Pedestrian Pathways in the Healthy City

30 June – 4 July 2015
Bristol has been awarded the title of European Green Capital City for 2015. To mark this prestigious designation, a 12-month programme of events is being put in place, celebrating Bristol’s progress in becoming a sustainable city and highlighting its plans for the future. The vision is ‘for Bristol to become a global leader in sustainable urban living – a global exemplar for happy healthy cities’.

One major event is the 52nd International Making Cities Livable Conference (June 29th-3rd July 2015) where the University of Bristol’s Institute for Advanced Studies, Elizabeth Blackwell Institute for Health Research, Cabot Institute and Future Cities Collaboratory will be coordinating the session on Pedestrian Paths in the Healthy City.

This proposal aims to bring key academics from across the Worldwide Universities Network to take part in this international conference and in a following symposium at the University of Bristol to explore the practice of walking as an aspect of the liveable city.

Walking will be explored from both a qualitative and quantitative perspective, and new research projects will be hosted by the University of Bristol’s Future Cities Collaboratory, a collaborative research framework for the University to work with external partners around the issues of future cities and communities, with Bristol as a potential test bed.

The research will respond to and reflect on the development of an app which can be employed as a source of research data about the ways in which walking through a city is altered, enhanced, encouraged and deliberately or subliminally directed by representations of its history. The app will produce data about users’ pathways through the environment, their choices, preferences and explorations, and offer insight therefore into the interaction between a guided path and the behaviour of individuals. Analysis of the data will indicate the choices people make in their adoption of a cultural route through the city.

Professor Ralph Pite, Director of IAS
Symposium Programme

**Tuesday 30th June 2015 – IMCL Session and UoB Reception**

**IMCL Session - The Watershed, Cinema 3 (for registrants only)**

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<tr>
<th>Time</th>
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<tr>
<td>2 pm</td>
<td>Pedestrian Pathways</td>
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<tr>
<td>2 pm</td>
<td>Moderator/Discussant: Lamine Mahdjoubi, Bristol, UK</td>
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<tr>
<td>3 pm</td>
<td>Suzanne Audrey (Bristol): <em>The contribution of walking to work to adult physical activity levels</em></td>
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<td>3 pm</td>
<td>Jonna Monaghan (Belfast)</td>
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3:30 pm – 3:45 pm Discussion

3:45 pm – 4 pm Coffee

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<th>Time</th>
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<tr>
<td>4 pm</td>
<td>What is a Livable City?</td>
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<td>4 pm</td>
<td>Moderator: Suzanne H. Crowhurst Lennard, Portland, USA</td>
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<tr>
<td>5 pm</td>
<td>Liz Zeidler (Happy City, Bristol, UK): <em>Happy City</em></td>
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<td>5 pm</td>
<td>Bruce Appleyard (San Diego State): <em>Toward Livability Ethics: A Framework to Guide Planning, Design and Engineering Decisions</em></td>
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**UoB Reception - The Orangery, Goldney Hall**

From 6 pm Reception and BBQ

**Wednesday 1st July 2015 – UoB Symposium Day 1**

**Venue – The Lancaster Room, Marriott Royal Hotel, College Green, Bristol**

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<thead>
<tr>
<th>Time</th>
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<tr>
<td>9 am</td>
<td>Registration and Coffee</td>
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<tr>
<td>9:45 am</td>
<td>Symposium Welcome</td>
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<tr>
<td>10 am</td>
<td>Nick Lieven, Pro Vice-Chancellor International, University of Bristol</td>
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<td>10 am</td>
<td>Nick Haskins, General Manager, Worldwide Universities Network</td>
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<td>10 am</td>
<td>Ralph Pite, Director of Institute for Advanced Studies</td>
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**10:00 am Workshop A: Walking and Health**

**Chair: Suzanne Audrey (Bristol)**

- *What are the physical and mental health benefits of walking?*
- *How are they measured currently and how might they be in the future?*
- *What role might co-production play in the definition and measurement of walking's health benefits?*
Mona Kristin Aaslund (Bergen): Walking – multiple purposes and great benefits
Suzanne Audrey (Bristol): Walking towards a healthy city
Anna Bornioli (UWE): Affective responses to walking in historic environments: moderation of setting type and traffic levels
JF Burn (Bristol): Pathways towards understanding health from walking
Tom Calvert (UWE): Interactions between the inner worlds of urban pedestrians and their experienced surroundings
Todd Handy (British Columbia): Attention as a Risk Factor in Falls and Loss of Mobility
Simone Fullager (Bath): Walking as embodied social practice: Exploring the gendered movement of self in women’s recovery from depression

12:30 pm    Lunch

1:30 pm    Workshop B: ‘Walkability’ and the Built Environment

Chair: Colin Taylor (Bristol)

• What are the most effective, and cost effective, improvements to the urban environment to increase ‘walkability’?
• How far do the variety of urban landscapes - water-side, pedestrianized, green spaces, shared cycle and pedestrian tracks, etc - incentivise or discourage walking?
• What methods do we have (and can we foresee) for measuring the success of improvements to urban environment?

Lee Beattie (Auckland): Achieving the 10 minute walkable neighbourhood in Australia and New Zealand suburban locations
Nikolai Bode (Bristol): How social interactions between pedestrians can affect the ‘walkability’ of built environments
Crispin Cooper (Cardiff): Network models of pedestrian behaviour in cities
Ellie Cosgrave (UCL), Tom Crick (Cardiff) & Theo Tryfonas (Bristol): Digital media, pedometers and the social construction of a healthy space
Errol Haarhoff (Auckland): Living at higher density in transit-oriented development: the role of the walkable neighbourhood in delivering liveability
Ute Leonards (Bristol): Nudge, nudge, nudge: do floor patterns influence where we walk?
Marianne Vanderschuren (Cape Town): Walkability in cities in the global South: not just an engineer’s view

4 pm    Break

4:30 pm    Panel Discussion with non-academic partners and groups, including Bristol Green Capital Partnership members

Chair: Andrew Stuck (Rethinking Cities: www.rethinkingcities.net)

Ben Barker (Let’s Walk Bedminster: www.letswalkbedminster.co.uk)
Susan Carter (Bristol Ramblers: www.bristolramblers.org.uk)
James Jackson (WSP Group: http://www.wspgroup.com/en)
Paola Spivach (Sustrans: www.sustrans.org.uk)
Kevin Ramm (Green Crocodile Company: www.crocodile.org.uk)
Rosalind Turner (Netwalking South West: www.netwalkingsouthwest.co.uk)
# Thursday 2nd July 2015 – UoB Symposium Day 2

