

January 2016

Reconsidering Library Collections: Community Services as Documents

Deborah Turner

Drexel University, turned@drexel.edu

Please take a moment to share how this work helps you [through this survey](#). Your feedback will be important as we plan further development of our repository.

Follow this and additional works at: <http://ideaexchange.uakron.edu/docam>

 Part of the [Collection Development and Management Commons](#)

Recommended Citation

Turner, Deborah (2015) "Reconsidering Library Collections: Community Services as Documents," *Proceedings from the Document Academy*: Vol. 2 : Iss. 1 , Article 17.

Available at: <http://ideaexchange.uakron.edu/docam/vol2/iss1/17>

This Conference Proceeding is brought to you for free and open access by University of Akron Press Managed at IdeaExchange@UAkron, the institutional repository of The University of Akron in Akron, Ohio, USA. It has been accepted for inclusion in Proceedings from the Document Academy by an authorized administrator of IdeaExchange@UAkron. For more information, please contact mjon@uakron.edu, uapress@uakron.edu.

Introduction

Traditionally, information professionals and librarians have engaged in practices that ensure access to objects such as books, digitized files, periodicals, and videos. Such practices include collection management, resource description, and reference service processes, which ensured that the information conveyed by those objects could be accessed and used. As information has increasingly become available in non-traditional formats, LIS professional practices have changed. For example, a recent trend in library space planning involves replacing book shelving with space for computer access. The move toward autonomous “self-serve” information access runs contrary to research that diverse residents served by urban public libraries prefer to interact with information orally in keeping with their cultural norms and preferences. This investigation explores current practices librarians use to meet the information needs of such residents within the changing landscape of the LIS field.

Literature review

The American Library Association’s first motto in 1878 was “the best reading for the largest number at the least expense.” No doubt, Melvil Dewey would be surprised to see the changes in libraries and in librarians’ professional practices as the field has evolved from its original focus on access to books and toward online information and the resources that facilitate access. However, Dewey might also be heartened by the ALA’s continued commitment to facilitating access to information in a neutral manner with regard to format and viewpoint (ALA, 2008, 1996, 1979). The ALA’s effort to study the increase in library programming as a way to disseminate information (Fournier, 2014) is another example of changes in the field. Perhaps the most succinct description of these changes comes from David Lankes’ assertion (2012) that libraries are about more than their “stuff” or the information resources they collect.

Research on these changes has been fruitful. For example, studies show that efforts to make online information and information communication technology available to residents in poor communities have been successful. However, those residents consistently want more, in particular, they want social connections in addition to the access to content (Wolfson, 2013). Furthermore, DiTomaso (2012) finds that despite decades of making resources available to a portion of this demographic—African Americans, their lack of social connections prevent them from achieving the socioeconomic mobility that could improve their economic prosperity, political participation, and social interaction in society (see also Frisby-Greenwood, 2013).

Finally, in recent years, scholars have increased attention on what people do to become informed. A variety of studies show that many want oral information when learning about something new (Case, 2007; Fidel & Green,

2004). For example, prenatal women form relationships through ongoing dialog with their midwives (McKenzie, 2009); professionals use oral information to socialize their colleagues (Hall, 1993; Meehan, 2000; Mirivel & Tracy, 2005; Sole & Edmondson, 2002; see also Turner, 2012); and, community members rely on stories shared orally about others' experiences to decide to adopt new technology (Burrell, 2012). In short, rather than relying on reading a book or article, some people and groups prefer to interact orally in order to gain access to information.

Evolutionary change in libraries, increased understanding of orality, and the desire to increase the social mobility of marginalized persons have resulted in modifications in librarians' professional practices. Of course, librarians continue to meet the information needs of library users. How they provide that access is the question at hand.

Method

This study's focus on practice emerges from the metatheory of social constructionism, which holds that knowledge emerges from our actions as well as from spoken and written words (Talja, Tuominen, & Savolainen, 2005). Consistent with that metatheory framing this study, the Participant Action Research method used (Kemmis, McTaggart, and Nixon, 2014) provides a means to study urban public librarians' practices. Three urban public library systems, one per year, provide different contexts in which to view such practices. This study presents preliminary outcomes based on data gathered at the first research site, the Cleveland Public Library system (CPL) in the Midwest U.S. state of Ohio. CPL has 29 branch libraries and a renovated main branch to serve Cleveland residents, which number nearly 390,000 according to the United States Bureau of the Census (2015). Cleveland's residents reflect its international diversity, high poverty, low literacy and recent ability to attract entrepreneurs. The CPL 2009-2014 Strategic Plan focuses on community deficits pertaining to resource for those who lack access to basic resources including adequate education, employment, food, and housing. On-going efforts to cope with a declining population, local economy, and diminishing library resources provide the backdrop for this study.

