Chapter X

Translating the Web Semantics of Georeferences

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Abstract

This chapter presents a review of the ways of georeferencing in Web resources, as opposed to the georeferencing of other information communities, specifically in route directions for wayfinders. The different information needs of the two information communities, reflected by their different semantics of georeferences, are identified. In a case study, we investigate the possibilities of translating the semantics of georeferences in Web resources to landmarks in route directions. We show that interpreting georeferences in Web resources enhances the perceivable properties of described features. Finally, we identify open questions for future research.
Introduction

The Web consists of a large amount of predominantly weakly structured and organized resources, with only a few resources having an explicit and structured description of the content. We can think of the Web as an informal network of diverse heterogeneous data sources, including simple files as well as modern object-relational and semantic databases. Many, if not most of these resources provide some form of reference to geographic space. Georeferences link the features of physical or social reality described in the content of the resources to particular locations in geographic space.

The descriptions of features together with their georeferences can be seen as a map inherent in the Web. This map has some properties, particularly heterogeneity. The types of features described, the ways the features are described, and the ways the georeferences are made are diverse, and the links between features and georeferences are implicit and diverse as well. Without a specified semantics of features and their reference to geographic space, the Web-inherent map cannot be translated automatically into an explicit map of general or specific purpose. This is true of the opposite as well. In general, search engines have problems with geographic searches when looking simply for keywords and not considering semantics of natural language structures.

In this chapter we will investigate georeferences in Web resources for a very specific purpose: exploiting the wealth of inherent geographic knowledge of Web resources for route directions. Choosing a specific purpose for (re-)constructing the inherent map in the Web allows for the identification of the fundamental challenges for research by a single case-based study. The case-based approach limits the complexity of the reconstruction at least by selecting an appropriate destination domain — the source domain, the Web, remains a heterogeneous domain. Choosing wayfinding as the destination domain does not limit the generality of our findings; other destination domains have to address the same challenges.

In wayfinding, people generate travel routes from their mental maps, and communicate these routes by relating movement and orientation actions to landmarks at selected points along the route. In comparison, wayfinding services generate travel routes on metric travel networks. The metric travel networks cannot communicate these routes by referring to landmarks due to a lack of landmark knowledge. There is neither a clear understanding of what constitutes a landmark, nor is there a ready-made directory of landmarks available. In this situation, the map inherent in the Web is a rich pool of geospatial features, which potentially can be used by wayfinding services for searching for landmarks.

Our hypothesis is: Referencing to geographic space is fundamentally different for Web content providers and wayfinders; nevertheless, links can be established.