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Capturing Volunteered Historical Information:
Lessons from Development of a Local Government Crowdsourcing Tool

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ABSTRACT

Government agencies are adopting a variety of web-based strategies to improve information systems, increase civic engagement, and enhance decision-making capabilities and planning processes. Within the U.S., a university research team designed a municipal web tool called the Austin Historical Survey Wiki to fill a pragmatic need for information about historic resources to be used for long range planning and development review purposes. The authors situate this web experiment in relation to an array of models for government interaction with citizens via data collection efforts and the application of GIS and web-based technologies. This experiment offers local government agencies and practitioners a replicable model for tracking official data and citizen contributions to a GIS. In addition, this research offers insights into potential barriers to and requirements for collaboration between government agencies and citizens online.

Keywords: Crowdsourcing, E-Government, E-Planning, Historic Preservation, Historical Survey, Open Government, Participatory Geographic Information Systems, Volunteered Geographic Information, Wikis

INTRODUCTION

A growing number of city governments aspire to be "civic laboratories" where web-based and mobile technologies are applied in experiments to increase the efficacy of municipal services in a quest for "smarter," more efficient, and more participatory cities (Townsend, 2013).

These experiments include innovation in the use of social media and apps, crowdsourcing platforms, and web-based geographic information systems (GIS) for urban planning and public administration (Townsend, 2013; Evans-Cowley & Hollander, 2010; Seltzer & Mahmoudi, 2013; Gordon & de Souza e Silva, 2011). They aim to enhance municipal

decision-making by incorporating the willingness of citizens to volunteer their time, perspectives, and knowledge.

Working within planning departments, some historic preservation programs are expanding the use of digital technologies to serve preservation and urban planning. An example is the award-winning, multi-million-dollar effort of the City of Los Angeles to survey historic resources citywide, including development of specialized GIS tools, a web presence for public outreach and data collection, and a robust public engagement plan to accomplish it (Bernstein, Sun, & Sucre, 2009; City of Los Angeles, 2013; Jarmusch, 2011). In a simultaneous, but less-resourced initiative in Austin, Texas, a university-based team created The Austin Historical Survey Wiki (referred to throughout this article as the Wiki) as municipal web infrastructure to maintain a cumulative database of historic resources that is open to public contributions. Through this web-based tool, historic resources are intended to be surveyed, documented, and maintained over time by a combination of municipal officials, professional preservationists, and interested members of the public.

The Wiki was inspired by visions of advancing municipal decision-making and planning support systems. The effort was based on the conviction that public participation, online or otherwise, can give governments a firmer basis for making decisions that are more defensible, representative, and potentially more equitable, because they arise from pluralistic, democratic processes. The project also originated out of a pragmatic need for timely information about historic resources to serve the City of Austin's long range planning and regulatory functions, which includes drafting land use plans, designation of historic landmarks and historic districts, and review of demolition and remodeling permits. These data have been collected primarily by expert consultants; in recent years, resource constraints led the City to experiment with volunteer data collection under professional supervision or review.

This project resulted in a collaborative platform that can be used to facilitate public involvement in data collection and maintenance. Within this model, government officials can disseminate "official data," while also allowing "unofficial" public contributions that are either promoted to official data or remain publicly accessible alongside it. The Wiki tests the hypothesis that through this web infrastructure, a local government can gather and maintain data through online engagement with the public and that the result will not only be useful data, but more robust public participation in local government decision-making.[1]

This article describes the web experiment and the conclusions of authors as to the successes and barriers identified during and after the project. The authors first review literature related to web-based technologies and models for online participation in planning processes. The literature describes developments in the application of GIS and web-based technologies that are aimed at facilitating the interaction and exchange of information between government agencies and citizens.[2] The next section delves into the use of historical surveys by local government, and the university-based hypotheses and local government needs that spurred the development of the Wiki. A third section details the collaborative design and development process, describing the features of the Wiki in relation to debates and tensions in information technology design identified by the research team. A fourth section describes the results of testing and launch of the Wiki. The authors conclude that the experiment produced a valuable model that could be replicated in other contexts. The authors also show how opening a government database on-line does little to democratize information if there is insufficient will, knowledge or resources to foster continued participation. The result reveals both the promise and pitfalls in experimentation with online civic engagement both within and beyond historic preservation and urban planning.

WEB-BASED TECHNOLOGY, GOVERNANCE, AND COLLABORATION

Within the US, public participation in urban planning and historic preservation is rooted in popular dissent to the failures of rational planning and urban renewal policies at mid-twentieth century, which neglected to include the voices of citizens in planning deliberations or account for the value of existing urban fabric.[3] Arnstein's Ladder of Citizen Participation (Arnstein, 1969) articulated the need for citizen participation in planning processes and remains a heavily cited article in planning literature. Arnstein's conceptual ladder moves from critique of governmental processes with no participation at the bottom rungs of the ladder, to tokenism, to prescriptions for citizen power in city planning in the top rungs. Moving up the rungs of the ladder, the role of citizens in government process becomes more direct and decision-making power is placed to a great extent within the hands of the community. At the pinnacle of Arnstein's model is citizen control.

Today, the virtues of public participation have become more widely accepted within urban planning, historic preservation has become a common function of many planning departments, and the technologies used to augment community participation have multiplied. Arnstein's ladder has been modified to reflect the acceptance of public participation as an essential part of planning and to incorporate new modalities of participation. For instance, Randolph adapts Arnstein's ladder for contemporary environmental land use planning (Randolph, 2012). In his conceptualization, the ladder moves from non-participation to "collaborative learning and co-management" (Randolph, 2012, 85). At this top rung, Randolph writes: "Stakeholders take part in networks and communities of place and practice to learn and develop new knowledge and build consensus for creative solutions. Beyond decisions [or decision-making], stakeholders engage in joint implementation and learn from adaptive management (Randolph, 2012, 85)." In various

modified forms, Arnstein's conceptual model has been used to assess on-line tools (Senbel and Church, 2011; Hanzl, 2007). For example, Evans-Cowley and Hollander (2010) write: "participation assessment reflects the level of control afforded participants, ranging from information-based or feedback-only options to interactive participant self-determination" (Evans-Cowley and Hollander, 2010, 399).

Initiatives aimed at "open government" span this continuum; there are examples of government initiatives that range from providing better (one-way) access to government data to the use of web-based initiatives that seek to transform government decision-making processes through direct citizen involvement (Lathrop and Ruma, 2010). The goal of "open government" has been officially embraced at the federal level within in the U.S. (Obama, 2010). There are examples of open government initiatives at all levels of government including among state and local governments (Lathrop and Ruma, 2010).[4]

Some manifestations of open government use *crowdsourcing* as a primary method of citizen participation. In fact, crowdsourcing has gained currency in planning scholarship and practice. Seltzer and Mahmoudi define crowdsourcing as: "issuing a challenge to a large and diverse group in hopes of arriving at new solutions more robust than those found inside the organization," while Goodspeed et al. define it more instrumentally as: "dividing a large task into small pieces that can be completed by a 'crowd' of participants" (Seltzer and Mahmoudi, 2012; Goodspeed, et. al 2012). Crowdsourcing is further defined as the completion of task or creation of an online body of work via contributions of distributed people (and their distributed knowledge) via the internet (Connors, Lei, & Kelly, 2012; Elwood, Goodchild, & Sui, 2012). A more specific definition of crowdsourcing is proposed by Estelles-Arolas & Gonzalez-Ladron-de-Guevara:

Crowdsourcing is a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes

to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage what the user has brought to the venture, whose form will depend on the type of activity undertaken. (Estelles-Arolas & Gonzalez-Ladron-de-Guevara, 2012)

Within the context of urban planning, crowdsourcing can range in the type and degree of information that is shared, from very basic empirical information to gathering more complex ideas from the public for municipal problem-solving.