Venue – The Lancaster Room, Marriott Royal Hotel, College Green, Bristol

8:30 am  
Coffee

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<th>Time</th>
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<tr>
<td>9:00 am</td>
<td><strong>Workshop C: Social Sciences – More Walking for All?</strong></td>
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<tr>
<td><strong>Chair:</strong></td>
<td>Alex Franklin (Cardiff)</td>
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<tr>
<td></td>
<td>How can walking be made more attractive and more integral to urban living - with respect to work, leisure, retail and education?</td>
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<td>How can the impact and effectiveness of interventions be assessed most accurately?</td>
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<td>How can the circumstances of differing communities be incorporated into the walking agenda?</td>
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<td>Shanthi Ameratunga (Auckland): Engaging perspectives of people with disabilities and older people in a street transformation project in Auckland, New Zealand</td>
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<td>Yi Gong (Cardiff): Neighbourhood green space, physical function and participation in physical activities among elderly men: the Caerphilly Projective Study</td>
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<td>Sue Porter (Bristol): Walking Interconnections</td>
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<td>Rosalind J. Turner (Netwalking South West: <a href="http://www.netwalkingsouthwest.co.uk">www.netwalkingsouthwest.co.uk</a>): The Restoration of Balance – walking a more natural path, taking steps to build social capital in work &amp; education</td>
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<td>11:00 pm</td>
<td>Break</td>
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<tr>
<td>11.30 pm</td>
<td><strong>Workshop D: Arts and Humanities (I) Cultural and Historical Legacies</strong></td>
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<tr>
<td><strong>Chair:</strong></td>
<td>Robin Jarvis (University of West of England)</td>
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<td>What is the role of cultural legacy in the experience of urban life, and the potential contribution of the cultural industry to urban planning?</td>
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<td>How does the historical legacy contribute to the identity of a city and to the sense of identity and belonging of its citizens?</td>
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<td>What differences arise (and what new possibilities arise) when access to the city’s past occurs at the same time as moving through its present?</td>
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<td>Barbara Castillo (Bristol): The Lost Santiago: Reconstructing urban history through the eyes of contemporary chroniclers</td>
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<td>Stephen Hodge (Exeter): Archipedology: tactics for the itinerant planner</td>
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<td>Alison O’Byrne (York): Pedestrian tourism</td>
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<td>Samuel Stockley (Leeds): Walking as urban method: a history of urban walking methods and knowledge from Dérive to UrbEx</td>
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<td>Caragh Wells (Bristol): Freedom through Fiction: How literature helps us read the city</td>
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<th>Time</th>
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<td>1:00 pm</td>
<td>Lunch</td>
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<th>Time</th>
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<tr>
<td>2.00 pm</td>
<td><strong>Workshop E: Arts and Humanities (II) Development of a Walking App</strong></td>
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<td><strong>Chair:</strong></td>
<td>Ralph Pite (Bristol)</td>
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<td>What is the role of smart technology in the experience of urban life?</td>
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• How can smart technology be used to encourage more walking in the city and to promote health and wellbeing?

Rebecca Hutcheon, Michael Malay, Jack Thacker & Stephanie Codsi (Bristol): Development of ‘Romantic Bristol’ Walking App
Mike Jones (Bristol): Map your Bristol
Ralph Pite (Bristol): Talkswalking: Edward Thomas and Robert Frost
Greg Smart (500more: www.500more.com): The use of apps in digital health
Andrew Stuck (Rethinking Cities: www.rethinkingcities.net): Walking into the digital unknown - creative expeditions at the Museum of Walking

4:00 pm Break
4:30 pm Plenary Panel

Responses and Whole Group Discussion around these questions:

• How does the interdisciplinary perspective created by a symposium of this kind alter our perception of the issues involved and change the shape of future thinking and research about walkability?
• How does the potential for new interventions and new research data which is offered by smart technology alter the research landscape in this subject-area?

Friday 3rd July 2015

Meeting point - The Marriott Royal Hotel, College Green, Bristol

Walking Tour led by Rosalind J. Turner, Netwalking South West netwalkingsouthwest.co.uk
9:30 am – noon

Saturday 4th July 2015

The Meeting Room, Arnolfini

Field-testing the Romantic Bristol: Writing the City App

10 am – 11 am Welcome and introduction
11 am – 12:30 pm Testing the app
12:30 pm – 2 pm Lunch and feedback
Abstracts

Wednesday 1st July 2015 – UoB Symposium Day 1

Workshop A: Walking and Health

Mona Kristin Aaslund (University of Bergen):
Postdoctoral Researcher, Department of Global Public Health and Primary Care

Walking – multiple purposes and great benefits

Walking is a basic everyday function with multiple purposes allowing humans to move from one place to another, execute activities of daily living, be social with others, and experience new places and new things. Being able to walk also helps us to be more independent and is the most common form of physical activity as it is easy to do, require no equipment, is free of charge and can be done almost everywhere and anytime. Walking is also a sustainable and active way of transportation with multiple benefits both for health and environment. Although walking is a functional task that most people do automatically and without thinking about it, it is a very complicated function. It is greatly influenced by the proper function of several systems of the body such as the cardiorespiratory system, nervous system, muscles and joints, vision, cognitive function and psychology. As a result, walking is an important predictor for health. Changes in walking, such as a slowing in walking speed, has been found to be an important predictor for future health and several unwanted outcomes such as disease, falls, dementia, dependence and death. Walking speed has therefore been suggested as a human vital sign together with temperature, blood pressure, pulse and breathing. Avoiding time in sedentary positions and increasing time in physical activity such as walking have the potential for substantial health benefits. It has been found that walking, and particular brisk walking, reduces the chances for disease and increases health. However, even though the health benefits of walking are well known, people tend to walk less than before. Hindrances for walking may be motivation, habits, disabilities, safety and accessibility. To motivate people walking and decrease hindrances for as many people as possible is therefore a key issue in public health.

