

Design for Wellbeing: Ageing & Mobility in the Built Environment

Call 2012
Announced March 2013 | Commence October 2013

- Understanding the relationship between the built environment, mobility and activity in older populations including care homes and residential homes
- [Providing] Evidence based and user-centred design and engineering approaches, in the context of the whole system, that are driven by a desire to increase and enable mobility and activity, decrease isolation and enable greater independence
- Understanding what environmental designs encourage activity/inactivity and how these can be engineered to facilitate older users to increase their physical activity

Design for Wellbeing: Ageing & Mobility in the Built Environment

“Approaches should consider use of novel methodologies for robust evidence generation that inform the design process and create decision tools for policy makers and industry.”

Ageing population | Healthy Ageing

Populations ageing across the EU | Increasing focus on 'healthy ageing'

Maintaining independence/preventing disability - important for wellbeing in later life

Access to activities outside the home

Social engagement

Sense of control

Cycling in Later Life in the UK

LOW LEVEL OF CYCLING AMONG OLDER PEOPLE IN THE UK

The share of journeys made by bicycle is low for all age groups, but particularly low in older age.

DIFFERENT STORY ELSEWHERE

Cycling is an important method of transport in older age in other parts of Northern Europe.

Share of journeys by people aged 65+:

- DENMARK: 15%
- NETHERLANDS: 22%
- GERMANY: 9%

MORE CYCLING WILL BENEFIT HEALTH IN LATER LIFE

Cycling could make a valuable contribution in promoting active ageing and prolonged independence and good health.


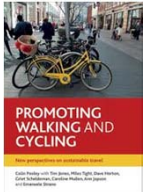
Physical activity declines with age to the extent that by 75 years only 1 in 10 men and 1 in 20 women are sufficiently active for good health.

Our Critique | Positionality

“For too long the focus has been on advising individuals to take an active approach to life. There has been far too little consideration of the social and physical environments that enable such activity to be taken.”

Pamela Das and Richard Horton 'Rethinking our approach to physical activity' (2012) The Lancet, Vol 380, No.9838, 2012, p187.

The 'Velomobile Elite'





Everybody Aches. Every Day.

Cyclists' identities and practices have been shaped by acclimatizing to current hostile cycling conditions to the extent that they sometimes struggle to understand why more people don't cycle. In so doing, they inadvertently perpetuate their identity as part of a 'velomobile elite'.

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Invisibility of older cycling



"I think Boris has a good view of the young male 'Tour de France' cyclists, but not the everyday cycling grand-mother"

ABSENCE OF OLDER PEOPLE CYCLING IS GETTING NOTICED

Public figures are starting to draw attention to the unequal distribution of cycling amongst the population.

"At the moment cycling is disproportionately young and male and that's because of the conditions. I suppose those are the people who feel able to cycle... What I want to see from these changes, and I think we will see, is far more women doing it, far more older people doing it."

London's Cycling Commissioner Andrew Gilligan discussing the Mayor of London's plans for cycling in the capital.

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A study to understand cycling among the older population in the UK and how this affects independence, health and wellbeing.



cycle BOOM objectives

- Develop a better understanding of how the design of our towns and cities, and bicycle technology, is shaping older people's experience of cycling
- Create a toolkit for policy makers and practitioners to support and promote older cycling

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Mixed Methods

"The complexity of our research problems calls for answers beyond simple numbers in a quantitative sense or words in a qualitative sense. A combination of both forms of data provides the most complete analysis of problems. Researchers situate numbers in the contexts and words of participants, and they frame the words of participants with numbers, trends, and statistical results. Both forms of data are necessary today."

Creswell & Plano Clark, 2011, Designing and Conducting Mixed Methods Research

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The diagram shows a central 'Mixed methods approach' connected to several research methods:

- Scoping secondary data sources
- International study visits
- Urban Design Audit
- Life history / Biographical interviews
- Mobile methods | Micro-ethnography
- (E)Cycling & Wellbeing Trial

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DESIGN FOR LIFELONG HEALTH & WELLBEING

Testing novel research methods



Geo-locating & representing affect


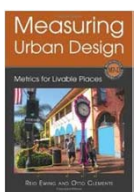
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Representing affect | developing a UD vocabulary cycle BOOM