Wikis provide one means for crowdsourcing, especially in the context of collaborative writing. The invention of the concept of the wiki is commonly attributed to Ward Cunningham and the best known example has been produced by the WikiMedia foundation called the Mediawiki (WikiMedia Foundation 2014). Walden characterizes wikis as being associated with a "write-publish-review-edit-republish cycle rather than the traditional write-edit-review-publish sequence" (Walden, 2011, 62). Others focus less on the ongoing nature of the editing process and instead on the collaborative nature of knowledge-production. This is the case with Beth Noveck's concept of "wiki government" (Noveck, 2009; Noveck, 2010).

In an experiment of "collaborative democracy," Noveck created a custom designed wiki for citizens to directly participate in patent review for the U.S. Patent Office (Noveck, 2009; Noveck, 2010). According to Noveck, citizens who participate online may be experts in their own right, with specialized knowledge that should be directly incorporated into the process of review. The custom designed wiki that she created was focused on bringing together a small group of interested citizens to work with government to improve decision-making processes.

Central to Noveck's model is the contrast between the concepts of collaborative democracy with deliberative democracy. She describes deliberative democracy as based on the theories of Jürgen Habermas and within this model, planners strive to create the optimum conditions for *ideal speech*, which consists of egalitarian communication among participants in order to reach rational, consensual decision-making.[1] Using collaborative democracy, Noveck proposes engaging citizens with the process of completing governmental tasks rather than focusing on forums aimed at democratic speech. This collaborative model has similarities to Randolph's ideal of collaborative learning and co-management (Randolph, 2012), while Noveck's model emphasizes an online modality for participation.

Public participatory GIS (PPGIS) constitutes another set of practices aimed at improving the interaction between citizens and government, by incorporating citizen knowledge into geographic information systems. Sieber has traced the social history of PPGIS within geography, planning, and other related disciplines describing it as "the use of geographic information systems (GIS) to broaden public involvement in policymaking" (Sieber, 2006, 491). PPGIS is an area of scholarship and practice that evolved out of critiques of the use of GIS by government agencies that are top down and that neglect local knowledge. For example Talen (2000) has encouraged "bottom up GIS" as a means to incorporate citizen perspectives into planning processes, as has Al-Kodmany (2009), who illustrates the inadequacies of large-scale governmental efforts to create a complete GIS. Ganapati and Brabham have also pointed to the potential for the use of GIS to increase citizen participation in planning and government processes (Ganapati, S. 2010; Brabham, 2009).

The development of social media, web-based GIS, and location-based mobile

technologies have further extended PPGIS, as citizens are able to collect detailed spatial data, annotate geographic features, and share this information online (Elwood, Goodchild, & Sui, 2012; Gordon & de Souza e Silva, 2011; Tulloch, 2008). These new capabilities have enabled *volunteered geographic information* (VGI) (Elwood, 2008). Open source platforms such as Ushahidi (Ushahidi, 2014) and proprietary systems, such as Google Maps and ESRI Online, are examples of web-based infrastructure developed to support volunteered geographic information. Here crowdsourcing methods are often employed to either replace or augment other sources of geographic data, with the aim of producing more accurate or complete maps.

"Citizen science" is yet another arena in which citizens engage in the production of volunteered information, usually in empirical data collection for use in scientific studies or public policy (Bowser and Shanley, 2013; Newman et al., 2010; Ottinger, 2010). Data from these efforts are often related to government and nongovernmental efforts at natural resource conservation.[5] Often citizen science is seen as a means of galvanizing citizen participation and interest in science. The Wiki research team identified parallels between efforts to conserve natural resources that are often embedded within citizen science projects and the potential to apply this model to efforts to conserve the built environment in the context of historic preservation and planning.

In an article on the future of GIS in planning, Drummond and French suggest that city planning departments should redirect funding to support new forms of professional-academic alliances that produce GIS-based tools, including "new GIS analysis, design, and participation tools if local and regional planning agencies provided funding and a real world application environment" (Drummond and French, 2008, 173). This is precisely the direction the Austin Historical Survey Wiki project pursued through a collaborative model that was designed to encourage public participation while meeting the needs of Austin's historic preservation office through the collection of empirical data.

The research team drew from the model of crowdsourcing in which citizens interested in preservation were given a relatively defined set of tasks – to observe, research, and document the built environment for use in local government decision-making. The research project also drew from a literature of participatory GIS, where the act of gathering geographical data could lead to better decision-making and volunteered geographic information could lead to more complete maps of community assets. The research team shared ambitions with citizen science, in that citizens' collection of empirical data was anticipated to lead to greater public understanding and appreciation for historic preservation. It was hoped that creation of the Austin Historical Survey Wiki would provide an entry point for the general public to learn about historic preservation and get involved.

The research team recognized from the outset that there were going to be substantial challenges to successfully employing web-based technologies. Some of these relate to the *digital divide*, which is characterized not only as unequal access to technology, but also limitations in proficiency with information technology (Zickuhr, 2013). Additional challenges include the differential availability of citizens to contribute time and attention; the potential for the contribution of erroneous or misleading information; difficulties in representing local or traditional knowledge using GIS; and limitations in the capacity for community-based organizations or governmental agencies to develop and maintain online initiatives (Seltzer & Mahmoudi, 2013; Sieber, 2006). Other concerns expressed in literature related to volunteered geographic information, citizen science, and wikis have to do with the validity of amateur contributions and their ability to be taken seriously by local governments, scientists and other professionals, and decision-makers (Johnson and Sieber, 2013; Ottinger, 2010; Riesch & Potter, 2014).

Many of these issues were anticipated by the research team and elements of the design of the tool were intended to respond to them. (These will be discussed in a later section.)

Nevertheless, many of these issues remained and are likely to have constrained participation. In fact, the research team would learn about the necessity to foster an on-line community to support the Wiki,[6] as well as the fragility of the alliances forged between university, community-based organizations, and local government. These would prove to be essential to the continued use and maintenance of the tool.

WIKI AS PROPOSED SOLUTION TO A LOCAL GOVERNMENT NECESSITY

The Austin Historical Survey Wiki did not arise solely out of an academic desire to test models of online interaction between government and citizens; the Wiki was digitally born to accomplish set of tasks that are common among the 1,600 Certified Local Governments (CLGs) in the U.S. that have agreed to survey historic resources (U.S. Department of the Interior, National Parks Service, 2013). Historical surveys are defined by the U.S. National Parks Service (NPS) as "a process of identifying and gathering data on a community's historic resources" (U.S. Department of the Interior, National Parks Service, 1985). These surveys produce lists of buildings, structures, districts, cultural landscapes, and objects (e.g. monuments and sometimes living resources such as heritage trees) deemed worthy of recognition and in some cases protection.