Suzanne Audrey (University of Bristol):
Senior Research Fellow, School of Social and Community Medicine

Walking towards a healthy city

There is compelling evidence that regular physical activity is effective in the prevention of chronic diseases (including cardiovascular disease, type 2 diabetes, some cancers, hypertension, obesity, depression and osteoporosis) and premature death, with the greatest improvements in health status seen when people who are least active become physically active. It is currently recommended that adults should aim to undertake at least 150 minutes of moderate intensity physical activity in bouts of 10 minutes or more throughout the week but many adults in the United Kingdom and other high-income countries do not achieve this. Increasing physical activity levels, particularly among the most inactive, is an important aim of current public health policy. Walking is the most common physical activity in England and has been described as near perfect exercise. It is a familiar, convenient and free form of exercise that can be
incorporated into everyday life and sustained into older age. One way for adults in employment to increase physical activity and incorporate exercise into their daily routine would be to walk during the commute to and from work. Walking at a moderate pace of five km/hour (three miles/hour) expends sufficient energy to meet the definition of moderate physical activity. The Walk to Work feasibility study, using accelerometers and GPS monitors to objectively compare walkers with car drivers, found that almost all of the walking commute was moderate physical activity.

Data from the 2011 Census in the UK suggest 9.8% of working adults walked to work: there may be scope to substantially increase this figure since 55% of part-time workers and 38% of full-time workers commuted less than 5 km. However, changing travel behaviour is extremely difficult. Qualitative research during the Walk to Work study found the views of both employers and employees ranged from resistance, through cynicism and confusion, to support for programmes to increase walking during the commute.

Anna Bornioli (University of the West of England):
PhD Student, Department of Geography and Environment Management

**Affective responses to walking in historic environments: moderation of setting type and traffic levels**

Levels of walking have dramatically dropped in the UK in the past thirty years, despite the positive impacts of walking on psychological wellbeing acknowledged by an emerging body of literature: in fact, walking is related to improved self-esteem, physical self-worth, mood and mind-set (review in Sinnett et al. 2011). According to scholars, several factors might explain the positive effects of exercise on psychological health: physiological effects, social elements and engagement with place. This research focuses on the latter aspect. In fact, studies in environmental psychology argue that the wellbeing effect of physical activity is mediated by the setting in which it is performed. Accordingly, literatures on walkability illustrate that the attractivity of a place, together with its aesthetic quality, is the most important element of walkability. But while the benefits of walking in green and rural spaces are widely studied in the literature, there is a lack of research on the moderating effect of attractive urban settings. This research aims to fill this gap by investigating the affective responses to walking in historic environments, focussing on the emotional construct as proxy of psychological wellbeing.

Here, the hypothesis is that the historic environment can have a positive moderating effect because of its intrinsic aesthetic value, which supports environmental preference, and its symbolic significance, which may trigger sense of place. This research also takes into account the additional benefits of the absence of traffic, arguing that motor traffic negatively influences the walking experience.

A mixed-methods strategy is adopted. In the first phase – quantitative – two experimental designs will measure affective appraisals of walking in several settings, assessing the moderating effect of setting type (historic and non-historic) and levels of traffic (car-free and with traffic). In the second phase – qualitative – interviews supported by map sketching will explore how the presence of an historic environment influences affective appraisals of the walking experience. Looking at the fields of cognitive psychology and mobilities, map sketching is here proposed as tool to identify individuals’ feelings and perceptions related to the walking experience.

The purpose of this research is to link the existing studies on environmental psychology and physical activity with the transport literature in order to inform policies of active urban mobility and pedestrianisation. The research will offer new insights on the links between walking, wellbeing and engagement with place.
**Pathways toward understanding health from walking**

Locomotion is fundamental to animal life and the locomotor system is a major body system requiring a considerable level of neural control and energy transport. Here we examine the relationship between physiology and locomotion and how each might affect the other. An important pathway from locomotion to health involves the fundamental process of dynamic adaptation to exercise in body tissues and systems. The pathway from health, defined in terms of physiological capacity or integrity, to locomotion involves the fundamental processes of neuromuscular control, oxygen transport and muscular force generation. In each case, measurement of locomotion has provided important insights in to the processes which generate and control it. Scientific research over the past century has largely been concerned with establishing the main parameters and processes of locomotion through laboratory measurement of walking and running. Over the past decade a new generation of technology has emerged enabling minimally invasive long term measurement of locomotion in outdoor environments. New approaches to analysis driven by increasingly powerful algorithms and computers have additionally provided new opportunities to extract information from data that was previously not available. It is reasonable to question the extent to which these advances might reveal more subtle and detailed relationships between walking and health. Using examples from research undertaken at Bristol, I shall argue that most of the potential health benefits of walking are related to a small number of easily measured parameters that describe total exertion and the rate of exertion and that the most exciting area for future research is in the analysis of walking to understand health status.

**Interactions between the inner worlds of urban pedestrians and their experienced surroundings**

There is growing interest in walking and how it can be encouraged due to its potential to ameliorate public health, environmental and congestion issues and the economic benefits attendant on this. However there is little research about the experience of urban walking. This presentation brings new insight into this experience. Data generated through 31 in-depth qualitative interviews yielded a simple concept, rich in implications. This is that the urban walking experience can partly be understood as triangular interactions between three factors: the inner world of the pedestrian, the outer city they experience and the physical movement of walking itself. The presentation focuses on relationships (that can have cognitive, imaginative and emotional aspects) between two of these, the inner world and the outer city.

Findings demonstrate the inner world of the pedestrian and the city they experience relating in a number of different ways through the thought life of the pedestrian: at times the pedestrian can be lost in personal reflection or daydreaming and hardly notice their surroundings at all. Alternatively, features in the city trigger enjoyable trains of thought in the pedestrian. At other times the city contains elements that threaten and interrupt the inner life of the pedestrian, reducing some of their walk’s experiential potential. The interaction between the inner world and experienced city can also influence the emotional life of the pedestrian. Outdoor surroundings can inspire in the walker positive or
negative emotions. A particular process by which the inner world and experienced city can interact is through the process of personal memories of a street. Beyond this some pedestrian participants reported imagining their city surroundings in bygone eras. In this way the inner world of the pedestrian and the experienced surroundings enhance and are bound to one another.

Two main conclusions are drawn for urban walking environments. Such environments could inspire the pedestrian in ways that go beyond aesthetic attractiveness and practical convenience: they could also address the emotions, imagination and cognition of the pedestrian. Secondly, ease of movement for the pedestrian is seen as being especially important as it can protect their thought life from interruption. This can have benefits for the well-being of the individual. It can also be of use to the economy, in urban areas where the knowledge economy is prevalent and where it is important for workers to have time to think as they walk to and from work or during their lunch hour.

