The Role of Urban Design in Promoting Cycling:
A Behaviour Change Perspective

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Overview

Nowadays, many cities try to increase the modal share of cycling to profit from the diverse benefits of cycling. This thesis explores how urban design can or cannot contribute to higher levels of cycling in London. Thereby, this thesis understands both 'soft' interventions (typically called 'behaviour change interventions') and 'hard' interventions ('infrastructure') equally important variables (that influence cycling behaviour) and explores how they relate to each other. It was based on the premise that the ways in which urban design interventions are used to promote cycling favour (certain) 'hard' interventions and as a result of such 'narrow lenses', miss to employ the full range of potential and necessary interventions.

Research Question

- Which variables can lead to an uptake in cycling?
- How are cycling policies promoting cycling in London?
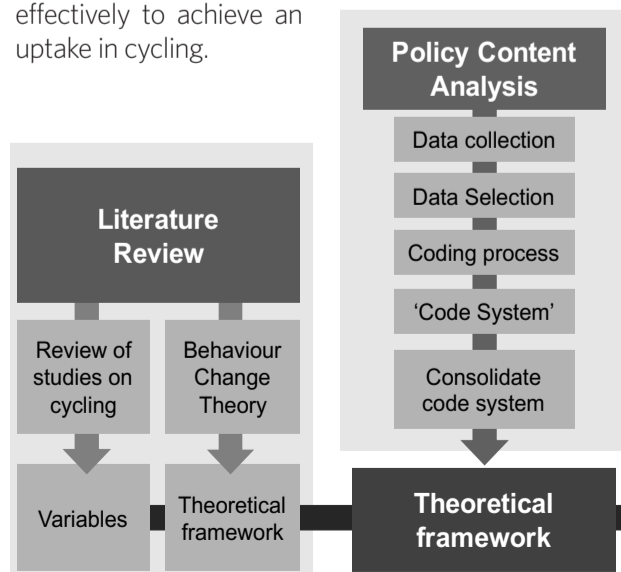- What is thereby the added role of urban design?

Objectives

(1) investigate the range of variables that are hypothesised to 'influence cycling'

(2) investigate how urban design can contribute to higher/lower levels of cycling' (more/less cyclists on the street, more/less daily journeys, increase/decrease in travelled distance)

(3) explore how urban design can or cannot contribute to higher levels of cycling in London.

Methodology

This thesis consists of a literature review and the subsequent synthesis of a theoretical framework for identifying the that conceptualises the impact of policies and interventions on cycling and a review of variables that were found to increase levels of cycling.

Then, a policy content analysis was then carried out to identify how cycling is promoted in London. Policies from different actors involved in the cycling policy discourse were screened for policy categories and for interventions to promote cycling.
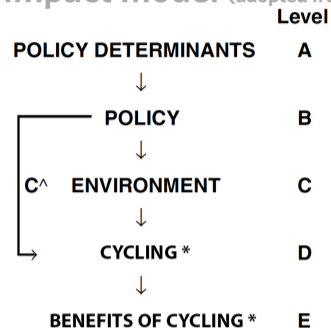
The emerged intervention categories were consolidated, discussed in relation to the theoretical framework and then compared with evidence from the literature review. This finally allowed to better position urban design in the framework and indicated ways in which urban design could be used more effectively to achieve an uptake in cycling.
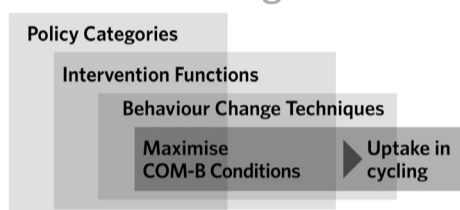

Theory

Several theories that describe how the context, policy determinant, policies and interventions influence behaviour were synthesised into a new conceptual framework.
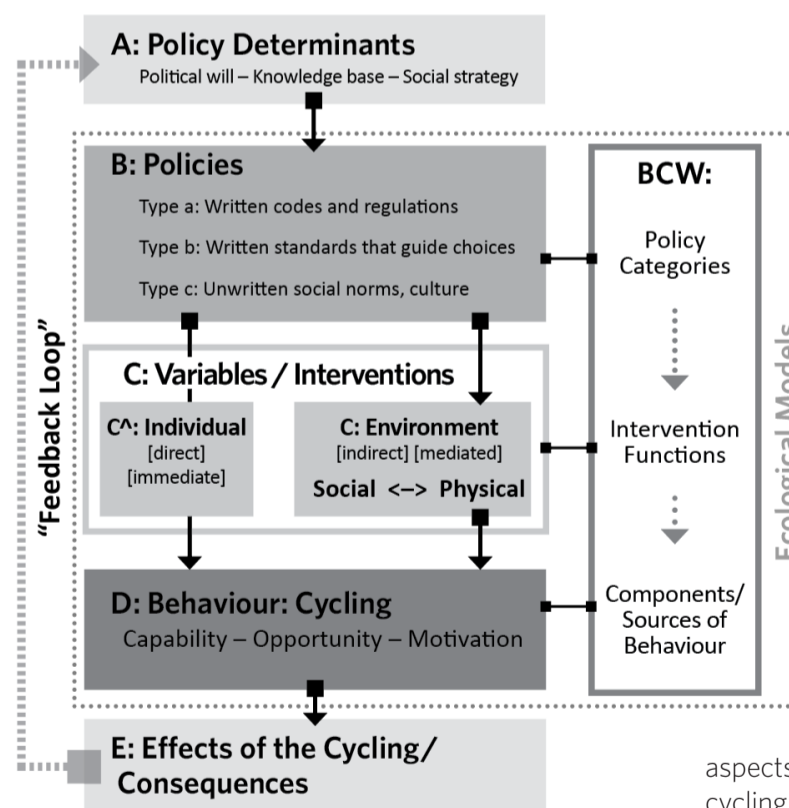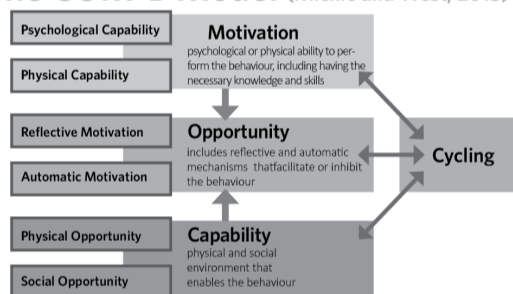
Policy impact model (adopted from Schmid et al., 2006)