Municipal preservation offices typically use the information from historical surveys to nominate local and national historic districts, designate historic landmarks, and develop compatibility standards for infill within historic districts. City planners, economic development specialists and other local government officials can use this information in revitalization efforts, heritage tourism, and emergency preparedness and mitigation (Laurie, J., 2008).

Beyond conventional uses for historical surveys, information about historic resources has the potential for use in urban design and place-making initiatives. Preserving historic resources can enhance neighborhoods, retaining a sense of place in the face of urban change (Allison and Peters, 2011). Historic resources contribute to the diversity of the city as temporal collage (Lynch, 1972). Data about historic resources can also be used in sustainability initiatives aimed at conserving material resources, reducing construction and demolition waste, and retrofitting buildings to improve performance (Preservation Green Lab, 2012; Frey, 2008; Stein, 2010). In declining communities, historical surveys can be used to identify assets that should be preserved in the face of demolition initiatives aimed at addressing blight and abandonment (Bertron and Rypkema, 2012).

Given all of these uses, a historical survey is not simply a list of historic resources. The uses of historical surveys range from long-range planning to use in development review and regulatory processes. These decisions include whether buildings can be demolished, if they can be remodeled and how, as well as the kinds of new development that may be allowed within certain districts or neighborhoods.[7]

Given potential benefits of having a comprehensive historical survey, the need for a survey was highlighted as an action item in Austin's comprehensive plan and downtown plan (City of Austin, 2011; City of Austin, 2012). A comprehensive survey had been conducted by consultants in 1984, but data from the survey was not maintained over time. A conventional yet costly solution would have been to commission a new comprehensive historical survey. The financial resources to accomplish a city-wide survey seemed out of reach.[8] It was thought that a Wiki might be a more economical solution, as local governments elsewhere had gathered historical survey data, and some have made them accessible online, often through web GIS (Bertron, 2013; Austin Historical Survey Project Team, 2009). This was a solution that would enlist citizens to expand public knowledge of the community's cultural resources, as they had already begun doing in neighborhood-based efforts to survey potential historic districts.

A UNIVERSITY-DESIGNED BLUEPRINT FOR LOCAL GOVERNMENT NEEDS

While the client for this project was a city government, the Wiki was developed and implemented by a research team at the University of Texas at Austin, working with the local preservation society, a non-governmental organization, and the City of Austin's planning department and historic preservation office. Members of the team worked intensively with city staff and community members to develop and test the Wiki, using pragmatic action research and participant observation as primary methodologies. Observations were gathered through numerous research team meetings, neighborhood association and community open houses, and the use of the Wiki in graduate courses in which students worked intensively with community members to test the tool and survey historic resources. Additionally, web analytics were used to collect quantitative data about usage of the web-based tool.

There were several key issues in decisions in the process of designing and developing the Wiki. The first was whether it should be a highly customized website or one that was expeditiously assembled (a mashup) of existing tools. This was largely resolved with consensus that the tool needed to be custom built, which took additional time for development, but enabled new features to be incorporated that were not available among existing platforms.

A second major question was whether the tool should be primarily based on proprietary or open source software. Within planning departments, ESRI's ArcGIS is considered the industry standard for desktop GIS. ArcGIS Online, a web-based option, became a viable option about halfway through development of the Wiki. There were also open source GIS options, including a heritage management system under development by the Getty Foundation (The Getty Conservation Institute, 2013). However, the research team decided to use a Google Maps Application Program Interface (API), a toolkit that allows developers to build a custom application, so that the Wiki would be intuitively familiar to the public as well as easily replicable.[9] The Wiki uses a Google Maps API to display base maps and to allow users to add historic places. It has a MySQL database and data modeling: data forms and user registration are accomplished with Drupal, an open-source PHP-based web framework.

Finally, the research team discussed at length whether the Wiki should be structured primarily by the bureaucratic needs of the historic preservation office or whether it should reflect freer forms of interaction more common to social media and digital history sites. Neighborhood groups were already using the paper survey forms for volunteer-based surveys; in effect Austin was experimenting with crowdsourcing historical surveys without using any online tools. Thus, there was a research logic to simply retaining the City of Austin's paper forms as a structure and migrating to a platform that better supported crowdsourcing. Citizens already involved in historic surveys would then find the online survey questions similar to the paper form they were already using and newcomers to preservation would find sets of easy questions that they could try out online.

The Wiki is designed to allow citizens to add historic places and to contribute and edit data associated with each historic place. It also includes data from the City of Austin and professional historical surveys. In order for the Wiki to be used in actual decision-making, the sources for all contributed information need to be known and retained as part of the City of Austin's public records. Several features of the Wiki emerged in response to these imperatives. One of the most fundamental was that information cannot be contributed anonymously; all data is displayed with the real name of the contributor and a timestamp. Additionally, each piece of data has a full revision history, in which prior contributions can be viewed along with names of the users who contributed or edited information.

Another central feature of the Wiki's design is moderation. All contributions are reviewed by a moderator before they are published. The

Figure 1. Screenshot of the Austin Historical Survey Wiki
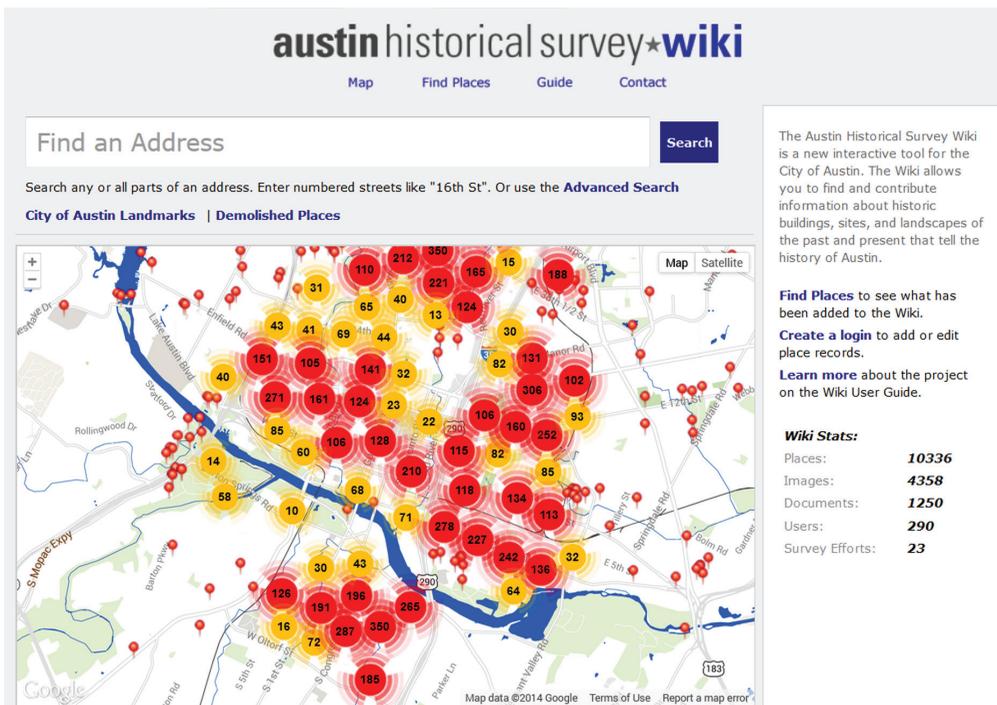
Historic Preservation Office selects and manages the moderators. The moderator may choose to send submissions back for further editing or may publish the submission, at which point the data becomes publicly visible. Protocols were developed to prevent moderators from slowing the flow of information or overstepping their bounds. Moderators were instructed not to review information for accuracy beyond gross and obvious error (e.g. "920" instead of "1920"), but to ensure that information was neither spam nor abusive.[10]