**Todd Handy** (The University of British Columbia):
Professor, Department of Psychology

**Attention as a Risk Factor in Falls and Loss of Mobility**

Far from being an automated activity, we now know that walking depends on an extensive engagement of higher cognitive functions, even under the most simple of environmental conditions. Nowhere is this relationship between cognition and mobility more salient than in the problem of falling in the elderly. The leading cause of injury and injury-related death in seniors, over the last decade, falls have been specifically tied to impairments in the ability to divide attention between walking and a second, cognitive task. In my talk here, I present the results from a recent series of studies in my lab examining the association between falls in the elderly and two additional forms of attention critical for walking—the ability to selectively attend to task-relevant aspects of the visual world, and the ability to sustain one’s attentional focus on the given task at hand. With respect to selective attention, we found that fallers show systematic deficits in their ability to attend to and discriminate visual events on the left side of visual space, relative to their non-falling peers. With respect to sustained attention, we found that fallers have a greater propensity for their minds to wander off-task, again relative to their non-falling peers. In both cases, the net consequence is a systematic reduction in the perceptual and cognitive analysis of the immediately surrounding perceptual environment. Taken in a broader mobility-based context, our findings suggest that declines in out-of-home travel that have recently been linked to mild cognitive impairment and Alzheimer’s disease may not be solely an issue of impaired way-finding abilities, as often occurs with these conditions. Contributing to this decrease in mobility may be impairments in the ability to attend to and negotiate our perceptual environment at a more fine-grained, step-by-step level of spatial resolution.

**Simone Fullager** (University of Bath):
Professor of sport and physical cultural studies, Department for Health

**Walking as embodied social practice: Exploring the gendered movement of self in women’s recovery from depression**

In this paper I critically examine how notions of recovery are mobilised in mental health discourses as they largely offer disembodied accounts of individual change. The cultural legacy of a mind-body opposition continues to haunt the epistemological landscape of mental health knowledge. For example, in the modern era depression has been framed as an
affective or cognitive disorder of the mind (with limited reference to the social context in psychological accounts) or the brain (the neurochemical self of psychiatry and pharmacology). The depressed body is positioned as passive and lacking in agency rather than relational, affective and social. The everyday practices that individuals engage in as they move through depression and recovery are rarely acknowledged as complex experiences that interconnect mind-affect-body and sociocultural-biological selfhood. In contrast this paper offers an embodied account of walking as an everyday practice that women identified as significant in their recovery from depression. Drawing upon an Australian Research Council funded qualitative study with 80 women (20-75 years old) I examine how walking as a social practice opens up different embodied relations to self and place that enable the performance of recovery and wellbeing. I identify the implications of this study for the creation of liveable cities and places in terms of the largely invisible experience of mental health and wellbeing.

Workshop B: ‘Walkability’ and the Built Environment

Lee Beattie (The University of Auckland):
Lecturer, Architecture and Planning

Achieving the 10 minute walkable neighbourhood in Australia and New Zealand suburban locations

New world Pacific Rim cities in Australia, New Zealand and North America have widely, and perhaps uncritically, adopted urban consolidation policy responses to counter the adverse effects of suburban sprawl by seeking to consolidate their future urban growth within existing urban centres and along transit corridors in greenfield locations to create compact, walkable and ‘liveable’ urban environments. The effective implementation of these strategies will, in part, require the appropriate governance responses and urban planning policy which enables the provision of higher density housing typologies in and around existing and proposed suburban town centres. This paper investigates these issues by evaluating and comparing the outcomes of six medium intensity housing developments, located within 400 metres of two major suburban greenfield development areas in Cockburn, Perth (Western Australia) and Albany, Auckland (New Zealand) used a two-phased research design. The first phase considered the degree of alignment the local statutory land use plans had towards achieving the wider regional policy approaches seeking urban consolidation. The second phase uses semi-structured interviews of the practitioners involved in the permit applications to determine how effective these policy responses were, barriers to implementation and where the appropriate governance arrangements were in place to achieve these outcomes in practice. This paper highlights the differences in governance and policy approaches used between these two locations and how these differences impacted on the physical implementation of the wider strategic goals seeking compact, walkable and ‘liveable’ urban environments in these suburban greenfield locations.
Nikolai Bode (University of Bristol)
Leverhulme Early Career Fellow, Engineering Mathematics

How social interactions between pedestrians can affect the ‘walkability’ of built environments

Walking in built environments is a social experience. We may consciously choose to walk with others, e.g. a group of friends, but even when walking on our own we have to react to other pedestrians, if only to avoid collisions. I will give examples for how such social interactions can affect where we walk and how we walk, thus impacting on environments’ ‘walkability’. Furthermore, I will argue that simple virtual environments provide a useful tool for research and education on social aspects of walking.

Social interactions affect walkability. Experiments with volunteers and observational studies have shown that groups of friends or families not only stay together when walking, but also adopt particular formations that facilitate conversation. These patterns are sensitive to the amount of space available which suggests that social groups may prefer and enjoy particular environments. In contrast, independently moving pedestrians, who have a clear goal they want to reach, often avoid busy routes and therefore other pedestrians. Moreover, individual-level decisions can affect the walking experience of others via simple social interactions. For example, increased walking speeds or ‘eagerness to overtake’ in individuals can, somewhat counter-intuitively, lead to a decrease in pedestrian flow which may be detrimental to pedestrians walking experience.

Virtual environments provide a useful tool for research and education on social aspects of walking. Simple virtual environments allow researchers to fully control the environment people experience. We used this approach to investigate the route choices of individual pedestrians. We found that in addition to environmental information, such as aspects of the built environment or the relative level on congestion on different routes, emotional aspects can crucially affect where we walk. Specifically, we found that under stress, we are more likely to use familiar routes, even if this contradicts normal patterns of reacting to others and the environment. Virtual environments provide a change in perspective for individuals and allow multiple testing and re-visiting of one’s own behaviour under the same circumstances. During extensive experiments with thousands of participants in the Science Museum in London, we found anecdotally that participants enjoyed ‘playing’ with a virtual environment and became more aware of the nature and consequences of social interactions between pedestrians in built environments. We therefore suggest virtual environments could be useful in further research, as well as outreach or education on social aspects that affect the ‘walkability’ of environments.

Crispin Cooper (Cardiff University):
Research Associate (PLACE), School of Planning and Geography

Network models of pedestrian behaviour in cities

I introduce the software sDNA (Spatial Design Network Analysis), a tool for measuring networks within the built environment. sDNA has been used in large scale studies of health (Sarkar, Gallacher, and Webster 2014) and social cohesion (Cooper, Fone, and Chiaradia 2014) as well as pedestrian and vehicle flow (Chiaradia, Wedderburn, and Cooper 2014). In a study of four areas in central London, sDNA predicts on average 58% of the variance in pedestrian flows.