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Cities and their psychology: how neuroscience affects urban planning
 The study of metropolitan areas and how their inhabitants interact with them is key to planning our future as a species

Colin Firth
 Independent.com, Tuesday 10 February 2011 08:00 GMT
[Link to comments \(0\)](#)

Ann Forsyth & Kevin Krizek (2011) Urban Design: Is there a Distinctive View from the Bicycle?, *Journal of Urban Design*, 16:4, 531-549, DOI: 10.1080/13574809.2011.586239


cB responding to call by Ann Forsyth and Kevin Krizek:

“...to take the experience of cycling seriously in urban design. This involves moving beyond a concern with safe and convenient facilities and complete networks to a more substantial interest in the experience of the environment from a cyclist’s point of view.”

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Focus cycle BOOM

WHO?



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 People aged 50-59 and 60+

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Methods and Preliminary Results

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Integrated methods cycle BOOM

Life history interview

How has their cycling status arisen over their life course

Naturalistic ride and video elicitation interview

Practices and experiences of later life cycling

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Life history interview: Objectives cycle BOOM

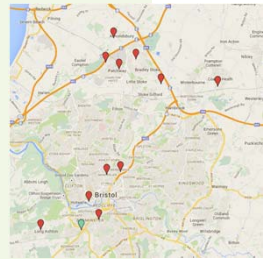
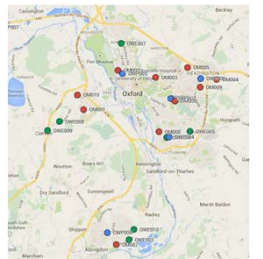
Through individual life histories of cycling reveal

- Whole-life view on engagement with cycling
 - Behaviour change and continuity in relation to life events and transitions and evolving social and physical settings
 - Practice of contemporary cycling
- Experience and narratives of cycling and ageing
 - How cycling is affected by later adulthood transitions? e.g. changing work patterns, family structure, roles, health
 - Adaptive, restorative and diminishing changes
 - Outlook for future cycling

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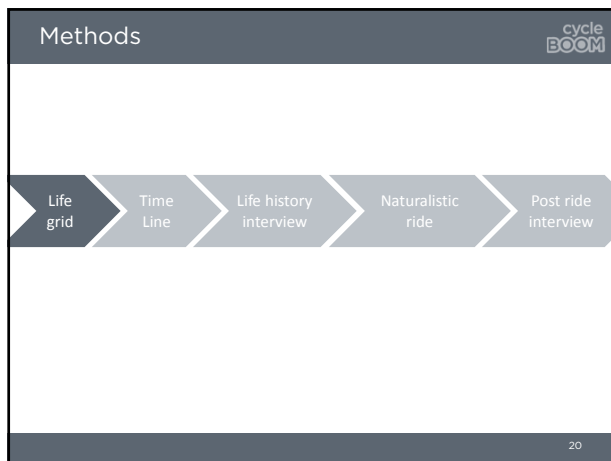
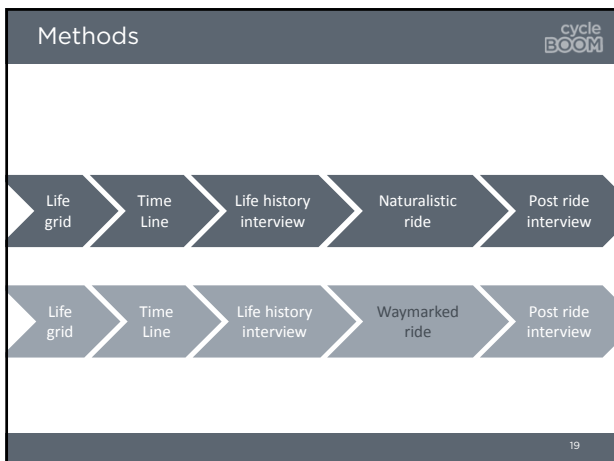
Wave One: Participants cycle BOOM

