factors such as labour markets, welfare policies, migration and integration as much as an increasing differentiation within urban societies in terms of race and ethnicity, class, gender, social milieus and lifestyles.

The re-planning and re-designing of public spaces, therefore, is high on the agenda of municipal activity. This presentation focuses on providing expertise for the city administration of Vienna, where seven steps are suggested, beginning with a multidimensional analysis (social area analysis) via questions of design, security and participation, and ending up with the suggestion that after 'finishing', the work has to continue to enable social groups to use the new designed stage for more socially integrative behaviour and practice.

Breitfuss, A. et al (2008) Integration im öffentlichen Raum. Stadt Wien, Magistratsabteilung 18 (Hrsg.): Werkstattbericht, Nr. 82.
Dangschat, J.S. (2009) 'Space Matters – Marginalisation and Its Places,' in International Journal of Urban and Regional Research, 33 (3), 835-840.
Dangschat, J.S. and Hamedinger, A. (2007) 'Sozial differenzierte Räume – Erkenntnisinteresse, Problemlagen und Steuerung', in Dangschat, J.S. and Hamedinger, A. (Hrsg.) Lebensstile, Soziale Lagen und Siedlungsstrukturen. Hannover: ARL, pp.206-239.

A study of the outdoor activities of disabled wheelchair users, in snowy conditions, in Japanese cities

Nana Fukuda and Ryuzo Ohno
Tokyo Institute of Technology

Keywords:
disabled people, wheelchairs, action plan, snowy city, environmental factors

Theme:
inclusive design and sustainable community planning; physical environment, health and wellbeing;

Japan has experienced an incomparable rapid population increase for the last few decades. Moreover, Japan is now facing a decrease in its workforce. This situation is leading policy makers to reconsider now the needs of the elderly and the disabled in society. The Japanese government, keen to implement 'normalisation' policies, has now launched wide reforms to create barrier-free design in city planning and transportation. This study outlines the different types of daily activities in snowy conditions for disabled wheelchair users, based on a questionnaire.

Snowfalls prevent disabled people from going out in winter. Consequently, their frequency of outings decreases compared to people without disabilities who do not want to go out in winter because of snow and coldness. On the other hand, the results show that disabled people in wheelchairs would not mind going out in winter, but snow prevents them from moving easily on the roads. Environmental factors, such as accessibility, also influence many of their outdoor activities. People make an 'action plan' when they go somewhere which consists of three factors: choosing the destination, route selection, and means of transportation. Disabled wheelchair users tend to consider, firstly, 'can I take my car there?' It is still less convenient for disabled people to take public transport to go somewhere, that is, if they cannot take the transportation they always use, they might not be able to go out in the first place. Secondly, the accessibility of destinations matters. Once the means of transportation is decided, the route seems to be selected. This differs from the action plans of people without disabilities who put more value on choosing their destinations. When disabled people choose destinations, environmental factors are more important than those that relate to psychological satisfactions such as atmosphere, comfort, and so on.

Ana Gacic
Faculty of Agriculture, University of Novi Sad, Serbia

A study of accessibility, quality and use of school grounds at a school for blind and visually impaired children in Belgrade, Serbia

The study was conducted at a school for blind and visually impaired children in Belgrade, Serbia. It aimed to examine whether the school grounds in this school were designed according to universal design principles. Universal design is based on the principle of designing for people of all abilities (Miyake et al., 1996). It is the act of creating each element to be beautiful and usable by all people (Miyake, 2002). This study's researchers adapted and combined a variety of methods to record this, including direct observation, checklists and student interviews which aimed to explore the relationship between the design of the school grounds and the quantity and quality of children's activity; as well as their ability for independent mobility and orientation in such a setting.

It was established that the school grounds were not designed according to universal design. Also, the standards for organising accessible open spaces were not in compliance with the law. Furthermore, it was found that the children were not provided with adequate conditions for independent mobility and orientation, thus we recorded a low intensity level of usage of the outdoor areas for educational and other activities. Consequently, they remained indoors for most of the time. We concluded that it is extremely important to apply set standards for accessibility and universal design for organising specialised facilities, such as this one. Abiding to set strict standards will help improve the quality of life and education of the blind and visually impaired children that reside in such facilities, and enhance their ability for independent mobility and orientation.