Central to the custom design of the wiki and its management of citizen contributions are "data review levels." A data review level is associated with each data field, indicating whether its contents have undergone "Preservation Office Review" or "Professional Review," or if the data remains "Unreviewed." This hierarchy is rooted in the City's Development Code, because surveys reviewed by the Historic Preservation Office are used in demolition review and

evaluation of historic district nominations.[11] Data at different levels of review are displayed simultaneously and with a timestamp, so that users can compare data from different levels of review. [12] "Unreviewed" data may be promoted up the hierarchy, but there is no expectation that data must be reviewed and promoted, except in the context of official review functions.

The research team uploaded information from prior professional surveys conducted over more than 30 years, allowing this data to be immediately editable by any member of the public or any professional, with regard to factual accuracy, evaluations of historical significance, and updates reflecting physical change. With the Wiki, historical surveys become less of a product completed at a certain point in time, and more of an ongoing process, involving citizens, preservation professionals, and city staff in a continual process of quality control and database maintenance.

Figure 2. Screenshot of historic resources page

Figure 3. Close-up of historic place page showing preservation office reviewed data

Figure 4. Close-up of historic place page showing unreviewed data

Review Level	Preservation Office	Professional	Unreviewed
Potential Designation(s)			
Place Type			Building
Status	Existing		
Moved			
Current Name(s)	Franzetti St		
Historic Name(s)	Franzetti St		
Overview	The Franzet		Freedmen's smokehouse and bar will be at 2402 San Gabriel St. in a two-story structure that was built in the 1860s by freed slaves. The area was a hub for the African-American community before the University of Texas at Austin became a predominant force in the neighborhood. Updated 10/19/2012 - 01:27 AM By Carl Webb

In addition, the tool was designed so that registered users can download data as a comma delimited file (.csv) for all historic places (or any user-defined subset). The data includes geographic coordinates, so users can display and analyze data in Excel or any geographic information system. This allows users to sift and analyze data as they wish. This feature allows community-based organizations, other city agencies, and web and mobile developers to access the city's information system for purposes that could range from original research to mobile heritage tours.

The Austin Historical Survey Wiki was designed to increase participation among a dispersed community of citizens who could contribute their time, observations, and values to widen the city's inventory of historic places. If citizens contributed information, team members reasoned that this might lead to a deeper knowledge of local heritage and enrich historic preservation and planning processes. The team hoped that the Wiki might also help the city's historic preservation office to recognize a wider range of cultural resources – buildings and landscapes associated with the recent past, more diverse ethnic and social heritage, cultural landscapes and vernacular resources (Shapiro, 2007; Kaufman, 2009; Mason, 2006). Furthermore, the team hoped that the Wiki would lead to several important outcomes including more identified and preserved historic places, more citizens engaged in historic preservation; and more transparent and participatory processes within local government planning and historic preservation.

COMMUNITY RESPONSES TO THE WIKI

An iterative process of design, development, and community engagement was integral to the creation of the tool and ultimately to understanding barriers to participation. The Wiki was first tested in a neighborhood near the university.[13] The research team met with volunteers in their homes, introducing them to the tool. While volunteers expressed enthusiasm, some seemed discouraged with a nascent beta website that had usability challenges. Existing political conflicts in the neighborhood, including ambivalence around organizing a historic district, contributed to burnout among a few volunteers who gave up before completing a neighborhood-wide survey.

The research team continued to work with the North University neighborhood while moving on to further test the Wiki in East Austin, an area of the city with several historically African-American and Hispanic communities.[14] The research team was aware that previous historic preservation initiatives in East Austin had met with suspicion, criticism, and active resistance.

Figure 5. Comparison of traditional historical survey methods and the Wiki survey method
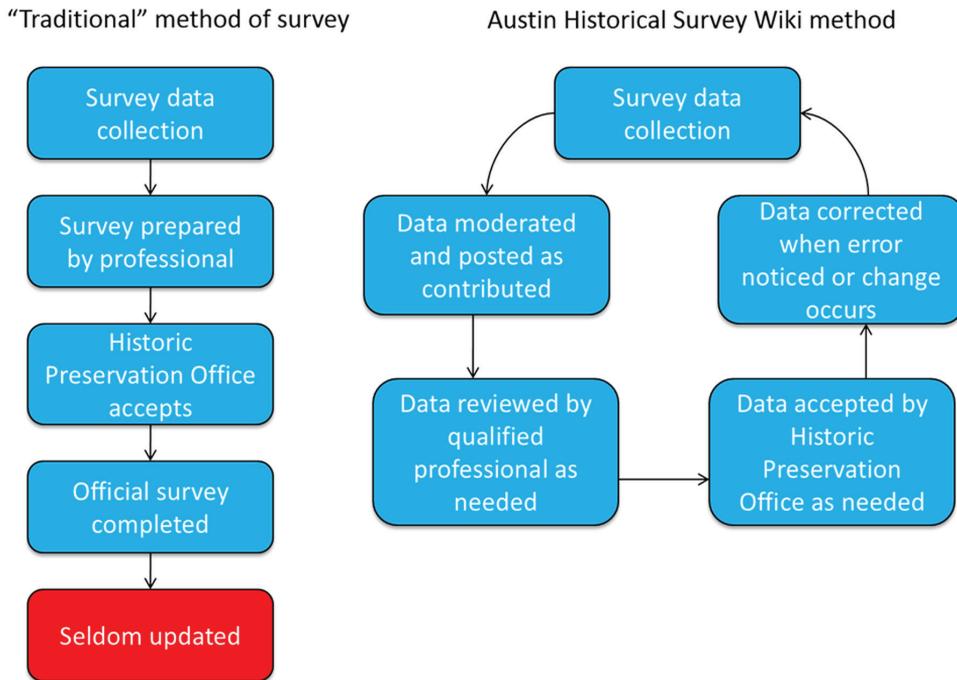
In the early 2000s, gentrification became a major concern as property values rose and demographics shifted. A community-based organization dedicated to environmental justice identified historic preservation as one of the main culprits of gentrification (Chusid, 2006).[15] Mindful of this, the research team focused demonstrations and open houses on history and preservation efforts already underway, in partnership with the organizations undertaking them.

