Contextual Adaptability of Navigational Spatial Descriptions: A Pragmatic Comparison

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Extended Abstract

Spatial descriptions are frequently used for navigation in urban environments. For example, they can take the form of an address or a route description, both of which are expressions that uniquely refer to a destination or to a route toward a location through a set of spatial features and relations (Paraboni et al. 2007).

Today's information systems provide these two forms of spatial descriptions as a combination of map features (e.g. street name and district number) in a predefined way (Schmidt and Weiser 2012), but offer no way to adapt to different users and environments (Hirtle et al. 2011). In contrast, in a spatial communication setting between humans, navigational descriptions are more flexible in the sense that factors like a user's prior knowledge and the structure of the environment shape the communication. For example, instead of using a formal address, you may describe a travel destination to a taxi driver by referring to features of the environment assumed to be known to both of you. Or a friend may direct you toward a location while considering your prior shared knowledge of the environment and its structure, which results in a generalized route description that includes only the relevant references to spatial features, e.g. buildings, junctions, subway stations, etc. (Dale et al. 2005). Although these different types of spatial descriptions refer to the same location, or provide instructions on how to navigate to it, their contextual meanings are quite different.

ICA European Symposium on CARTOGRAPHY
VIENNA, 10–12 NOVEMBER 2015

Published in "Proceedings of the 1st ICA European Symposium on Cartography", edited by Georg Gartner and Haosheng Huang, EuroCarto 2015, 10-12 November 2015, Vienna, Austria

In this paper, we compare the potential for adaptability of contextual meaning of formal addresses, route descriptions (generated either by computers or humans), and destination descriptions in the context of human navigation in urban environments. The notion of pragmatics is deployed for the intended comparison. Here we understand pragmatics as the relation between spatial descriptions and description-using agents. We consider spatial descriptions as linguistic descriptions (i.e. a spatial description is our linguistic unit in this research) and introduce common topics of linguistic pragmatics such as redundancy, relevancy, cohesion, coherence, context, and common ground within the spatial descriptions studied in this paper.

As the result, those spatial descriptions that are expressed in natural language and directly made based on human spatial thinking might be seen as global among human beings. Such descriptions are among those forms of spatial description where the basic formations are the same everywhere around the world: in order to give efficient route directions, one should select some elements that are referred to as *good* on the levels of both semantics and pragmatics. In contrast, although addresses are among the most commonly used spatial descriptions, their structure, and consequently their semantic and pragmatic considerations show geographical differences. Different addressing systems around the world fundamentally differ even on the syntactic level. Some countries have declared a strict structure for addressing, from the type of the selected elements to their order of appearance, which does not fully correspond to our spatial thinking. But there also exist descriptive addressing systems, in which addresses are expressed in natural languages and thus treated like human-generated spatial descriptions (Karimipour et al. 2014).

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