Miyake, F.A., Kameyama, H. and Miyake, Y. (1996) Creating people-friendly parks: From barrier-free to universal design. Tokyo: Kajima Institute Publishing.
Miyake, F.A. (2002) 'Linking people with nature by Universal Design', in Shoemaker, C.A. (ed.-in-chief) Interaction by Design: Bringing People and Plants Together for Health and Well-Being. An International Symposium. Iowa: Iowa State Press, pp.53-62.

Keywords:
school grounds, visually impaired children, accessibility, universal design, mobility and orientation

Theme:
inclusive design and sustainable community planning

J Aaron Hipp and Amy E. Eyler
Washington University in St Louis

Ciclovias as an urban initiative to get city residents outdoors

St. Louis (MO, USA) Open Streets is a ciclovia initiative implemented in 2010 to highlight assets of the city and encourage residents to be active. Open Streets provides space for recreation, encourages sustainable forms of transportation, facilitates interaction with the urban built environment, and complements the city's bicycling, complete streets, and greening initiatives. A six-mile route is closed to vehicular traffic on event dates with routes varying to highlight a different neighbourhood of the city. Working with the mayor's office, we conducted an evaluation of the four 2010 events.

Though Open Streets provides an excellent venue for neighbourhood involvement and a safe place for children, families, and older adults to come out and play, city residents and children were underrepresented. Only 14% of observed participants were identified as children/youth and only 52% of adults surveyed resided within city limits.

For those participating, the event was highly successful. Survey participants reported an average of 78.5 minutes of physical activity during the event. This number is greater than the 75 minutes of aerobic activity per week recommended by the US CDC. Forty-three percent of respondents stated they would not be performing physical activity during this time if they were not participating in Open Streets. Open Streets provided additional measures of success for getting people outdoors in their community. In terms of pride and a sense of community, respondents reported a positive change in their feelings toward the city (89%) and in perceived vibrancy along the route (74%). Economically, 56% were made aware of new restaurants and businesses along the route and 82% of respondents spent money.

This project represented a pilot evaluation of a ciclovia and has led to a grant proposal to identify strategies and policies to increase the participation of urban, low-income families for purposes of increasing activity and creating a sense of community.

Keywords:
ciclovia, physical activity, sense of community, urban environments, families

Theme:
physical environment, health and wellbeing

Revitalizing people spaces along the waterways' network in Hangzhou, China

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Beijing Turenscape Design Institute

Dihua Li
Graduate School of Landscape Architecture, Peking University

Hangzhou, with its famous West Lake and dense network of waterways, used to be a water city which enjoyed a harmonious relationship with its inhabitants. The city, however, is now facing four challenges under rapid urbanisation: 1) the ecological functions of the waterways' system, such as its habitats, flooding control, water purification, are degrading; 2) the recreational value of its canals and rivers is declining; 3) the perception of the waterways' network and its cultural features is weakening; and 4) living beside the water is disappearing. In brief, people spaces along the waterways, as well as its vitality, is being lost.

Based on field and questionnaire research in Hangzhou, this paper proposes that the overall Ecological Infrastructure (EI) oriented by water, as the foundation for revitalising waterfront people places, should be established on a regional scale, primarily by constructing critical networks of habitat conservation, water regulation, culture and recreation, so that comprehensive ecosystem services, the benefits people would obtain from the waterways' system, can be provided.

In particular, a recreational and cultural network of EI, integrated with canals and rivers, is particularly important for city life and people places adjoining water in Hangzhou. Greenways, as corridors leading from the waterways' network, would offer continuous walkways and bikeways to connect open spaces, such as, parks, plazas, community or neighbourhood centres, and the cultural resources of the city's historic sites and vernacular landscapes.

Ultimately, EI design guidelines, the useful manual accepted by the Hangzhou government, are presented mainly for site-scale application. Focusing on reclamation of channels, banks, walkways/ bikeways, access, vegetation, and facilities, specific guidelines are proposed for each section of the river and canal, so that revitalisation of people spaces along the water can be thoroughly achieved.

Keywords:
people spaces, waterway networks, ecological infrastructure, ecosystem services, Hangzhou

Theme:
inclusive design and sustainable community planning; physical environment, health and wellbeing

Children building dens

Thea McMillan
University of Edinburgh

Observing children in their everyday, it becomes clear that they use and perceive spaces differently from adults, leading to the wider research question: what is the process by which children perceive and create spaces, and how can we use a better understanding of this to involve children in the architectural design process?

For this specific ongoing study, I am observing and recording children making dens, in various different indoor and in-nature settings. My methodology is one of (sensory) ethnography, using participant observation to gather data; including film, photography, architectural process drawings, field notes and conversations with the children; how they talk about what they have made is as important as observing the process of making.

