

Wiki-place: Building place-based GIS from VGI

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Geographers, urban designers, sociologists, and other researchers have had a longstanding interest in exploring the nuances and complementarity of the concepts of space and place. Space is generally understood with reference to formal systems of registering exacting mathematical coordinates to locations or features in two, three or four dimensions. In contrast, place is typically seen as a more subtle and ambiguous concept that is rooted in the meaning and value that individuals derive from a specific location or setting through active interactions and spatio-cognitive processes (Tuan, 1977). Place has different meanings depending on the field of interest. For Mike Goodchild (2011), *“The concept of place has a long history in geography and related disciplines, but has been plagued by a fundamental vagueness of definition”*. From a social perspective, place is considered as “an expression of context”, an expression of the “value of linking individual behaviour to context” (Goodchild, 2011). Place is often used in the sense of community or neighbourhood, implying an informal relationship with an area surrounding the individual’s place of residence (Goodchild, 2011). From a conceptual geographical point of view, Michel Lussault (2007) argues that “spaces are socially constructed” and that all space is a formal arrangement of artefacts, materials and ideas, and is characterized by specific attributes like scale, metric, substance and configuration. He considers space as a meta-concept that is contextually and contingency shaped as places, areas (territories) or networks. In this framework, place can be seen as space where Euclidian or metric distance does not matter.

The importance of how people perceive of and conceptualize place has long been seen as an important element in building our understanding of a range of issues such as how people navigate space, what comprises a vibrant city centre, why some areas are seen to be threatening, and how people ascribe value to landscapes among others (Lynch, 1960). Nevertheless, GIS (as the most prominent spatial decision-making tool) has often been criticised for promoting, or at least facilitating, an absolute and mechanistic representation of space that has limited its usefulness for representation and analyses of human-centred issues (Pickles, 1995). In other words, GIS are typically space-based and are not effective in representing the ‘sense of places’ (Goodchild, 2012). This “sense of place” idea refers to a concept of place that is essentially polysemic (meaning changes with respect to points of view, perspectives) and dynamic (evolving ‘topology’ depending on time, people...). Almost two decades of applied public participation GIS (PPGIS) research and practice has alleviated many of the early concerns of GIS as citizens can increasingly direct how the technology and data are applied to issues of local interest. Some PPGIS case studies illustrate how aspects of place can be derived through community members’ direct use of GI technology and through examination of detailed text comments and/or geometries that citizens anchor to features or areas of importance to them (Hall et al. 2010; Brown and Weber, 2012, Turkucu and Roche, 2008). However, these data can be labour-intensive to gather and are often associated strongly with geographically- and temporally-limited processes such as land management assessment or events.

In this position paper, we build upon recent interest in extracting place-related information from increasingly common stores of Volunteered Geographic Information (VGI). As noted by Goodchild (2007) among others, the term VGI encompasses a wide array of data created by citizens that have some form of explicit or relative spatial reference. A growing amount of research is coalescing around the potential to infer various dimensions of perceived place or space by mining the tag and/or image content of geotagged photographs and placemarks submitted to sites such as Flickr, Panoramio and GoogleMaps. Much of this

work has focused on identifying the semantic and geographic extent of place names and the vernacular characterisations of place present in user-specified tags or references in web pages (Jones et al., 2009). Dykes et al. (2008), for example, illustrate how geovisualization methods can be used to extract a series of basic “scene types” and “descriptors” from photos contributed to Geography. Hollenstein and Purves (2010), Jankowski et al. (2010) and Graham and Zook (2011), among others, use different approaches to demonstrate how spatial representations of place, such as names of specific cities, neighbourhoods (see <http://livehoods.org/> for instance), or vernacular concepts such as “downtown”, can be distilled from the tags associated with georeferenced images and placemarks.

The concept of place has evolved in the location age as location-based technologies are not limited to answering “where” we are or “who” and “what” is close to us, but rather can also provide extended capabilities for users to access new forms of virtual places or augment physical places in which they live by adding digital artefacts. This hypermodern context is characterized by its wikinomics (Tapscott and William, 2009), where places could be identified, sensed and characterized by citizen seen as sensors (geosocial 2.0) and their meaning could be crowdsourced. In this context of hyper-modernity, places become hyper-places where physical Euclidean distances are less relevant than other forms of distance (time, connectivity, digital, social...) (Roche et al., 2012a).

Our proposal aims to provide a bottom-up approach for VGI contributors to build and explore different conceptualizations and indicators of place within a process that is traceable and navigable. Unlike the absolute and measurable nature of space, place is alternatively vague, sometimes contested, a product of individuals’ perceptions and defined through collective and social processes. Representing the plurality of different perspectives within GIS has proven to be challenging, in part because the data author ultimately must settle upon a single compromise location for a feature or a single value for one of its attributes. The multi-author nature of VGI alleviates this concern to some extent since people can contribute conflicting data. However, tracing the evolution of a current VGI data set, even one as advanced and highly regarded as OpenStreetMap or wikimapia, is not without difficulty (Roche et al., 2012b).

We suggest that augmenting collaborative online mapping tools with wiki-like capabilities will allow: a) multiple representations of a given feature or a place to be created or changed by any user, b) the dynamic and iterative processes of data construction to be navigated in an open and traceable manner, and c) differences in indicators of place to be identified and highlighted. These differences or delimitations may relate to different views of what constitutes a neighbourhood or alternative characterisations of a place (e.g. empty field versus pristine meadow, safe versus dangerous pathway). In this way, spatial and aspatial delimitations offer an interesting avenue to investigate both the aspects of place that are commonly held within a group of VGI contributors and where place-based agreement and disagreement are found. From a data quality perspective, delimitations may provide another approach to quantify uncertainty in VGI data and operationalize the “social approach” advocated by Goodchild and Li (2012). Wiki-based delimitations should also provide innovative avenue to implement the geographic approach of VGI quality insurance by offering a specific ‘diff’ operator to allow “*comparison of a purported geographic fact with the broad body of geographic knowledge*” (Goodchild and Li, 2012).

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