The Wiki was presented as a tool to aid community-based organizations in achieving their own goals, seeking to avoid imposing any external agenda. When presenting at an African American museum, for example, the research team explained how the new tool might help with cataloguing objects associated with particular sites and promoting exhibits. When interacting with neighborhood groups, the Wiki was presented as a low-cost approach to conducting historical surveys required for local historic district applications. Music and cultural organizations were invited to use the Wiki to upload stories about significant sites, businesses, cemeteries, or other places that could draw community users and catalyze appreciation of neglected historical figures from the East Side.[16]

Some representatives from communities of color on the East Side, including community members associated with efforts to document the area's African American and Hispanic community histories, engaged the Wiki and the research team with skepticism.[17] The process of testing the Wiki exposed persistent perceptions among some community leaders that historic preservation and city planning efforts contribute to economic and cultural gentrification. The Wiki's inclusion of numerous fields to catalogue architectural features may have intimidated users who felt that they needed to contribute a lot of specialized information or who only wanted to contribute stories related to inhabitants of a historic home rather than documenting its

architecture. For some residents the digital divide remained a reality, especially for seniors who may be able to record oral histories or share photos, but were wary of using an online tool.

Some conversations with residents and preservation advocates led to passionate discussions about the community's changing demographics. East Austin was rapidly changing; while the Austin region is one of the fastest growing metropolitan areas in the country, its central city, including East Austin, is losing African American population. There appeared to be, at the core of many of these informal conversations, a desire among residents of color in East Austin to control the images, planning, and funding related to their cultural assets in the face of demographic change, growing development pressure, and concerns about the community's relationship to the City of Austin and its development-oriented initiatives. Some community leaders were more interested in having comprehensive discussions with their communities on the meaning and use of historical surveys before engaging the Wiki. The greatest concern was being able to tell stories, especially about lost places. While performing outreach with a local African American historical group, its leadership had a wealth of stories about "touchstone" sites, places that were meaningful to those who remembered vibrant businesses that served as important social spaces and community institutions (Allen, 1989). Some community members were more enthusiastic about documenting their personal and community attachments to these touchstone sites. They seemed reluctant to participate, because the Wiki was built for municipal purposes and didn't seem to encourage community remembrance of important social spaces.[18]

One neighborhood group was interested in organizing a local historic district to slow the rate of demolitions and preserve their interpretation of neighborhood character. This neighborhood group embraced the Wiki, dedicating time before one of their meetings to test the tool. However, introduction of the Wiki revealed fissures between Anglo and Latino residents, in a community undergoing demographic and socioeconomic shifts. A Latino preservation advocate pointed out a less-than-flattering photo of a property that came from a decade-old professional survey on the Wiki. He expressed concern that photos taken by strangers and posted to the Wiki would contribute to stereotypes about Latino residents. Other advocates did not see the City-sanctioned neighborhood group as legitimate representation of residents and suggested other, less Anglo-dominated groups for more "authentic" testing.

While the Wiki was designed for better transparency, some viewed it with suspicion that there were ulterior motives aimed at gentrification and the cultural appropriation of East Austin's African American and Hispanic heritage. The Wiki was designed for community-based organizations to use for their own purposes as well as the City of Austin's; however, its status as a municipal platform and database may have reduced participation among community-based organizations.[19]

QUANTITATIVE MEASURES OF PARTICIPATION

After more than a year of iterative development and testing, the Austin Historical Survey Wiki was officially "launched" at City Hall with great fanfare on June 4, 2012. News media covered the event and general enthusiasm was expressed by participating officials and by members of the public. At the time of this writing, 290 users have registered to edit or contribute to the Wiki. As a measure of broad participation, this number is modest in a city of more than 840,000. On the other hand, the Kansas Historic Resources Inventory, another website that allows public contributions, has 456 registered users, in a state of 2.88 million (Kansas State Historic Preservation Office & Kansas Historical Society, 2014).

Table 1 shows the number of contributions for two years after the Wiki's official debut. The column "number of places created" represents the number of historic buildings, objects, structures, and other sites that have been newly added

to the Wiki. The table counts each contributor's use of the Wiki in adding information to the Wiki, not the original sources of data. The large numbers for the University research team include batch uploads of volunteer survey data, as well as legacy data from professional historical surveys conducted over the years. Images on the Wiki include both recent photos and scanned photos from a range of periods. Documents include scans of historic zoning ordinances, previously conducted surveys, and other, mostly official documents. Data fields range from historical narratives to architectural style, to information about window and door types.

The chart illustrates how participation among public participants, volunteers, and City of Austin staff diminished, while the greatest number of contributions in the second year were from students at the University of Texas at Austin. This reflects the ongoing use of the tool in historic preservation courses. Three Austin neighborhoods have used the Wiki for historical surveys, but this has been accomplished mainly with the assistance of university students and faculty. (Figure 6 shows historic places surveyed in the East César Chávez neighborhood). This

has undoubtedly influenced the spatial extent of new historic resources, as contributions follow the patterns of already established partnerships between affiliated faculty and community-based organizations and neighborhood groups. The significant drop in contributions among all groups indicates that the intensive outreach during the Wiki's first year was an important factor in participation by volunteers.

Figure 7 shows the distribution of data by review level. The fields labeled as "Preservation Office Review" are primarily associated with designated historic landmarks that were uploaded to the Wiki before launch. The greatest proportion of data (39%) is labeled as "Professional Review." This reflects prior professional surveys that have been added to the Wiki. A smaller proportion of fields (26%) is "unreviewed." Unreviewed data is primarily associated with neighborhood local historic district surveys and some data entered by individual users. Data in this chart must also be contextualized; there have been more than 30 years of professional surveys compared to just a few years of citizen surveying (both paper- and Wiki-based). It is also essential to

Table 1. Contributions to the Wiki one and two years after official launch

Contributor	Number of Places Created		Images Uploaded		Documents Uploaded		Data Fields Added	
	As of June 2013	Between June 2013- June 2014	As of June 2013	Between June 2013- June 2014	As of June 2013	Between June 2013- June 2014	As of June 2013	Between June 2013- June 2014
University Research Team	4,761	3	3,716	0	11,428	0	68,932	37
City of Austin	99	1	190	0	571	0	9,223	35
Heritage Society volunteers	61	4	199	0	940	0	3,455	18
University Students	34	209	36	24	106	0	2,847	1,679
Other public participants	139	12	90	7	236	2	977	29
Total	5,094	5323	4,231	4,262	13,281	13,283	85,434*	87,232*

* These numbers include data that have been archived due to the contribution of new information at the same level of review. The total number of data fields of *current* data on the Wiki was (N=78,066) as of June 2013; (N= 79,523) as of June 2014.