Range of experienced cyclists: age, sex, location

Bristol 12 Oxford 10

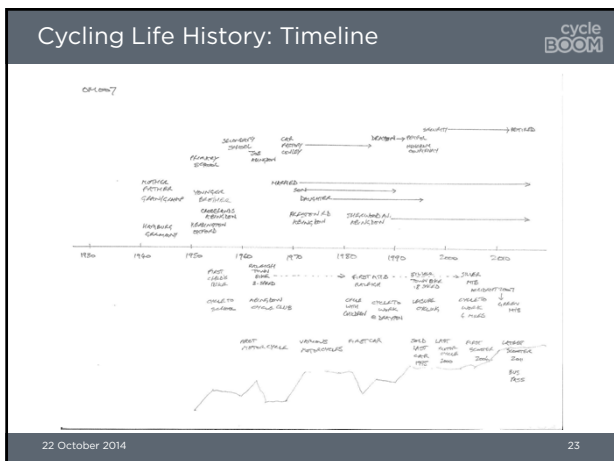
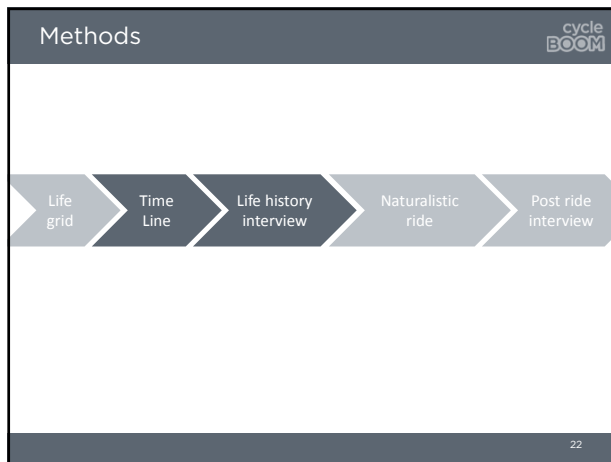
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Cycling Life History: Grid

Life History Grid

Year of birth	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Residence	Portland Beaverton Brimley	Beaverton Clifton Litchford Kurtz	Clifton Litchford Kurtz	Litchford Kurtz	Beaverton Clifton Litchford Kurtz	Beaverton Clifton Litchford Kurtz	Beaverton Clifton Litchford Kurtz	Beaverton Clifton Litchford Kurtz
Household	Man, Dad Mother Sister Husband	Man, Dad Mother Sister Husband	Man, Dad Mother Sister Husband	Man, Dad Mother Sister Husband	Man, Dad Mother Sister Husband	Man, Dad Mother Sister Husband	Man, Dad Mother Sister Husband	Man, Dad Mother Sister Husband
Education / work (last / present)	High School	High School	High School	High School	High School	High School	High School	High School
Activities / hobbies / leisure	Swimming Hiking Golf	Swimming Hiking Golf	Swimming Hiking Golf	Swimming Hiking Golf	Swimming Hiking Golf	Swimming Hiking Golf	Swimming Hiking Golf	Swimming Hiking Golf
Transport	Bus	Bus	Bus	Bus	Bus	Bus	Bus	Bus
Cycling - number of rides access to a bike	1-2 rides Access to a bike	3-4 rides Access to a bike	5-6 rides Access to a bike	7-8 rides Access to a bike	9-10 rides Access to a bike	11-12 rides Access to a bike	13-14 rides Access to a bike	15-16 rides Access to a bike
Cycling - activity	Commuting Recreation	Commuting Recreation	Commuting Recreation	Commuting Recreation	Commuting Recreation	Commuting Recreation	Commuting Recreation	Commuting Recreation



Life History Interviews: Emerging themes

- Heterogeneity in past cycling trajectories:
 - Continued | Expanded | Diminished | Rediscovered | Discontinued | New | Stopped | Absent
- Heterogeneity in future cycling trajectories:
 - Continue | increase | decrease | uncertain | start | behind me
- Influences on pathway:
 - Body | gender | environment | social | culture
- Cycling niche:
 - Enduring: knowledge | skills
 - Adapting: bike | kit | timing | skills | company | routes
 - Explorative: mentors
- Later life:
 - Transitions: retirement | residential moves | family roles | motivation
 - Niches established and evolved

Methods

Life grid → Time Line → Life history interview → **Naturalistic ride** → Post ride interview

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Naturalistic ride : background

- ‘New mobilities paradigm’ exploring mobile bodies in mobile contexts
- Approaches that diverge from traditional methods – research ‘on the move’. (Sheller and Urry, 2006)
- Mobility not just movement between point A and B (Cresswell, 2006)
- Interest in affect, place, meaning, culture and representation