Recent work focuses on modelling flows of cyclists within cities. In the case of cyclists, predictions are based on directness and length of routes, slope and levels of vehicle traffic.
This study provides a template for modelling of the effect of improvements to the urban environment both on pedestrian route choice and the decision to walk. In a pedestrian context, the aim would be to extend the existing models of pedestrian flow, which are based on route length and directness, to also account for quality of the built environment. To foster applicability and impacts beyond the proposed study, I would suggest using an established pedestrian environment audit tool such as PERS (Transport for London 2006). Substantial data collection would be required to build a picture of pedestrian environment quality throughout the city. It would also be necessary to collect either pedestrian route (GPS trace) or flow (count) data to calibrate the model. The proposed study would help to integrate street-scale, qualitative research with urban-scale quantitative work. Network analysis allows us to understand how individual links are integrated with the wider surrounding network. It also allows us to measure the desirability or otherwise of routes from a utility perspective. This is an essential baseline when evaluating the success of measures to encourage walking: if a beautiful path is built to nowhere, for example, we can expect it to be used for leisure but not commuting, and we should not take the lack of commuters on such a path to indicate that beauty is not of value! Calibrating a route choice model will give a measure of the effectiveness of walkability enhancing measures.


Ellie Cosgrave (UCL)  
Research Associate, Department of Science, Technology, Engineering and Public Policy

Theo Tryfonas (University of Bristol)  
Senior Lecturer in Systems Engineering

Tom Crick (Cardiff Metropolitan University)  
Senior Lecturer in Computer Science, Department of Information Systems

**Digital, pedometers and the social (media) construction of a healthy space**

Gromit unleashed, that began humbly its life as a public arts trail in Bristol, was estimated to bring almost £60 million to the city in the form of income from tourism and the evidence suggests that the initiative contributed in total around double as much to the local economy. Interestingly, it also mobilised 1.18 million people and encouraged them to get off their sofas and on their feet hunting for Gromits. This challenge was unprecedented by local standards in the way it encouraged large numbers of people from Bristol and beyond to clock several miles walking around the city and of course encouraged them even more to experience the city on foot. The differential is orders of magnitude above the typical results that a corporate, or even city-sponsored, pedometer challenge could bring. There are many factors that contributed to this success of the scheme, such as the beautiful, funky Gromits themselves for starters and the charitable cause behind the original appeal for fundraising for sick children. But we believe that the success of the venture was also down to the role of
Errol Haarhoff (The University of Auckland):
Professor, Architecture and Planning

Living at Higher Density in Transit-oriented development: the role of the walkable neighbourhood in delivering liveability

Urban growth management policies that aim to counter low density sprawl by concentrating future growth at higher densities in, and around, transit centres are core to the promotion of compact urban growth planning. This in turn requires an increasing number of urban residents living at higher densities in multi-unit housing typologies. This approach to urban planning is advanced on the argument that ‘transit-oriented development’ places higher density communities within walking distance of neighbourhood facilities such as cafes, libraries, parks, shops, local employment, and public transport, that in turn enhances liveability and the quality of life experienced. In Australasian cities this approach contradicts the historic preference for low density, detached housing in suburban contexts, and raises a question about whether higher density housing will result in the outcomes that the planning visions aim to achieve? What is argued is that achieving the outcomes envisaged for transit-oriented development and walkable communities requires dwelling satisfaction to be met by both the housing itself and the quality of amenity that the neighbourhood offers. This linking of home and neighbourhood has been explored in two research projects in Auckland involving seven case studies of medium density housing in walkable communities. The paper will deliver results from this research that examines the idea that the walkable neighbourhood leads to enhanced liveability, identifies what amenities and conditions are necessary to achieve this outcome, and what obstacles may be persist.

Ute Leonards (University of Bristol):
Reader in Neuropsychology

Nudge, nudge, nudge: do floor patterns influence where we walk?

Outdoor and indoor spaces in man-made environments are often paved (or tiled) with clearly visible grouting. People do not always walk in the direction of the grouting, and the dominant tile orientation often does not correspond to the direction of travel. Despite the importance of vision to the control of locomotion, current biomechanical models would predict that floor patterns should not matter, because walking in an obstacle-free environment, on even and hazard-free ground, is heavily automated and overlearned (for a
recent review see e.g. Guertin, 2009, Brain Res Rev). Reported research covering the impact of optic flow on the perception of self-motion would not predict too much impact of floor patterns either. Optic flow research tends to be based on specific objects or goals, often in virtual environments, where most influence should arise from the lateral visual periphery, not a comparatively narrow part of the lower visual field. Nevertheless, the vision literature on motion perception suggests that floor patterns, in particular when found in corridors, will impact walking direction due to the so-called aperture problem. More specifically, oblique floor patterns should induce substantial veering away from the intended direction of walking in line with the misperceived midpoint of such patterns (see e.g. Bressan and Vezzani,1995, Perception). Recently, we investigated whether commonly encountered floor patterns influence our ability to walk “straight ahead” in an obstacle free environment. Results showed that participants veered considerably (up to 8% across trials) over the measured travel distance (Leonards et al, PLoS One, in press). In my talk, I will argue that these findings are not only important to the study of locomotion, but, if also observed in real world environments, might have direct implications for architectural design and walkability.

Marianne Vanderschuren (University of Cape Town):
Associate Professor, Civil Engineering

Walkability in cities in the global South: not just an engineer’s view

As cities in the developing world embark on projects to improve their public transport in order to develop sustainable transport systems, attention will need to be paid to how users access transit stops. Non-motorised transport (NMT) has been identified as the most common way people in the global South access public transport, with walking being the most prominent mode. However, many people living in emerging global cities such as Cape Town have to access public transport under uncomfortable conditions that are a threat to their personal safety and security. Addressing such challenges may help to drive further public transport patronage by choice public transport users as transit authorities deal with mounting pressure on operating subsidies; but perhaps more importantly address issues of social justice by meeting the needs of many captive public transport users. Transportation planning authorities need tools to assess the quality of public transport access and egress trips, in order to guide investments in improvements to pedestrian movement networks leading to public transport. Traditional methods of evaluating station accessibility have been found to be overly mechanistic and there is a growing literature base, which contends that inclusion of built environment factors and user perceptions allows for a better understanding of how supportive the environment is for walking. That the built environment influences walking has long been the attestation of proponents of neo-traditional planning principals and inquiries by travel behaviour researchers have classified built environment factors into the 3 dimensions of the built environment, namely: Density, Diversity, and Design. These dimensions have since been expanded with the inclusions of destination accessibility and distance to transit. User perceptions have been argued to mediate walking decisions warranting their inclusion in assessments of pedestrian access and egress trips

