Cognitive Aspects of Movement in Urban Design
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People have an objective when moving around: a goal, a purpose or a destination. Seldom people just wander around for no reason, even when indicating to use intuition.

Choices are made to reach the objective: mode(s) of transportation and route. Some choices are made in advance, prior to departure, other choices are made on the way or even in real-time. A huge proportion of our choices is based on earlier experience with the physically built environment (prior knowledge), interpretation of what is expected (logic), personal preferences and personal habitats (back-ground). Some choices are made obviously, many choices are made unconsciously. But what drives our choices? Efficiency? Costs? Time? Quality? Safety?

The Built Environment provides a framework for our movement: Movement is limited to the infrastructure, i.e. street network and paths offered. Pedestrians have most freedom but are despite limited physically and legally: we cannot walk through walls or cross private property. Trains and trams are limited to the rail infrastructure. Every means of transportation has its own network, although some parts of the networks can be used by multiple modes.

![Figure 1: Map based solely on GPS tracks produced by 35 students and 35 families tracked for one week in Delft, acquired by the Sensing the City project, responsible teacher: Stefan van der Spek, TU Delft, (c) 2013.](image-url)
Our human brain facilitates our movement in space and time. We built a spatio-temporal cognitive map of our (built) environment. Either by physically visiting the location or by using aids such as maps, 3D models and other representations. Emotion adds personal values to the map. Spaces become places with a meaning: nodes or stepping stones on the way from origin to destination. Highlights in the city become landmarks: beacons or location-referenced identifiable objects. We all have our own, unique map in our minds, just like Google builds a personalised representation of the map for you based on search-engine entries, browsing behaviour and physical movement. But, we also have many elements in common. Our brain is the starting point of understanding our movement.

In the lecture I will discuss the relation between movement and the cognitive system, between actual movement and structure offered. Space Syntax (Hillier) uses the spatial layout of infrastructures to determine the potential use. Three-step analysis (De Bois) is based on the limitations of the human brain. Can we reveal the logic of our movement and translate this into design of smarter cities?

References


