Chapter 31
Mapping the Mappers: Exploring the Communities of VGI Users Through OpenStreetMap Data

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ABSTRACT

Volunteered geographic information (VGI) platforms generate crowdsourced layers where a vast amount of shared and shareable geo-information is available. Monitoring the informative reliability of these sources is an important task, and the main VGI project, OpenStreetMap is a good testing ground to investigate how the collective intelligence made of users' networks creates public knowledge. OpenStreetMap (OSM) can be defined as a language of representation of real geographical entities shared as web maps. Mappers often work in solitude, but they stick to and strictly respect the rules given by their community. The aim is to create a geographical database used by anyone for any purpose. The chapter explores the following questions: How many contributors are there? Where are they and what do they collect? What are the interactions between them? The chapter illustrates what can be read from the OSM data, the available tools, and what could help researchers to understand this community.

INTRODUCTION

The value of territorial knowledge is largely recognised when it's shared. Entire communities and groups of mappers have made it more tangible and visible through digital maps by using and populating OpenStreetMap. Researchers from different disciplines are capturing the implicit possibilities of observing transformations by starting from the analysis of the Wikipedia of Maps, as Fox (2012) described it because of its editable characteristic. This chapter introduces OpenStreetMap as a data source, mapping tool and a means of visual representation, illustrates what OpenStreetMap is, when, how and why it was

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created. Following this brief introduction, the second section focuses on the socio-economic value it produces and the economic interest shown by companies and corporations. An overview of the literature review shows the relevance of OpenStreetMap for the research and, in particular, the social research. The section also motivates the contribution of OpenStreetMap to research and considers the problem of data quality within the realm of voluntary geographic information (VGI). In the review, the authors add considerations on citizen science (mentioning extreme citizen science), social innovation (e.g., all those local initiatives based on OpenStreetMap, which were then replicated elsewhere) and humanitarian aid. Following this review, the chapter's core investigates how users collaborate on the project, how they collect data, what's in the data to learn about people, vandalism, the role of some organisational bodies in the OSM Foundation. The authors explore different methods to explain contributors' motivations and question the concept of community. The chapter illustrates the methods and tools to extract data on the users and information about an area through the Overpass-API and OHSOME APIs (reading the historical data). The case study focuses on an area in the Alpine Arc, not previously covered and lacking mapped streets. By observing the contributors' activity, the authors explain how small enterprises can use OSM to solve local challenges in rural areas and the value of local knowledge visually represented through digital maps.

BACKGROUND

Mapping the Earth is a process of exploring and representing the territory, a visualisation of local knowledge. Traditionally, this field has been considered reserved for highly skilled individuals and groups. Over the years, surveyors, cartographers, and geographers have been engaged in mapping the world by transcribing it on paper and then digitising it. The history of maps and map-making is full of remarkable episodes of expeditions, for example, Lewis and Clark's one to map North America's West and Lambton and Everest's Great Arc expedition to measure India. National mapping agencies are established in each country and preserve the accuracy and the updates of the national maps.

It was common to assume that mappers needed a university-level degree to measure the Earth and transcribe the information on paper or into the computer and that expensive equipment and infrastructure was fundamental to support their work. However, some changes have occurred over the past few decades. Following the removal of the selective availability of the GPS signal by US President Bill Clinton in 2000 (Haklay et al., 2008) and the publication of the interchange standard (GPS eXchange format or GPX) in 2002, the low-cost GPS receivers with better positional accuracy (6 to 10 meters in normal conditions, in contrast to roughly 100 meters) became available on the market and GPS receiver developers rapidly adopted the GPX standard. More people than ever before collected and uploaded information about different locations to their computers.

The wide availability of high-quality location information has enabled mass-market mapping based on affordable GPS receivers, home computers, and the Internet. Although a range of projects based on user-generated mapping has emerged, OpenStreetMap (OSM) is probably the most extensive and effective project (Haklay et al., 2008). "The availability of low-cost, high-quality and high-accuracy Global Positioning System (GPS) means that consumers or citizens can now collect geographic information using smart devices such as smartphones or dedicated GPS units; these geographic data can then be uploaded and contributed to OpenStreetMap (OSM)" (Mooney and Minghini, 2017). Haklay et al. (2008) describe OpenStreetMap as "a knowledge collective that provides user-generated street maps". These