For the den-building workshops, children aged 4-6 and 9-11 are provided with a variety of materials, and recorded in a number of settings. Assuming all children are different, the study group includes a 6-year-old girl who has additional support needs in movement, seeing the world, and communicating, and is very much a part of this diverse group. She will need extra consideration to ensure that her perception of, and reaction to, the den space can be accurately recorded; I propose a more specialised process, enabling her design process through a series of yes/no questions, asking her peers to describe how they see her using the den, and recording closely her changing facial expressions and reactions to it.

As I am at the beginning of my PhD, I am aware that this abstract is necessarily hypothetical, however, I would hope that the questions raised are of discursive interest, and by June 2011, I will have added considerable data from my ongoing fieldwork to contribute to the consideration of children creating their own spaces of play.

Burke, C. (2008) 'Play in focus: children's visual voice in participative research', in Thomson, P. (ed.) Doing visual research with children and young people. Oxon: Routledge, pp.23-36.
Christensen, P. and James, A. (2000) 'Childhood diversity and commonality: some methodological insights', in Christensen, P. and James, A. (eds.) Research with children: Perspectives and practices. Oxon: Routledge, pp.156-172.

Keywords:
children inclusive participation process spaces

Theme:
physical environment, health and wellbeing

Julie Melville
Centre for Intergenerational Practice, Keele University

A study of how the development and design of the UK's first purpose-built intergenerational site has influenced social interactions between the generations

Many changes in society, such as increased geographic mobility, increased work hours, a continually changing economy and improved technological advances, have led to generations frequently becoming segregated from one another, especially younger and older adults (Hatton-Yeo and Ohsako, 2000; 1-72). Naturally occurring opportunities for exchange and interaction between the generations are not as prevalent in contemporary society as young people often spend the majority of their time in either school or childcare, while many older adults now live and socialise in age-isolated environments, leaving limited time and opportunities to gather together. Consequently, these social and economic changes have contributed to the reduction of potential opportunities for age integration. This segregation can lead to unrealistic, negative stereotypes and a decrease in positive exchanges between the generations. For the purpose of this paper, generations are defined as those under the age of 25 and those over 60 years old.

One response to these issues has been the development of intergenerational shared sites and spaces (IGSS) to simultaneously serve the needs of multiple generations. Whilst such projects now cover a diverse range of indoor public spaces (e.g., schools, day centres, libraries), there are very few designated outdoor spaces where young people and older adults are actively encouraged to participate in activities together. Therefore, a critical issue emerging within the intergenerational field is the lack of attention being paid to how the built environment promotes or inhibits intergenerational engagement (Turner, 2005; Pain, 2005). Based on their review, Kuehne and Kaplan (2001) argue that there is a considerable need to distinguish, understand and observe how the 'outside environment', activities occurring in such spaces, and characteristics of participants, influence intergenerational relationships. Moreover, Turner (2005) suggests that outdoor spaces such as communal gardens, playgrounds, town squares and parks offer special opportunities for intergenerational interaction.

Consequently, this paper explores intergenerational use of shared public spaces by reporting on a study of the UK's first purpose-built intergenerational centre in the London borough of Merton. The centre consists of an architect-designed, pre-fabricated building and surrounding outdoor spaces, including an intergenerational playground and garden. By utilising documentary analysis, semi-structured qualitative interviews, unstructured ethnographic observation and structured non-participant observation, this project explores the processes involved in the centre's development, and the ways in which the resulting design of the centre's indoor and outdoor spaces has influenced the level and types of interactions between centre users. In so doing, it will answer questions such as: in what ways do older and younger participants use these spaces?; are the different spaces user friendly for all age groups?; are they conducive to a narrow or a wide range of IG interaction?; and are there cues in the environment which suggest certain modes of interactive behaviour and discourage others? In summary, this paper will highlight the complex interplay between the IGSS environment and intergenerational participants and explore how a purpose-built intergenerational space facilitates and/or impedes IG interaction.

Keywords:
intergenerational, shared sites, garden, playground

Theme:
age friendly built environments from childhood to old age

Hatton-Yeo, A. and Ohsako, T. (2000) Intergenerational programmes: public policy and research implications: An international perspective. Hamburg, Germany: UNESCO Institute for Education.
Holland, C., et al (2007) Social Interactions in Urban Public Spaces. York: Joseph Rowntree Foundation.
Pain, R. (2005) Intergenerational relations and practice in the development of sustainable communities. Background paper for the Office of the Deputy Prime Minister. Durham University: International Centre for the Regional Regeneration and Development Studies.
Turner, D. (2005) 'Facility design and building', in Generations United (eds). Under one roof: A guide to starting and strengthening intergenerational shared site programs. Washington, D.C.: Generations United, pp. 21-46.