Accordingly, this research makes use of mobile phone technology in the collection of subjective user perceptions of the micro level built environment along public transport access and egress trips. The vast development of smartphone technology in the last decade has meant that mobile phones can perform a variety of functions i.e. GPS, Camera, Voice recorder, and over time prices for such devices has come down dramatically. The combination of these perceptions with objective meso level through the use of Spatial Multi
Engaging perspectives of people with disabilities and older people in a street transformation project in Auckland, New Zealand

Achieving the environmental and health co-benefits of active modes of travel is a public health imperative. As ‘leading-edge’ transport initiatives promoting walking and cycling that benefit active able-bodied people are rolled-out, can they enhance the physical activity and social participation of older residents and people living with physical, sensory and mobility impairments, groups at increased risk of social isolation and unmet health needs? Currently, an innovative street design that is a variation of the concept of ‘self-explaining roads’ called Future Streets (www.futurestreets.org.nz) is being implemented in Māngere, a low-income neighbourhood in Auckland, New Zealand, to promote walking and cycling and enhance the health, vitality, environment and social wellbeing of the area. Auckland is New Zealand’s largest metropolitan region and Māngere is a multi-ethnic community where 90% of residents identify with indigenous Maori or Pacific Island ethnicity.

The ‘Lest we forget’ project builds on this opportunity to explore the lived experiences and impacts of street designs and the built environment on the health and wellbeing of older residents and people with disability. The project is designed to use participatory research methodologies to explore the dynamic interaction between the new street re-designs by engaging participants from both the Future Streets intervention area and a control area in the region – to explore the lived experience of the community using in-depth qualitative research methods. The methods being used include Go-along interviews and participatory Photovoice. The overall project will use the findings and engage community stakeholders in the process of quantitatively assessing current and future health and equity impacts of street and urban designs using mathematical and economic modelling.

This presentation will outline the foundation for this project including results of the negotiated discussions and community-research-transport industry partnerships established to achieve the intended outcomes of this project. Our overarching goal is to inform an inclusive model of transport and health that enables communities at increased risk of injury, transport poverty and social exclusion to participate meaningfully in transport planning of vibrant and resilient communities.
Neighbourhood green space, physical function and participation in physical activities among elderly men: the Caerphilly Projective Study

Background
The built environment in which older people live plays an important role in promoting or inhibiting physical activity. Most work on this complex relationship between physical activity and the environment has excluded people with reduced physical function or ignored the difference between groups with different levels of physical function. This study aims to explore the role of neighbourhood green space in determining levels of participation in physical activity among elderly men with different levels of lower extremity physical function.

Method
Using data collected from the Caerphilly Prospective Study (CaPS) and green space data collected from high resolution Landmap true colour aerial photography, we first investigated the effect of the quantity of neighbourhood green space and the variation in neighbourhood vegetation on participation in physical activity for 1,010 men aged 66 and over in Caerphilly county borough, Wales, UK. Second, we explored whether neighbourhood green space affects groups with different levels of lower extremity physical function in different ways.

Results
Increasing percentage of green space within a 400 meters radius buffer around the home was significantly associated with more participation in physical activity after adjusting for lower extremity physical function, psychological distress, general health, car ownership, age group, marital status, social class, education level and other environmental factors (OR = 1.21, 95% CI 1.05, 1.41). A statistically significant interaction between the variation in neighbourhood vegetation and lower extremity physical function was observed (OR = 1.92, 95% CI 1.12, 3.28).

Conclusion
Elderly men living in neighbourhoods with more green space have higher levels of participation in regular physical activity. The association between variation in neighbourhood vegetation and regular physical activity varied according to lower extremity physical function. Subjects reporting poor lower extremity physical function living in neighbourhoods with more homogeneous vegetation (i.e. low variation) were more likely to participate in regular physical activity than those living in neighbourhoods with less homogeneous vegetation (i.e. high variation). Good lower extremity physical function reduced the adverse effect of high variation vegetation on participation in regular physical activity. This provides a basis for the future development of novel interventions that aim to increase levels of physical activity in later life, and has implications for planning policy to design, preserve, facilitate and encourage the use of green space near home.

Walking Interconnections

The 'Walking Interconnections: Performing conversations of sustainability' AHRC Connected Communities funded research project, brought disabled people and sustainability practitioners together to share walking encounters in public places. Through mapping, talking, walking and reflecting together they entered each other’s life-world’s, and their
experiences are caught in photographs, maps and a sound play crafted by Dee Heddon from the recorded conversations of the walkers. Disabled people most often find themselves positioned as only vulnerable, but recent research (Abbot and Porter, 2013) has led us to propose that there may be a 'wisdom' (Leipoldt, 2006) drawn from lived experience, which disabled people can contribute to the resilience and sustainability debates. Leipoldt identifies the wisdom he believes can be drawn from the disability experience, which can be summarised as: making real choices, moving beyond the rhetoric of rights to value individual choice; acknowledging limits, knowing what to accept and what is open to change; skilfully 'riding the wave', rather than seeking to control it; bearing up through committed relationships, with oneself, others and the environment; and, creativity in living, and personal transformation.

The 'Walking Interconnections' project explored this 'wisdom', resilience and the potential contribution to learning for a sustainable society, by developing dialogues between Disabled people and sustainability practitioners. It used walking, narrative and arts-based methods to develop dialogues between these two traditionally separated communities. Through these dialogues it seeks to understand more about different forms of resilience, and to question the valuing of self-reliance over positive interdependencies, in support of the transition to a sustainable society.

In this paper we will explore the ideas underpinning the 'Walking Interconnections' research, and discuss findings and the impact the project is having on emergency planning and the debate about shared public spaces.

Rosalind Turner (Netwalking South West):
Founder, Netwalking South West

The Restoration of Balance – walking a more natural path, taking steps to build social capital in work & education

MY PREMISE ~ for a vision of Healthy and Liveable Cities to be realised, we need healthy people living, working and playing in them, relating well not only to one another, but to the wider landscape. Integral to that vision are four key words, ‘Movement’, ‘Expression’, ‘Reflection’ and Reciprocity, all central for sustainable health, individually, organisationally and environmentally.

CONSIDERATIONS ~ as our individual and organisational lives become increasingly intertwined with machines and digital technology, our needs as human beings can become increasingly side-lined, and thus the full expression of our human qualities, characteristics and capabilities can be diminished.