Figure 6. Places surveyed by volunteers and professionals in the East César Chávez neighborhood
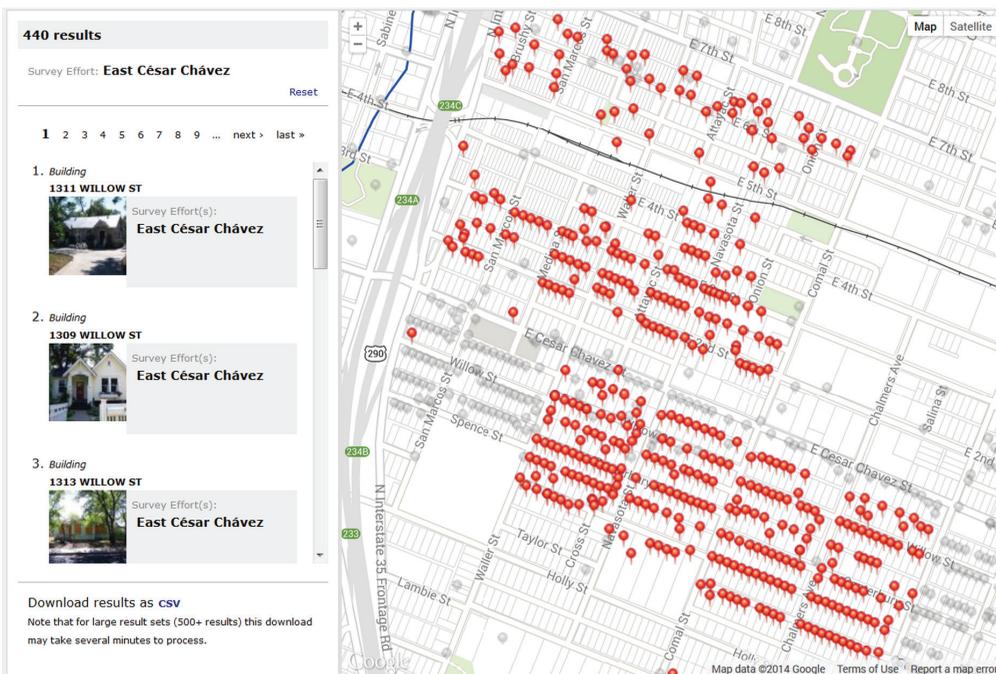

note that the promotion of citizen contributions to "professional" or "preservation office review" reduces the number of "unreviewed" fields. Still, the numbers seem to indicate that the Wiki disseminates government and professional data to a greater extent than the capture of large quantities of crowdsourced information originating from citizens (see Figure 7).

An aim of the project was to encourage community-based organizations to adopt the Wiki as a means of organizing information for their own purposes. As noted in Table 1, the local heritage society continues to add content and uses the site to disseminate content, but only on a limited basis. It may be that the heritage society is more concerned with its own initiatives and historic tour app, rather than data collection on the City's platform. It remains an open question as to the number of community-based organizations that will have the interest and capacity to contribute to the City's information system in a systematic way that also benefits community-based goals. The

evidence seems to indicate that adoption of the tool is limited and that major outreach efforts would be required to revive participation on the Wiki.

A test of the Wiki's capacity to support government decision-making and the use of volunteered data will come when City staff begin regularly including Wiki data in staff reports that involve deliberation on the part of the Landmarks Commission, the Planning Commission, and the City Council. Or when citizens insist on the use of Wiki data in official proceedings.[20] Neither has happened. If data from the site were incorporated into the daily practice of municipal preservation and planning, as had been intended from the start, it would more directly test the hypothesis that the public can contribute valid data to information systems used in planning and decision-making. The lack of use in public decision-making means that the connection between the Wiki and public administration is largely unrealized

Figure 7. Data by review level

Number of Fields of Data by Review Level
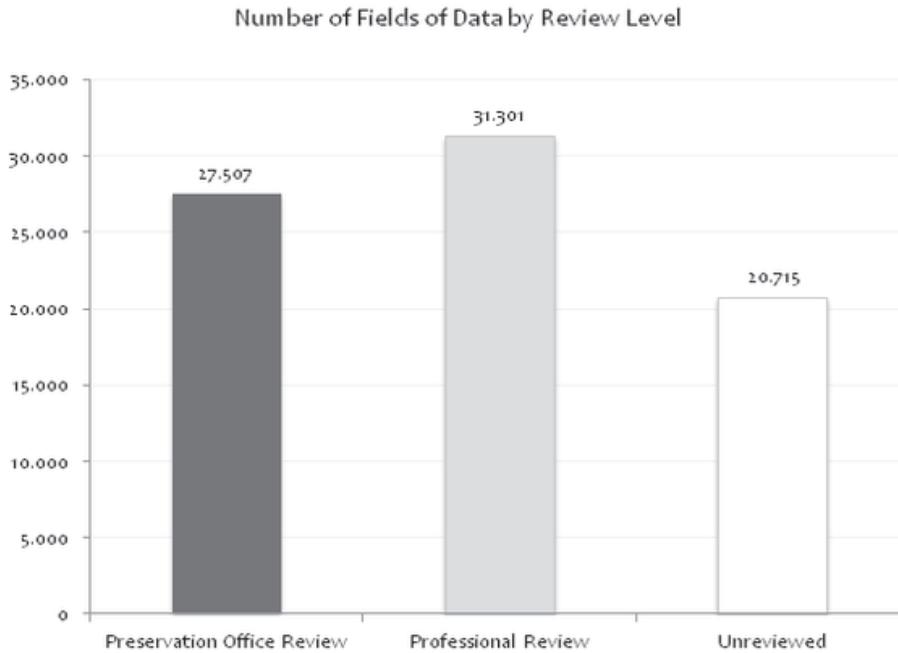
and the connection between the two is likely to be invisible to many potential users.

In addition, professional consultants conducting surveys for the City of Austin have not incorporated citizen outreach with the Wiki into their workflows (see figure 8). City Preservation Office staff have neither required public engagement nor used the Wiki to do more than disseminate information. The experiment brought into high relief not only the limitations in the capacity for government agencies and community organizations to maintain online initiatives as anticipated by Seltzer & Mahmoudi (2013) and Sieber (2006), but their reluctance to apply data from the tool in decision-making processes or facilitate communities of active users willing to review and edit data already on the Wiki.

CONCLUSION: VALUE AND LIMITATIONS OF THE WIKI MODEL AND SUGGESTED CONDITIONS FOR FUTURE EXPERIMENTATION

In a chapter on the use of GIS in archaeology and heritage studies, Fitzjohn (2009) described the potential for web-based heritage projects to incorporate a rich layering of data using geographic information systems. He writes that GIS can provide "an environment where our varied types of archaeological, historic or even public participatory data can be collated and juxtaposed, evaluated and layered with the non-traditional data so that we can start to think and speak about place in new ways" (Fitzjohn, 2009, 249). He describes how multiple understandings of space can be related within a GIS from "the accumulation and mapping of the 'factual' knowledge about places," to "imagined

Figure 8. This screenshot shows a survey of city-owned properties conducted by a preservation professional and disseminated on the Wiki. Volunteers were not employed in the survey process; however, citizens can still contribute "unreviewed data" about these places
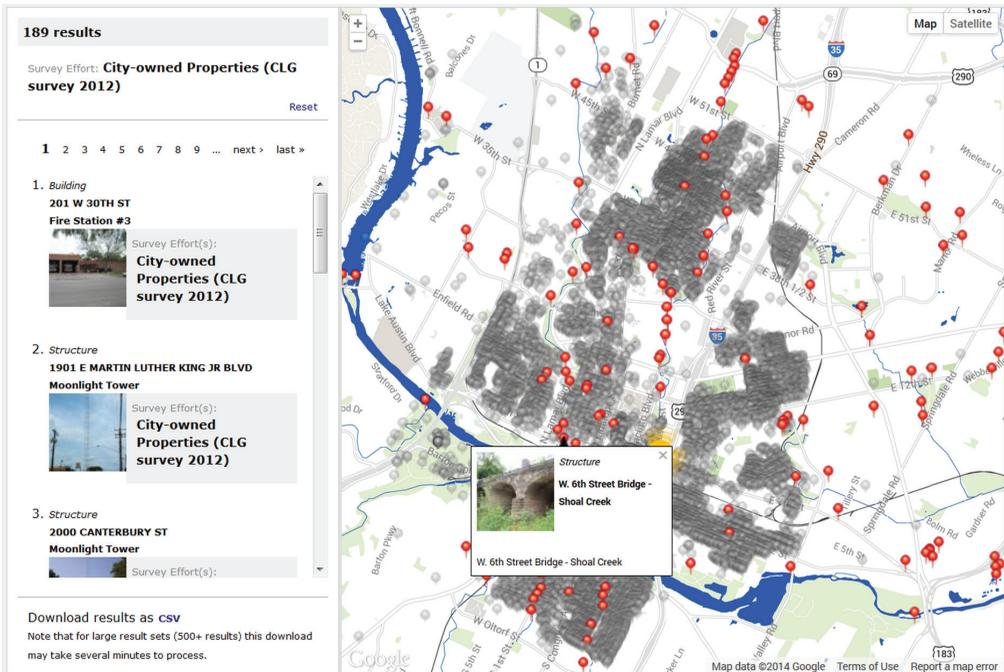
geographies and cognitive maps." (Fitzjohn, 2009, 250). He describes how a GIS may even include "remembrance-rethinking-recovery of spaces lost."[21]