Simulations as a spatial learning tool

Andrew Phillip Payne
Savannah College of Art and Design

Keywords:
usability, inclusive design, architecture, design education, human-centred design

Theme:
inclusive design and sustainable community planning

As part of the 'Inclusive design and sustainable community planning' session of the INCLUDE 2011 conference, the Sight, Sound + Movement accessibility workshop offers architecture students the opportunity to simulate various disabilities. Simulations include reduced/loss of vision and mobility impairments such as a single user wheelchair, companion wheelchair and temporary impairments such as a leg brace with crutches. The exercises conducted during this multi-day workshop are not intended to convey the actual experience of the impairment or 'what it's like to be blind' but rather how the built environment and routine design decisions impact the user's ability to use, experience and navigate space.

Interactions with toilet stalls, sinks and accessories, entry doors, stairs, elevators, ramps, parking and building materials are just a few of the opportunities students are exposed to during the simulations. In addition, students are tasked with examining their everyday paths of travel to identify good and bad examples of accessible design.

This workshop is offered to design students as an introduction to the architect's responsibility to all users, without discrimination, when designing interior and exterior environments for private and public users. These types of simulations are very common in social and behavioural science education and have become valuable, in a very tangible way, in the architecture education curriculum.

Campus open space as part of urban public space: The case of Gadjah Mada University, Yogyakarta, Indonesia

Rony Gunawan Sunaryo
Architecture Department, Petra Christian University

Nindyo Soewarno and Bakti Setiawan
Architecture and Planning Department, Gadjah Mada University

Keywords:
campus open space, public space, tipo-morphology analysis, inclusive planning

Theme:
inclusive design and sustainable community planning

Gadjah Mada University (GMU) in Yogyakarta city is the oldest state university in Indonesia, having been established for 61 years. GMU campus has a total area of 671,174 sqm, over 50% of the area is open space and it has become the dominant element in morphology of Yogyakarta in Indonesia's post-independence era. Urban public facilities - hospitals, student dormitories, offices, conference halls – have all grown in and around the campus. The campus' open spaces - streets, courtyards, squares - for more than five decades were open and accessible to everyone for public activities; there was a symbiosis between the spaces of the campus and public interest.

This situation changed in the last decade as security and maintenance issues surfaced on campus, such that making the campus environment open to the citizen was seen as a source of problems so that necessary arrangements and restrictions were made to the use of open spaces at the GMU campus. From the standpoint of management of the internal campus, this step is an improvement; conversely, from the viewpoint of the citizen, this step is regarded as the beginning of exclusivity at the GMU campus.

This research focuses on what, and how, the role of that campus has an impact on open space in public life and the formation of urban space morphology of Yogyakarta city. The method used is tipo-morphology, with the reading process synchronic - current conditions and diachronic - process changes that occur from the built form as well as the use of space. The results found that the GMU campus has a dominant role in the formation of urban social activity and is an important element in the morphology of Yogyakarta, therefore, the planning and management of campus open space should be inclusive, involve more stakeholders, namely, the government and citizens, for the sustainable environment.

Summary papers and abstracts

My favourite place:
Royal Botanic Garden,
Edinburgh, UK

Sarah Boyack

Sarah Boyack was elected as a Member of the Scottish Parliament for Lothian on May 5th 2011, having previously represented the Edinburgh Central constituency in the Scottish Parliament from 1999-2011. She was appointed by Ed Miliband and Iain Gray to co-chair the Labour Party's review following the results of last month's Scottish elections. In November 2004, she received the RSPB Goldcrest Award for the greatest contribution to the development of environmental policy since devolution and she currently serves as Scottish Labour's Shadow Cabinet Secretary for Rural Affairs, Environment and Climate Change. Prior to entering politics, she worked as a Planning Officer in London and Stirling and as a Lecturer in Planning at Edinburgh College of Art and Heriot-Watt University.