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Naturalistic ride: Routes

Participant chooses route: familiar journey, similar timing, everyday experience

Sheryl: Shopping Cecil: Social visit

James: Exercise

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Naturalistic ride: Equipment

Participant:	Researcher:
• Binaural microphones inside windjammers	• Lapel microphone for autoethnography
• Mindwave EEG	• Forward-facing GoPro video camera
• Mobile phone to record EEG	
• Forward facing GoPro video camera	
• Garmin GPS	
• Edulab proximity sonar measure / log	

Abraham, Oxford

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Naturalistic ride: Ride Video

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Methods

Life grid → Time Line → Life history interview → **Naturalistic ride** → Post ride interview

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Naturalistic ride: Post-ride interview

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Strategies and tactics: route choice, road position, manoeuvres, transgressions, infrastructure, wider environment


Experiences of cycling: sensory, affective, social



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Naturalistic ride: Video elicitation


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Naturalistic ride: Revised approach

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- More less-experienced cyclists
- Better socio-economic and BME representation
- Researcher / participant equipment burden reduced for naturalistic - waymarked enhanced
- Rear facing participant camera (Laurier 2014)
- Eliciting affect: priming, reviewing, delving

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Wellbeing | Executive Function

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Wellbeing - multifaceted concept that encompasses a sense of mental and physical health, (social) engagement, satisfaction and fulfillment in life.

When we age, we experience a decline in our mental and physical functioning, which can affect our sense of wellbeing.


Low **cognitive function** is associated with low psychological wellbeing in middle/older aged adults (Llewellyn, 2008).

Exercise particularly impacts "**executive function**" – inhibition of irrelevant information, enhancement of goal-relevant information, (motor) planning, and cognitive flexibility (Hillman et al., 2008)

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Cycling and Wellbeing Trial

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Test the impact of (re)discovering cycling on physical activity, mental health and wellbeing in older adults.

Measures:

1. Cognitive function (Executive function tasks)
2. Eudaimonic wellbeing (actualizing inherent potentials)
3. Hedonic wellbeing (maximizing pleasure moments)
4. Physical health (self-reported)

Tools – Psychological wellbeing (PWB) questionnaire (Ryff, 1989); Health Survey SF36v2. Exec function tasks: MMSE; CERAD I & II; Verbal fluency; Plus minus; RVIP; Stroop; Letter Memory; Dot probe; Go-No-Go...

Sample of E-bike (n=40); pedal cycle (n=40); control group (n=20) matched on age, sex, SES, educational from Oxford and Reading areas.

Exposure - (Re)Engaging with cycling at least 3 times per week for at least 30 minutes during the 8-week period.

Pre-test and then re-test after 8 week period | Diary record | Focus Groups | GPS validation/Odometer.

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Wellbeing trials: Focus Groups


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Positive experience of E-bikes:


- Mobility
 - Geographies - rediscovered | extended | deepened
 - Additional journeys and replacing car
 - "same amount of exercise but more pleasure because going further than my usual boundaries"
- Health and wellbeing
 - Greater confidence
 - Spatial awareness and control
 - Social
 - Motivation | engagement
- Negative experience of E-bikes:
 - E-bike weight | cost | security | stranding
 - Unsupportive infrastructure "Oxford is a dangerous city to cycle round":

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Summary cycle BOOM



Heterogeneity
discovered | rediscovered | (dis)continued



Constraints
body | gender | geography

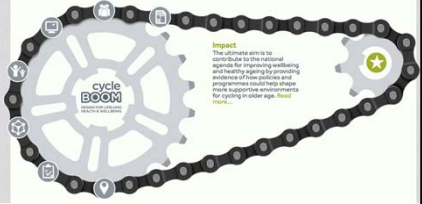
Resilience
enduring | adapting | imparting

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Impact cycle BOOM

Developing more inclusive neighbourhoods, towns and cities

Designing products suited to the growing market of older people



Impact:
The ultimate aim is to contribute to the national agenda for improving wellbeing and healthy ageing by providing evidence of how policies and programmes could help shape more supportive environments for cycling in older age. [Read more](#)

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References cycle BOOM

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