Austin's participatory Wiki centers on the empirical collection of data about historic places, which is part of Fitzjohn's model. To a certain extent, the Wiki can also represent which historic places that citizens' value. Citizens can describe a historic place's significance as well as its attributes. They have the ability to place markers anywhere on the map and record information about any place within Austin's city limits as historic resources. In this way, the Wiki can capture representations of collective places of value. This is an important modification to the current method of historical survey, which is largely driven by staff and professionals.

However, the opportunity to participate is not a freeform invitation to add memories about a place; the Wiki is an invitation to share data related directly to the goals and objectives of the Historic Preservation Office. This may have constrained participation among those who do not wish to use standardized forms or established preservation categories to share information about local history.[22]

Part of the rationale for the Wiki was to provide a platform where historic resources could be identified in advance of conflicts over development. This assumes that citizens are willing and able to articulate their attachments to historic places before they are threatened, and to share information in a way that a local government can use in its established bureaucratic processes. The Wiki does not intentionally exclude alternative narratives about place, but it does not explicitly encourage them either.

Some members of the research team were disappointed that the tool could not give citizens the opportunity to give voice to what they believe *should be done* with the data. The Wiki

created a data-gathering and data-maintenance tool that relates to Noveck's notion of collaborative democracy; however, it did not provide a space for online deliberation. One can indicate that a historic resource is eligible for landmark designation; however, there is no place to share ideas as to other creative means of preservation, remembrance, or celebration. This was inherent in the decision to create a tool to support the existing historical survey process. While the inventory is crowdsourced, the solutions to *how* one might preserve a place are not. If a user has an idea for adaptively reusing an abandoned or underutilized building or for incorporating artwork that celebrates the past, there is no place to contribute these ideas. This limits the potential rewards of participation, which might give citizens a sense of empowerment and even some limited control over how their data is used (as their data might be accompanied by their perspectives). Group preferences or consensus over the desirability to preserve a place cannot be represented on the site. This may limit the formation of communities of Wiki users who might otherwise steward data on the site.[23]

Community participation also requires city government to have an ongoing commitment to overcoming divides that are not only digital, but also to address mistrust that has developed out of a much longer history of prior government interactions with the community. This necessity for trust cuts both ways; Austin Historical Survey Wiki was created with the idea that preservation professionals and city staff would want to seek out public contributions and open their information to revision and additions beyond their control. [24]

Furthermore, the choice to participate on the Wiki requires a user's willingness to associate a particular piece of information with one's name. That requires trust in the intentions of local government and other users. Distrust can be based on a range of concerns, from doubt that the information will be used, to concerns that data on the Wiki will be used either to oppose or to promote preservation in ways with which the contributor might disagree.

Even with these observed issues and limitations, the authors feel strongly that there is value in the tool that was produced. The public now has access to previously inaccessible professional surveys. As the research team prepared data for upload to the Wiki, many questions were raised that required working closely with City staff. This resulted in clarifications and corrections to professional assessments as well as basic information about surveyed properties. Thus, both accessibility and the quality of information about historic places has been improved.

In addition, the system of moderation and data review levels is replicable and may be useful for other government efforts that could benefit from citizen involvement in data collection. The categories of data that has been accepted by government officials, vetted by professionals, or simply available and unreviewed is a substantial improvement over crowdsourcing sites that do not make this clear. The Wiki provides a system of accountability for data that a local government accepts as official, while allowing citizen-generated data to coexist online. Some of this crowd-sourced information will become official data; some may simply remain visible. In time, the availability of citizen contributed data may change what is considered official government data, expanding beyond current norms and standards.

Austin's Wiki should not be understood as a crowdsourcing model that simply parses out discrete and easy steps for a general public, but a tool that requires government officials and other professionals to continually interact with citizens and to facilitate the flow of information into and out of the tool. It is a tool that was built for the preservation community to share information with government officials and for both to engage in joint fact-finding. From Austin's web experiment, it is evident that the ability to realize improvements in public engagement and planning support systems for decision-making will require more than technical infrastructure.

The successful implementation of tools similar to Austin's Wiki will require continued development of both technological infrastructure and public outreach methods that can

enable diverse communities of citizens to coalesce, collaborate, and deliberate online. At the most basic, and fundamental level, the success of this model requires a willingness among government officials to engage with the public and a long-term commitment to both citizen participation and stewardship of online resources. Online engagement also requires willingness on the part of community-based organizations to share information, encourage their constituents to actively participate in local government data gathering, and advocate for the use of citizen-generated data in decision-making over the long term. Ultimately, this model requires government officials and professionals not only to design and maintain a usable platform, but to actively facilitate both collaboration and deliberation between citizens, community stakeholders, and decision-makers on and off-line.

DISCLAIMER

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ENDNOTES

[1]   In addition, the academics and practitioners involved in the project wanted to engage the public with the potentially rewarding act of scanning the urban landscape for historic resources that should be preserved.

[2]   By "citizens," we refer generally to members of the public as distinguished from local government officials.

[3]   The National Historic Preservation Act of 1966 was adopted to protect historic resources from destruction of urban fabric using federal funds. The same year, the federal Model Cities program adopted public participation as an essential feature of urban revitalization efforts.

[4]   "E-government" is also a common term within public administration that refers to the use of online technology to improve government "management and delivery of public services" (Hu et al., 2009).

[5]   For instance, scientists at the Lady Bird Johnson Wildflower Center, a research center connected to the University of Texas at Austin, have developed online platforms enabling scientists to work with groups of citizens to gather observations of invasive species around the state (Texasinvasives.org, 2011) and to map urban forests to be used in efforts to conserve and enhance municipal resource protection in Austin (Tree Folks and Lady Bird Johnson Wildflower Center, 2014). These were early prototypes for the Wiki.

[6]   See Bryant, S. L., Forte, A., & Bruckman, A. (2005).