WORK & EDUCATION BASED STRESS IS ON THE INCREASE ~ the relentless pressure to keep abreast with the furious pace of new and evolving systems and technologies within the workplace, is undoubtedly a contributory factor to this exponential rise in workplace stress.

A SYSTEMS THINKING PERSPECTIVE ON HISTORY ~ humans and other-than-humans, have evolved together over millennia in a dynamic dance of reciprocity; continual movement, expression and reflection. Over the many crossroads encountered in our march through time, perhaps some of the pivotal moments in human history could be distilled into a series of unusual choices and pronouncements. For me there are several highlights, however a notable time was during the 15th & 16th century with the gradual dismissal of the intuitive in favour of the rational, I am thinking specifically here of the experiments of Rene Descartes and his peers and the experiments conducted on live dogs . .

and the Rational Mind a Faithful Servant, we have created a society that honours the servant and forgotten the gift.”
AND THEREIN LIES OUR 21ST CENTURY DILEMMA?! We have now become so clever technologically, we have almost designed out all but the most infinitesimal of human movements, relegating movement to be purely a leisure activity. And yet, as technology takes over many of the functions our bodies used to execute; the more static we are, the more depressed our systems become. In addition to which, as we are now discovering, the more intertwined our lives become with technology the potential for greater social isolation is increased, often going hand in hand, with social and other dysfunctions.
THE CHALLENGE MOVING FORWARD ~ is to embrace movement in all its forms challenging and changing our systems from repression to expression, from static to dynamic, from rigidity to fluidity.
POTENTIAL SOLUTIONS ~ using structured & facilitated walking experiences within our centres of work and education could address many of these aforementioned issues, work on many levels and could be used in a variety of ways. Building in walking to the curriculum or the pattern of the working day could radically transform the landscape of our cities, building greater social cohesion and specifically for businesses, greater social capital

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**Workshop D: Arts and Humanities (I) Cultural and Historical Legacies**

*Barbara Castillo* (University of Bristol):
PhD Student, Hispanic studies

**The Lost Santiago: Reconstructing Urban History through the Eyes of Contemporary Chroniclers**

The genre of the urban chronicle in Chile has a long tradition that dates back to the early 20th century, with the work of authors such as Joaquín Edwards Bello, whose walks around Santiago have provided an important contribution to understanding the urban life of the period. Contemporary chroniclers such as Roberto Merino and Álvaro Bisama have returned to this tradition in some of their chronicles, representing in their texts not only scenes of everyday life in Santiago, but also reproducing a critique that reflects on the effects of neoliberalism on both the urban life and urban development of the city. Whereas Merino’s strolls through Santiago’s centre place the author in the world of modernisation by means of the demolition of old historic buildings, which confront him with the loss of his own history, and produce in him feelings of nostalgia, Bisama’s walks in poor areas of the city allow him to understand that a significant part his society lives on the limits of this process of modernisation, and therefore on the margins of urban development. By means of an analysis of the chronicles “Casa Gana Edwards, El último Agosto” and “Lullaby”, I aim to show that flaneurisme in the chronicles of contemporary Chilean writers works as a form of recapturing the historical memory of a city that tends to erase its own urban history.

*Stephen Hodge* (University of Exeter):
Senior Lecturer, Drama

**Archipedology: tactics for the itinerant planner**

‘Leaking,’ the architect Cedric Price said, ‘is best observed in a floating boat.’ What are we going to do about these rising water levels? Should we build more walls? Retreat to the hills? Conceive new liquid architectures? Can we each contribute to turning off the tap? Is there
even a tap? Are there solutions? Or just a tsunami of questions? It's not too late to feel hopeful, surely?

With its feet planted firmly in two decades of solo and collaborative walking (developing disrupted walking strategies with Wrights & Sites and others), this presentation draws from Hodge's recent project 'Where to build the walls that protect us', an Arts Council England funded, Kaleider 'Future City' commission for Exeter (September 2013 - September 2014). An ambulant charrette (collective planning period) which encourages us all to imagine and model a future city. Our city of Exeter (or wherever). With one eye on the ongoing fiscal crisis and the challenges of climate change, this exercise in serious play helps us to look again at the fundamental fabric of our city and envisage it afresh.

Informed by 4, 6-hour public reconnaissance excursions (focusing on ‘climate & terrain’, ‘buildings & the life between them’, ‘industry & commerce’ and ‘mobility & communications’), the project team (including architect Tim Offer; documentary photographer Rob Darch; producer Kaleider; and multiple ‘experts’, from UK MET Office staff to long-term city residents) developed an iterative approach to masterplanning: 5 cities in 5 days; each day built from scratch; each day catalogued; each day just 1 possible city.

Planning away from the studio. Meeting and journeying with expert-residents on their own ground, and expert-professionals out from behind their lecterns or desks. ‘Walking and talking the work into existence’ (Lachmayer).

Drawing on documentary photography, this manifesto presentation will adopt an extended PechaKucha format.

Alison O’Byrne (University of York):
Lecturer, Centre for Eighteenth Century Studies

**Pedestrian Tourism**

This paper will look at the construction of the pedestrian tourist in 18th- and early 19th-century guidebooks, considering how the earliest guidebooks to London imagine the city as a place experienced on foot, and how a culture of tourism grew up in this period as map, print and booksellers offered a range of items to help those on foot to find their way. At the same time, urban improvements helped to make the city more navigable, through improved paving and cleaning of the streets and through the posting of street names at street corners (thus making maps more straightforward to use). In addition to considering how these works shape London into a cultural artefact, some consideration will also be given to how the presentation of London in works aimed at tourists relate to modern-day tourist aids.

Samuel Stockley (University of Leeds):
Creative Industries PhD researcher, School of Performance and Cultural Industries

**Walking as urban method: a history of urban walking methods and knowledge from Dérive to UrbEx**

Whether termed dérive, flânerie, or UrbEx, various forms of walking have been used as methodologies for understanding and critiquing city life. Stemming from the Situationist International's condemnation of Paris in the early 20th Century, right through to global networks of Urban Explorers place-hacking secured locations in 2015, the efficacy of walking as a method is rooted in its capacity for uncovering, through on-foot exploration, a greater sense of place than can be achieved through sedentary and non-immersive methods. Whilst such forms of heightened walking are myriad in their specific objectives and practices, walking’s various incarnations aim to access authentic urban experiences by tapping into the
life of cities that’s obscured by excessive planning, development, and security. Walking, as method, aims to unearth these obscured spaces in pursuit of new forms of knowledge that better capture the relationships between mobility, place, and thinking.