My favourite place:
Botanical Gardens, Calella
de la Palafrugell, Costa
Brava, Spain

Elizabeth Burton

Elizabeth Burton is Professor of Sustainable Building Design and Wellbeing at the University of Warwick and a Principal Investigator of Inclusive Design for Getting Outdoors (I'DGO). Having established the WISE (Wellbeing in Sustainable Environments) research unit at Oxford Brookes University, she moved into her current post in September 2009, forging a cross-disciplinary link between the School of Health and Social Studies and the School of Engineering. An Architect and Urban Designer by training, her aim as a researcher is to develop a sound evidence base for architectural practice; an objective recently furthered by a Dream Fellowship from the UK Engineering and Physical Sciences Research Council. Elizabeth is passionate about the social aspects of sustainability and the impact of the built environment on people's wellbeing, quality of life and mental health and has particular expertise in ageing research, including dementia-friendly design.

Keith Irving

Keith Irving is the Manager of Living Streets Scotland; a national branch of the UK charity championing pedestrians' needs, rights and priorities. Together with his team, he focuses on engaging with communities and campaigning for safe, attractive, enjoyable streets, where people want to walk. His current priorities range from increasing walking levels at secondary schools to promoting a 20mph speed limit on residential and high streets within Scotland's towns and cities. Keith has an MSc in Transport Planning and, prior to joining Living Streets, he worked as a Senior Researcher in the Scottish Parliament, focusing on transport, environment and health issues, and as the Travel Plan Officer for the South East Scotland region.

My favourite place:
Tynecastle,
Edinburgh, UK

Marketta Kyttä

Marketta Kyttä is a Senior Research Fellow at the Centre of Urban and Regional Studies at Aalto University, Finland. Having obtained a Masters of Psychology at the University of Helsinki in 1989, she went on to complete a PhD in architecture and urban planning in 2004; subsequently winning the Lea Pulkkinen and Tapio Nummenmaa Awards for her innovative dissertation on environmental child-friendliness. Her research focuses on urban health and happiness, participatory-planning and the everyday aspects of place, and she leads a multidisciplinary team developing award-winning softGIS methodology. Her work has been funded by the Finnish Ministry of Education, the Finnish Academy and the Finnish Funding Agency for Technology and Innovation and she is a Member of the Advisory Committee for the Asuntosäätiö (Finnish Housing Foundation), as well as a lecturer, doctoral student supervisor and international journal referee.

My favourite place:
Marken lempipaikka,
Finland

My favourite place:
Voorstraat in my home town, Voorschoten, The Netherlands

Rob Methorst

Rob Methorst is a Senior Advisor at the Rijkswaterstaat Centre for Transport and Navigation; one of five Centres of Excellence attached to the Dutch Ministry of Infrastructure and the Environment. A Geographer-Planner by training, he has 30 years experience in the field of transport and road traffic safety, including strategic policy planning at local, provincial and national authority level. Chair of the EU COST Action 358 on Pedestrians' Quality Needs, Rob specialises in understanding the needs and behaviour of vulnerable road users, human factors in road safety and the mechanisms and impact of 'shared space' developments. He was a staff member of the Dutch Pedestrians Association and is currently an advisor to the 'pedestrian-friendly neighbourhoods' element of Inclusive Design for Getting Outdoors (I'DGO).

My favourite place:
Hamamatsu, Japan

Rita Newton

Rita Newton is a member of the Royal Institution of Chartered Surveyors with a postgraduate Master of Education from the University of Manchester. She moved into the discipline of inclusive design in the mid-1990s and jointly established the SURFACE Inclusive Design Research Centre at the University of Salford with Professor Marcus Ormerod in 1995. Rita's role within SURFACE is largely focused on research projects, such as Inclusive Design for Getting Outdoors (I'DGO) and Visions 2030, and her particular areas of interest are understanding user needs and exploring ways in which they can be documented, interpreted and met within the built environment, particularly at neighbourhood scale. Rita is also a Senior Lecturer at the University of Salford and manages the SURFACE MSc in Accessibility and Inclusive Design.

Marcus Ormerod

Originally working in industry as an RICS-accredited Chartered Surveyor, Marcus moved into academia in 1991 and, alongside Rita Newton, founded the SURFACE Inclusive Design Research Centre at the University of Salford in 1995. A skilled teacher of both the principles and techniques of access auditing, he has been a registered Access Consultant since 1999 and sits on the Advisory Panel for the National Register of Access Consultants (NRAC). He has worked to champion change at national and international levels, sitting on the British Standards Committee on Accessible Housing and the Department for Trade & Industry's Global Watch Mission on Intelligent Housing, as well as working closely with the Access Association. Marcus is also part of the international group of Universal Design Educators Online and a Principal Investigator of the Inclusive Design for Getting Outdoors (I'DGO) research project.

