Cartographic journal, The, ISSN 0008-7041
Volume 53, number 4 (november 2016)

Abstract
Ever since behavioural geographers started working with place perception; and Peter Gould and Kevin Lynch used mental maps to explore city visualization and spatial preferences, participation has become an integral part of geographical research. Later, when Robert Chambers and others introduced maps into Participatory Rural Appraisal, Participatory GIS and Public Participation GIS were also recognized by quantitative geographers as research methods and visualization tools. In the era of smartphones and global Internet coverage, applications such as FixMyStreet, ArcGIS Online, CartoDB and Maptioannaire allow users to cross the technology gap and become neocartographers without the need for GIS knowledge. GeoParticipation based on using spatial tools in order to involve citizens in community participation can be the future development of Public Participation GIS as it provides an easy-to-use environment and social engagement while creating the feeling of belonging to a certain social group or community. The paper presents a historical review of participatory approaches to the creation of maps, while focusing on the changing role of citizens; from being the objects of geographical research to being the creators of the agenda as well as decision-makers within their communities. Maps were always used as tools of power, but there is a visible shift in the (map) power structures, from maps created by experts and state administration representatives towards maps created by people and their users.

Abstract
This paper reviews persistent principles of participation processes. On the basis of a review of recent interrogations of the (Public) Participatory Geographic Information Systems (P)PGIS and Volunteered Geographic Information (VGI) approaches, a summary of five prevailing principles in participatory spatial information handling is presented. We investigate these five principles that are common to (P)PGIS and VGI on the basis of a framework of two dimensions that govern the participatory use of spatial information from the perspective of people and society. This framework is presented as a shared perspective of (P)PGIS and VGI and illustrates that, although both share many of these same principles, the ways in which these principles are approached are highly diverse. The paper ends with a future outlook in which we discuss the inter-connected memes of potential technological futures, the signification of localness in 'local spatial knowledge', and the ramifications of ethical tenets by which PGIS and VGI can strengthen each other as two sides of the same coin.

Abstract
Participatory GIS (PGIS) was borne out of the cauldron of the GIS and Society debates and the social theoretic critique of GIS. The form and practice of PGIS continues to reflect its origins. At its core PGIS remains focused on integrating local

knowledge that is multivalent, equivocal, and often conflictual within a reductionist GIS technology and extensive Spatial Data Infrastructure. Recent conceptual developments in deep mapping and spatial storytelling have the potential to advance the representation of community knowledge through participatory deep mapping. Deep mapping explicitly recognizes that social life is contingent, implicated, and unpredictable. In representing a critical engagement between Geographic Information Science (GISc) and community knowledge and representation, deep mapping potentially challenges the misalignment in representing community knowledge in GIS and in bending geospatial technologies to the needs of communities.

Upside-Down GIS: The Future of Citizen Science and Community Participation P. 326-334

Michelle M. Thompson

Abstract

This article will focus on the changes in time, technology and data that have affected traditional partner relationships using participatory geographic information systems (PGIS). Project development roles of reliance held by the community, and managed by university agents, has shifted from cooperative to, in some cases, complete independence. The modern model of citizen participation includes a resident-planner toolkit with greater access to neighbourhood data and low- to high-tech analytical tools. Many community-led quality of life studies have a limited scope and focus on policy issues that do not serve a larger constituency. Many neighbourhood plans exclude self-reported neighbourhood knowledge and, due to the frequency of municipal reporting cycles, leaves gaps and data mismatch. Given this, the traditional public participation GIS (PPGIS) model may be less data driven due to a more mission-driven resident-led PGIS solution. Planners in practice and in academia have raised levels of concern about data standards, interoperability, reliability, error and metadata. How and why Citizen Science influenced the progression of PPGIS, participation GIS, crowdsourcing and now community-managed data in both theory and practice are provided. This paper will reflect on how top-down strategies to include neighbourhood knowledge are being reframed by the United States Federal Community of Practice. The future of data integration focuses on both the process and products of data development from both the bottom-up and top-down perspectives.

Powering Up: Revisiting Participatory GIS and Empowerment P. 335-340

Jon Corbett, Logan Cochrane & Mark Gill

Abstract

Since 1996, participatory GIS (PGIS) has facilitated avenues through which public participation can occur. One of the ways practitioners articulate social change associated with PGIS interventions has been to qualify success using the term ‘empowerment’. This paper explores the extent to which PGIS academic literature has utilised, defined, measured, and analysed empowerment. This research will demonstrate the degree to which PGIS has, from 1996 to 2014, appropriately and adequately taken into account the causative and direct relationship between a PGIS intervention and empowerment. This article identifies works broadly dealing with PGIS, then searches within that subset of literature for the term ‘empowerment.’ The findings are both quantitatively and qualitatively assessed to explore the trends within the PGIS literature over time and to contextualise the ways in which empowerment has been identified, understood, and articulated. We conclude with a discussion on the extent to which future PGIS research and practice has the ability to disrupt power inequalities.

Facilitating PPGIS Through University Libraries P. 341-347

Rina Ghose & Stephen Appel

Abstract

Equitable access to local geospatial data continues to pose challenges to the knowledge production efforts of marginalized citizen groups. While local government agencies have provided greater access to public data sets through their internet Geographic Information System (GIS) sites, data cannot always be downloaded and used directly by citizens. Past research demonstrates that data sharing at the local level can be a challenging task, mired by legal, institutional, and personal issues. Despite the hype about open data in government, its acceptance and implementation is slow at the local

scale. The need for a centralized data repository system at the local scale is thus crucial. This research explores the recent groundbreaking effort to establish a state-wide geospatial portal among the 26 University of Wisconsin (UW) library systems. Through a survey and follow up interviews conducted among public land information professionals in Wisconsin, we find that GIS professionals in local and county governments are open to data sharing through a common geospatial portal. Simultaneously, the efforts to introduce open source GIS software and technical skills through workshops conducted by the library staff demonstrate new ways to facilitate Public Participation GIS (PPGIS). Our research thus demonstrates that university libraries can emerge as an effective model for advancing PPGIS through geoportals, web services, and data and applications in the cloud.

Mapping the Digital Terrain: Towards Indigenous Geographic Information and Spatial Data Quality Indicators for Indigenous Knowledge and Traditional Land-Use Data Collection P. 348-355

Rachel Olson, Jeffrey Hackett & Steven DeRoy

Abstract

Mapping spatial information to represent indigenous knowledge (IK) and rights has been taking place since the early 1970s in various parts of Canada. These mapping initiatives continue to be primarily associated with traditional land-use (TLU) studies and have deep roots in participatory methods that include aspects of participatory geographic information systems (PGIS). In the current context of encroaching industrial developments into indigenous homelands and the strengthening of Indigenous rights within Canadian Supreme Court rulings, the role of mapping TLU information is central. Who is conducting the research, what tools are used, and how this information is shared are all key questions being asked in the Indigenous context. As a result, the quality of spatial data has become a critical part of these engagement processes. This paper focuses on the intersections of new methods of TLU/IK data collection, namely a direct-to-digital approach that seeks to minimize misrepresentation and mistranslations of IK. From these intersections, the authors recognize the need to establish Indigenous-led quality indicators that directly address the introduction of new methods into the TLU/IK field. Indigenous geographic information and spatial data quality indicators will better address the current needs of Indigenous communities in the negotiation of resource developments in their territories, and provide a new path forward for enhancing the use of geospatial technologies in Indigenous communities.