	Level
POLICY DETERMINANTS	A
↓	
POLICY	B
C^ ENVIRONMENT	C
↓	
CYCLING *	D
↓	
BENEFITS OF CYCLING *	E

The Behaviour Change Wheel (Michie et al., 2014)

The COM-B Model (Michie and West, 2013)

A: Policy Determinants
Political will – Knowledge base – Social strategy

B: Policies
Type a: Written codes and regulations
Type b: Written standards that guide choices
Type c: Unwritten social norms, culture

C: Variables / Interventions
Cˆ: Individual [direct] [immediate]
C: Environment [indirect] [mediated]
Social <–> Physical

D: Behaviour: Cycling
Capability – Opportunity – Motivation

"Feedback Loop"

BCW:
Policy Categories
Intervention Functions
Components/ Sources of Behaviour

Ecological Models

E: Effects of the Cycling/ Consequences

Conclusion

Urban design and re-configuration, re-design of space can be a powerful tool to achieve change by providing or denying "opportunity" both as possiblism or determinism. But this should not hinder designers to go beyond prevailing traditions or to explore the possibility of combining urban design measures with other, not-spatial interventions – particularly to address crucial, but often not deliberately addressed aspects of behaviour such as habits or the skills and ability to ride. These

Variables

The key argument extracted from the literature review is that: regardless of the classification of interventions as „hard" or „soft" measures, they equally aim at an uptake in cycling that is based on 'behaviour changes'. To be effective, they need to be carried out systematically and comprehensively, theory and evidence based and deliberately chosen and addressing specific target groups or behaviours. Particularly habits seem to massively influence behaviour and behaviour change, but hardly any of the systematic reviews or policy recommendations mention how they should be addressed.
The literature review also revealed that approaches to change cycling behaviour are framed through 'narrow lenses' and the focus of the particular study or discipline. But collectively, these approaches seem to add up to a wide scope of correlates and interventions that were identified as important for cycling.

Policy content analsyis & Results

71 documents (with 4600+ pages) were identified in different policy reviews, policy databases and from different actors and then screened and categorised. 28 documents were selected (both London and UK level) and coded and processed in MaxQDA in a 'conventional content analysis', where codes are defined and emerge during the analysis from the data (Hsieh and Shannon 2005). The only pre-defined codes for interventions were 'spatial' and 'non-spatial' and the benefits marked with an asterisk (*). The following code categories emerged:

Benefits*: Consequences / Benefits of cycling (-> E) function as policy determinants („Feedback Loop")

Policies* [B]: Guide and support interventions. But were found to be often very general and vague.

Knowledge transfer: influences A/B/ C: Important for the 'knowledge base' (=policy determinant), to improve how policies are implemented and to ensure high quality of interventions.

Design principles: between B and C/Cˆ: Link between policies and interventions. Contain detailed information and guidance for the implementation of interventions. Are particularly important because policies are often so vague, but rarely binding.

Non-physical interventions* & Physical interventions* [C/Cˆ]: A wide variety of potential physical and non-physical interventions and combined measures were indentified. A taxonomy/coherent terminology is necessary to enable systematic evaluation of interventions.

Barriers* & Tipping points: Barriers were often the basis for proposed interventions. Tipping points were rarely considered in the policies, but actually matter for increasing the modal share. Link directly to the individual, the behaviour and the COM-B components.

aspects are specifically important to make non-cyclists cycling and to effctively change the modal share.
Considering the often very vague policy documents, the project also revealed the importance of policy determinants, benefits, design guidelines, principles and knowledge transfer to effectively bring about change.

'Behavioural boost'

According to the literature, only a 'major contextual change' can effectively break habitual transport patterns. This project proposes to increase the impact of infrastructural changes through (temporary) intervention which open a habitual 'window' or as a tipping point. For example the EcoMobility Festival (where a neighbourhood is closed for one month for motorised traffic and where various pedal-driven vehicles are provided) could serve as such a 'behavioural boost'.

Michie, S. et al. (2014) The behaviour change wheel: a guide to designing Interventions.
Michie, S. & West, R. (2013) Behaviour change theory and evidence: a presentation to Government. Health Psychology Review.
Schmid, T. L. et al. (2006) A framework for physical activity policy research. Journal of Physical Activity & Health. 3S20.