[7]   Questions of preservation and redevelopment can ignite tensions between community values and private property rights. This is certainly true in Austin, where there is both a desire and strong incentives to preserve historic places on the one hand, and staunch defense of private property rights and wariness of government intervention on the other. This web experiment was launched in a context where citizen-initiated lawsuits were challenging the city's tax abatement program for historic properties and where a diverse set of neighborhoods engaged in sometimes tense battles over local community preservation and gentrification (Coppola, 2012; Chusid, 2006). Even within this contentious political environment, there was general agreement among city staff, planning consultants, and the local heritage society of the value of conducting a citywide historic resources survey.

[8]   Another option would have been to continue the process of surveying only particular areas of the city. Local governments also commission surveys by theme, focusing on a type of architecture, an era, or an aspect of social history. Both area and thematic surveys, if not integrated into a common database, make a patchwork of historical data that may never reach a planner's desk and may never be mapped in any systematic way. This was definitely the case in Austin, where the paper pages of the City's 1984 historical survey resided in the City's Historic Preservation Office and remained largely inaccessible to the general public. Pages of the survey had gone missing from the library system. Numerous professional historical surveys, conducted over the years, had never been systematically compiled or shared.

[9]   While the Wiki was under development, the City of Austin was also developing an improved web-based GIS portal to share its considerable stores of GIS data about zoning, parcels, natural resources, among other layers. Therefore, the team decided to provide a means for the City and for all registered users to download data along with geographic coordinates, so that the data could be regularly transferred between the Wiki and the City of Austin's web-based GIS portal or to desktop GIS.

[10]   So far, there has been a 24-hour or less turnaround time for user contributed information to be reviewed and published on the website.

[11]   Austin City Code §25-11-213(B)(2); §25-2-353(C). Preservation professionals are defined by reference to federal rules: "Secretary of the Interior's professional standards for expertise in "history" or "architectural history" as described in Code of Federal Regulations Title 36, Chapter I, Part 61 (Procedures for State, Tribal, and Local Government Historic Preservation Programs)."

[12]   Each field's review level maintains separate revision histories. The Historic Preservation Office manages the data review process. Data fields may be promoted individually or in batches. When it becomes apparent that there are large quantities of data that should be promoted in batch, for example when a professional survey effort is completed, the preservation officer can query the Wiki for these fields and batch promote them. The overall effect is one where data moves up the ladder from one level of review to another, while leaving traces of its migration behind for users to follow. Editing any data field, regardless of its review level, will submit as new non-reviewed data. Thus, users may offer a correction to officially accepted data without overwriting these data; their corrections may be left at non-reviewed state, alongside the official data for that field, or they may be later promoted to replace the previous official data.

[13]   This phase was funded by grants from the City of Austin and a Certified Local Government grant from the Texas Historical Commission.

[14]   This phase of the project was funded through a National Park Service Preserve America grant.

[15]   In response, the City launched a staff task force that explored the potential causal link between historic preservation and gentrification. The task force concluded that there was little evidence that preservation contributed to displacement (City of Austin 2003). The task force even suggested that preservation tools had a positive effect on neighborhood stability and had the potential to mitigate the effects of gentrification. Nonetheless, there remained the potential in introducing the Wiki that prior battles could re-emerge.

[16]   Amateur genealogists and alumni from Huston-Tillotson, a historically black university, were two groups who expressed enthusiasm for the project after presentations. The genealogists, accustomed to utilizing public land and property records, considered the Wiki a more detailed, personalized tool with potential to make their family histories more tangible, by associating ancestors with places. Alumni saw the potential for sharing stories that they worried might soon be lost as elderly membership passed away.

[17]   The African American Cultural Heritage District, designated by the state in 2009, holds particular significance in the planning history of the city. Encompassing much of what was called "the Negro District" in the 1928 City Plan, the District commemorates the success of the African American community despite segregationist public policies.

[18]   The Wiki had been designed to allow and even encourage the documentation of places that had been demolished or otherwise no longer existed. Still, it wasn't immediately apparent to users what the City's Historic Preservation Office would do with this information.

[19]   In addition, language translation, a feature that supports non-Native English speakers across the city, is presently difficult to deploy on the Wiki. In an early version of the Wiki used in beta testing, a language translation feature made translation services via Google readily accessible. After transition to the City of Austin's servers, the path to activate Google translation became less apparent. This may have substantially affected the usability of the Wiki for Spanish-speaking populations or others whose first language is not English.

[20]   Another test of the Wiki will arise when developers and real estate agents begin to consult the Wiki for information and contribute information to it.

[21]   In this piece, the typology is based on Henri Lefebvre's writings in *The Production of Space*.

[22]   This could be a significant issue in Austin in particular, a city that has been noted for its geography of creative resistance, where community members fight the homogenization of place with a particularly protective stance toward beloved taco bars, music venues, and other places of the very recent past threatened with redevelopment (Long, 2010). To date, users of the Wiki have not recorded much of the more elusive attachments to place celebrated in the popular media and blog sites about Austin.

[23]   Unfortunately, there is now no way to know where there are conflicts over designation or over the data on the Wiki. The best one can do is to search for the records on the site to see if information has been systematically modified and then try to talk with individual users.

[24]   In addition, some users were unwilling to add images to the Wiki without the means of retaining greater rights to their photos (uploading images grants to the City non-exclusive rights to reproduction). Some desired the integration of Creative Commons licensing, which offers a standardized means of sharing on the web that retains certain rights, such as requiring attribution when images are used, and specifying whether images may be modified (Creative Commons 2014). The Wiki does not yet deploy the system.

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The mission of the **International Journal of E-Planning Research (IJEPR)** is to provide scholars, researchers, students and urban and regional planning practitioners with analytical and theoretically informed empirical research on e-planning, as well as evidence on best-practices of e-planning, in both urban and regional planning fields. The journal aims to establish itself as a reference for information on e-planning issues. The International Journal of E-Planning Research is committed to provide a forum for an international exchange of ideas on e-planning research and practice.

COVERAGE/MAJOR TOPICS:

- E-planning and culture, leisure and tourism
- E-planning and disability
- E-planning and digital divide
- E-planning and disasters management
- E-planning and education
- E-planning and environment
- E-planning and ethnicity
- E-planning and gender
- E-planning and health
- E-planning and housing
- E-planning and low carbon urban development
- E-planning and social issues
- E-planning and universal design
- E-planning and urban e-marketing
- E-planning and urban economic development
- E-planning and urban governance
- E-planning and urban infrastructures
- E-planning in developing countries
- Urban and metropolitan government reform through e-planning
- Future directions for e-planning
- Innovations and best practices in e-planning
- Citizen e-participation in urban planning
- E-planning and visualization
- E-planning benchmarking
- E-planning data collection
- E-planning data management (data analysis, data storage)
- E-planning evaluation
- E-planning monitoring
- E-planning online communication and dissemination
- Organizational and human factors in e-planning
- Qualitative online research methods for e-planning
- Quantitative online research methods for e-planning
- Scenarios and prospective methods in e-planning
- Software technology for e-planning
- Strategic e-planning methods
- Technology pitfalls in e-planning projects
- Data protection and citizens' privacy in e-planning
- E-planning and human rights
- Ethics in e-planning
- History of e-planning (adoption and impact of e-planning)
- Theories of e-planning (modern and post-modern planning theories)
- Trust in e-planning

Ideas for Special Theme Issues may be submitted to the Editor-in-Chief.

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