My favourite place: Kendoon Loch and island near the Galloway Forest, Kirkcudbrightshire, UK

David Rudlin

David Rudlin manages URBED (Urbanism Environment and Design), a planning, design and research consultancy based in the northwest of England. In his early career, he worked for both Manchester City Council and as a member of the Homes for Change co-operative on the redevelopment of the inner city district of Hulme and, since joining URBED in 1990, has led a number of high-profile projects, from the Oldham Beyond Vision to the Temple Quay masterplan in Bristol. Co-author of Sustainable Urban Neighbourhood: Building the 21st Century Home, David has written research reports for the Joseph Rowntree Foundation, Friends of the Earth and the Urban Task Force. He is a former member of the CABE Design Review Panel, a founder Academician of the Academy for Urbanism, and Chair of both Beam in Wakefield and the Sheffield Design Panel.

My favourite place: Alexandra Park, Manchester, UK

My favourite place:
Millennium Park,
Chicago, USA

William Sullivan

William Sullivan is Professor of Landscape Architecture at the University of Illinois at Urbana-Champaign. Having trained as a Landscape Architect, he obtained a PhD in Natural Resources with a concentration in Environment & Behavior in 1991 and has since taught Environmental Design at Kansas State University, the University of Michigan, and at Illinois. His research interests focus on the impact of the built environment on human health and wellbeing and he has published extensively in this area, most recently in *The Routledge Handbook of Urban Ecology*. Having won a number of academic awards and competitive grants, he is the current President of the Council of Environmental Deans and Directors and Director of the Education Justice Project's Prison Garden programme at the Danville Correctional Center, Illinois.

My favourite place: The
Meadows,
Edinburgh, UK

Penny Travlou

Penny Travlou is a Research Fellow at OPENspace and a Lecturer at the Edinburgh School of Architecture and Landscape Architecture (ESALA). Building on her PhD from the Department of Geography at the University of Durham, her interests lie in the field of cultural/urban geography and the use of new technologies in researching teenagers' experience of public space. Penny was one of the primary investigators in a comparative international project on the perception and use of public open spaces by teenagers in Scotland and the United States; research for which she was awarded two grants and a Joint Activities Award from The British Academy (with Catharine Ward Thompson). She has worked on Wild Adventure Space for Young People, a scoping study for Natural England, and is currently Co-Investigator of the collaborative ELMCIP project, funded by the Humanities in the European Research Area.

Ian Wall

My favourite place: the waterway at Edinburgh Park, Edinburgh, UK

Ian Wall has an Honorary Doctorate of Science from Heriot-Watt University and is an Honorary Fellow of the Royal Incorporation of Architects in Scotland. A former Chief Executive of the property development company, The EDI Group Ltd, he was instrumental in developing the pathfinder Urban Regeneration Company, PARC Craigmillar, with the City of Edinburgh Council and led its groundbreaking redevelopment project for five years. As “one of the Top 25 Clients for Architecture in Britain” (the Royal Institute of British Architects), he has also been responsible for Edinburgh Park and the regeneration of both Wester Hailes Town Centre and the Tron area of Edinburgh’s World Heritage Site. He created the Edinburgh International Science Festival over twenty years ago and sits on numerous boards, including those of Shelter UK, Children in Scotland and The Local Authorities and Research Councils’ Initiative (LARCI).

Catharine Ward Thompson

My favourite place: Little Tunk lake, Maine, USA

Catharine Ward Thompson is Research Professor of Landscape Architecture at the Edinburgh School of Architecture and Landscape Architecture (ESALA) based at Edinburgh College of Art and the University of Edinburgh. Director of OPENspace, the research centre for inclusive access to outdoor environments (which celebrates its 10th anniversary this year), her research focuses on environment-behaviour interactions, landscape design for older people, children and teenagers, and salutogenic environments. Since 2003, she has been Director of the EPSRC-funded Inclusive Design for Getting Outdoors (I’DGO) consortium and is currently a Co-investigator of the knowledge transfer group, KT-EQUAL, focused on extending quality life for older and disabled people. A Fellow of the Chartered Landscape Institute and the Higher Education Academy, she has lectured widely throughout the UK, Europe, the USA, Canada and Australia and currently sits on the Scottish Government’s Good Places, Better Health Evaluation Group.

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I'DGO
kt equal Exchanging Knowledge | Extending Quality Life
EPSRC Pioneering research and skills