**Caragh Wells** (University of Bristol):
Senior Lecturer in Hispanic Studies

*Freedom through Fiction: How Literature Helps Us Read the City*

We underestimate the contribution that urban fiction can make to deepen our knowledge and experience of the city. What is deemed by some areas of academic research to be too subjective and unquantifiable often reveals itself to be the bearer of profound insights into the ways in which the human mind interacts with external space. This paper explores a selection of literary responses to the interface between human cognition and city streets through the practice of walking. Examples will be drawn from literary representations of Barcelona as well as other Spanish cities. These case studies reveal that literature provides us with deep insights into the emotional and cognitive processes that arise from the intersection between mind and environment, often producing radical shifts in a character’s emotional experiences. If we pay close attention to language, alterations in perspective, point of view and accounts of emotional fluctuations in the texts, we begin to understand the capacity for literature to capture the experience of complex brain states that arise as the human psyche interacts with city streets and vice versa. Literary accounts of walking within urban spaces enable us to understand how walking the city can promote liberation, repression and allow for the envisaging of utopian spaces beyond the concrete realities of the space under description. Thus, the imaginative potential of walking the city is often captured by literature, which leads to questions concerning concepts of freedom, personal growth and re-adaptation to once familiar environments following unfamiliar psychological states that arise through walking. This paper encourages those interested in the pedestrian experience to utilise literature as a source of discovery in their attempts to enhance lives within our urban communities.

**Workshop E: Arts and Humanities (II) Development of the Walking App**

**Rebecca Hutcheon** (University of Bristol)
PhD Student, Department of English

**Michael Malay** (University of Bristol)
Teaching Fellow, Department of English

**Jack Thacker** (University of Bristol)
PhD Student, Department of English

**Stephanie Codsi** (University of Bristol)
Assistant Teacher, Department of English

*Development of a Walking App*

**Mike Jones** (University of Bristol):
Senior Technical Researcher, IT Services R&D

*Map your Bristol*
Ralph Pite (University of Bristol):
Director, Institute of Advanced Studies, and Professor of English Literature

**Talkswalking: Edward Thomas and Robert Frost**

The famous American poet, Robert Frost, was in his lifetime an almost equally famous talker – his many lecture appearances and readings were chatty, informal events, while the poems themselves were written in a style that attempted to capture the cadences, sounds and tone of speech. Conversation with his friends often took place outdoors, in what Frost called ‘Talks-walking’. Perhaps his closest friend, the English poet Edward Thomas, remembered, ‘The sun used to shine while we two walked [...] and sometimes mused, sometimes talked | As either pleased.’

Both men brought walking and talking together with a degree of closeness that the English language encourages: what difference does this rhyme make to the relation between the two activities? What sort of talking does walking encourage and, vice versa, what sort of walking does talking encourage? This coincidence in the language may be accidental or a reflection of underlying similarity or it may provide an opportunity to bring together two separate elements of our lives. It may prompt, therefore, reflection on the linkage between observation and intervention, findings and impact in the work of research.

Greg Smart (500more):
Digital Health Consultant, Founder & CEO, 500more

**The use of apps in digital health**

Andrew Stuck (Rethinking Cities):
Director & founder, Rethinking Cities Ltd.

**Walking into the digital unknown – creative expeditions at the Museum of Walking**

A simple enquiry as how to use a smartphone to interact with those around you and how to use a variety of apps being devised to get one engaged with one’s urban surroundings, was how the “Expedition into the Digital Unknown” was born. Over a six month period, a monthly walkshop across London from Highbury & Islington to South Kensington, attracted some 60+ participants and hundreds of followers on line. Beginning with the basics of how to get around, how to find shops and services, and how to make purchases, participants swiftly moved on in their digital enquiries, to consider geo-tagging, photo-sharing and augmented reality. No longer wanting to be just observers or consumers, they wanted to create and track their own stories of their journeys on foot and the places through which they passed. Creating geo-located media of their own, games and hunts to challenge their friends, capturing conversations as hyper-local journalists and volunteering as citizen scientists. Some surprising insights came through, not least the urge to create and publish, to explore further, to share one’s discoveries, but also to realise the extra dimensions and interferences of creating in the urban realm, the ‘unsocial’ nature of our mobile world, the tension of relationships of ‘friends’, between those you walk beside and those more remote. The original expedition in 2013 has led to further sorties into the Digital Unknown, including developing and field testing apps that promote more journeys on foot, but also looking at how more traditional tools can be just if not more effective in getting more people out and about on foot.
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<td><a href="mailto:Ralph.Pite@bristol.ac.uk">Ralph.Pite@bristol.ac.uk</a></td>
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<td><a href="mailto:Sue.Porter@bristol.ac.uk">Sue.Porter@bristol.ac.uk</a></td>
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<td><a href="mailto:greg@500more.com">greg@500more.com</a></td>
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<td><a href="mailto:Paola.Spivach@sustrans.org.uk">Paola.Spivach@sustrans.org.uk</a></td>
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<td><a href="mailto:pc11sms@leeds.ac.uk">pc11sms@leeds.ac.uk</a></td>
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<td>Stuck, Andrew</td>
<td><a href="mailto:andrew@rethinkingcities.net">andrew@rethinkingcities.net</a></td>
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<td>Taylor, Colin</td>
<td><a href="mailto:Colin.Taylor@bristol.ac.uk">Colin.Taylor@bristol.ac.uk</a></td>
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<td>Thacker, Jack</td>
<td><a href="mailto:jt14940@bristol.ac.uk">jt14940@bristol.ac.uk</a></td>
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<td><a href="mailto:Theo.Tryfonas@bristol.ac.uk">Theo.Tryfonas@bristol.ac.uk</a></td>
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<td><a href="mailto:netwalkingsouthwest@gmail.com">netwalkingsouthwest@gmail.com</a></td>
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<td><a href="mailto:marianne.vanderschuren@uct.ac.za">marianne.vanderschuren@uct.ac.za</a></td>
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<td>Wells, Caragh</td>
<td><a href="mailto:c.wells@bristol.ac.uk">c.wells@bristol.ac.uk</a></td>
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Pedestrian Pathways in the Healthy City
#ppathways

Organised by:
Institute for Advanced Studies
Royal Fort House
University of Bristol
Bristol BS8 1UJ
bristol.ac.uk/ias
@UoBris_IAS