

# Emotional Mapping for Migrants – Using Cartography for Integration Efforts

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## 1 ABSTRACT

In this description of a work in progress the general assumption is followed, that the perception and conception of space is individual and influenced by emotions. Based on an existing project on using emotional responses to space for enhancing navigation systems for pedestrians the conceptual work in progress is presented, to use cartographic tools for migrants and locals to exchange their perception of their neighbourhood and environment. The overall hypothesis is accordingly, that integration processes need communication and cartographic communication processes might be useful in this context.

## 2 EMOTIONAL WAYFINDING

Emotional response to space can be characterized by its emotional significance for an individual, whereas a physical connection to the environment does not exist. The individual moulding of an object's emotional significance can be further classified to direct-, indirect- and collaborative response according to the form and status of physiological development (Davidson et al 2006).

Direct responses to space or spatial objects are created by direct episodic experiences, thus form direct episodic memories. The dependency on time is source for further determination to "history based episodes", which bases on individual experiences in the past, and "current episodes", where current emotions and experiences build up new landmarks within the personal knowledge base.

Indirect landmarks are built up by "third party events", which form some kind of semantic memory based on third party narrations. The creation of indirect semantic landmarks may be achieved by personal narrations of others, where variations of emotional response depending on the basis of relation-confidence are expectable, or factual knowledge extracted from different kind of media, like books, data, news, etc..

Collaborative responses to space are the result of demographic reasoning. Although this class seems to consist of an external, thus non individual, component, this is the result of stochastic evaluation. Actually no physical obvious relations, but physiological accordances among the user-group to specific objects or behaviors may be observable. The result of these observations describes social landmarks, which should have strong relations to individual episodes and the internal knowledge of the individual.

In order to serve as additional "layer" or landmark for navigation tasks each of these classes need to have a link to space. This reference to the external, real environment may be in form of a direct or indirect connection to or description of space with various granularities and degree of emotional response.

## 3 THE "EMOTIONAL MAPPING" PROJECT

The basic assumption in the research project EmoMap is that every human perceives urban space differently. Some places are seen to be unsafe, others as especially beautiful. This perception is subjective and emotions of the person influence it. The research field emotional mapping deals with collecting subjective perception of space and deriving mental maps of it. This is done by interviewing a group of test persons about their city (or parts thereof) and combining all their answers and drawings into an average mental map (Matei 2003). A major disadvantage of this method is the granularity of the resulting map: the areas of same emotional value are pretty large as it is not possible to scale the test method to get very detailed results. Also, it is likely that the results are more based on preconceived opinions and are not based on the actual emotion related to space.

For the project EmoMap we try to use the option of volunteered geographic information (VGI) to collect emotional views of the city by allowing users of a Web 2.0 community to contribute and share their emotions. The data collection will be done in-situ with the help of apps on current smartphones. Compared to the traditional method this brings the advantage that the collected data is of a more punctual type, e.g. an emotion is not associated with a large area but a point or a small area. Also, the data of many different users can be stored independently without the need to make an aggregation towards one average data set. This

allows finding out how specific groups of users perceive their environment, e.g. people of type A think this place is unsafe. This information can be used to design user-adaptive mobility services. For EmoMap we focus on using the collected data for modified route calculation in pedestrian navigation systems. The hereby developed methods and algorithms will then be tested for the hypothesis that the inclusion of emotional data can improve user satisfaction.

All VGI collected during the project EmoMap will be stored in an open online database (OpenEmotionMap.org). OpenEmotionMap will be open for other projects and can be used, filled and at a later stage maybe even developed by the community continually. Via an API (application programming interface) it will be possible to integrate the service in other Web 2.0 applications. It is planned to use this open interface for other scientific projects at our group, for example for integration and migrant mapping.

#### **4 EXPANDING EMOTIONAL MAPPING TO THE DOMAIN OF INTEGRATION OF MIGRANTS**

Based on the idea, that individual responses to space and place exist, the overall assumption is followed, that mapping emotional response to space in various scales (neighbourhood, district, city) can be a tool for locals and migrants to express their view and perspective of their life in a particular area. A further assumption is followed that problems of integration ask for efforts of communicating different perspectives and thus, as using mapping as a process of communication, can contribute to at least starting a process of exchange.

Currently the conception of an empirical test with Turkish migrants and local neighbours in particular areas in Vienna, Austria by using various tools (maps, smart phone) is under development. Experiences of the work with using map metaphors in narrative atlases will be considered (cp. Mills 2010).

#### **5 CONCLUSION**

The inclusion of emotional layers and landmarks in mapping and presenting space and place is expected to provide a deeper understanding, e.g. of navigation and way finding, but also about the heterogenous understanding of space by different persons living in the same area. Consequently, the author plans to test the concepted model in order to understand the role that emotion plays in facilitating way finding and navigation and as a collaborative tool for enhancing communication between migrants and locals.

#### **6 ACKNOWLEDGMENT**

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