Data gathered for this initial year of a three-year study mainly emerges from 8 interviews with librarian administrators. Preliminary analysis also comes, to a lesser extent, from 42 interviews with eligible library users and a focus group with seven representatives from five community service agencies. Interviewing library administrator participants, specifically branch managers and system-wide administrative staff, made it possible to obtain information about CPL practices and policies in twelve (12) hours of audio recorded data. Eligible library users included those who use the library and those who do not by conducting interviews

in library and non-library community spaces. Community member interviewees were recruited from among passers-by inside of a CPL branch library and inside of two different community rooms on a property that houses a faith-based organization and residential facilities. Community member interviewees were offered a small gift as compensation for the 10-15 minutes they volunteered to be interviewed. Finally, given the frequency that interactions between the library and community service agencies emerged in the first two data sets, it became clear that obtaining data directly from a convenience sample of community service agencies would further inform this study.

PAR not only makes it possible to gather formal data—during a focus group and with interviews—but also informal data. The latter, gathered by attending and participating in meetings with library staff and during multiple calls and sites visits over a one-year period, provided opportunities for member checking of the data gathered. To some extent, PAR made it possible to gain an insiders' view of CPL practices and to view study participants as research partners. In effect, the research design facilitated this examination of work that informs and precedes planning of library services.

Data—(Not So Small) Talk

The eight administrators described a variety of ways on which they rely to meet the information needs of the underserved: providing reference service, marketing, disseminating information through programming, and collaborating with community service providers. All these approaches proved more effective when they accounted for the understanding that urban poor patrons want to talk to someone, preferably someone perceived as trusting, before they read anything on or offline. Six of the eight library administrators commented that most members of urban poor populations make an effort to talk to library staff regardless of that staff member's title—librarian, non-librarian assistant, security guard, or other. One administrator commented that if a library staff member, “doesn't take time to say hello [to a patron], they'll walk out the door and we'll not see them again—I've seen it happen.”

Observation data reinforced the importance of these greetings. It was not uncommon for library users to enter the library building and greet a library staff member before settling into a specific part of the building. These interactions seldom involved staff assisting patrons with an information source. However, library users often returned later to the same staff member they had previously greeted to ask an information-related question. Librarians at service desks (usually a reference desk or a computer work station help desk) were quick to walk library users who approached them for help to an available computer for a brief interaction after which the user continued to work online alone. Patrons working at adjacent workstations frequently asked for assistance as soon as the

librarian became available, but before that librarian returned to the service desk, which also indicates the importance of oral information at that library location. Finally, a few library users talked for longer periods with a service desk staff member even when it involved waiting to initiate the conversation or to continue interrupted conversations. Librarian administrators described the steps taken to manage these interactions. Steps involved the library participants making time for (sometimes frequent) interruptions in their work. Upon being greeted, staff sometimes introduced library users to other library staff members. Next, several participants described how a greeting may lead, immediately or in time, to altering (beginning early or extending) a service desk shift in order to accommodate a more extended greeting that became a more traditional reference question. Related, several participants described having talked with a library user outside of a service shift (to convey a sense of importance, to minimize interruptions, etc.) in order to accommodate a conversation with a library patron whether it involved a traditional reference question during that time. Librarian administrators also had a sense of when it was acceptable to initiate a greeting even it involved approaching a library user who seemed focused on a task. For example, while interviewing eligible library users inside the library, a librarian participant encouraged patrons who had just entered and others who had been on site using library resources for some time to consider talking with me. These kinds of interruptions reflected knowledge about why, when, and how it would be appropriate for a librarian to initiate an oral exchange with a library user. Finally, insights library administrators shared into managing oral interactions provided information about how staff prioritize tasks. Librarians ensured sufficient professional and security staffing when programs involving community service agencies were certain to draw a crowd in part because they anticipated increased dialog with library user attendees.

The interview and observation data demonstrate the importance of greetings as a gateway to more traditional information interactions. One administrator explained that greetings can be the start of what, in effect, is a multi-staged reference interview, even if the focus of one or more 'stages' seemed only unrelated small talk. During subsequent stages, patrons begin to reveal a need for information about some challenge they are facing.

Talking and Not-talking with Experts

As patrons reveal information needs through what appear to be multi-stage reference interviews, staff take measures to make that information available to the patrons. Often this is accomplished through library collaborations with community service agencies. In other words, library administrators meet the information needs of patrons who prefer to talk, in part, by making it possible for them to talk with representatives of community service agencies. The data reveal

that the information is made available in ways that range from having an agency's materials on-hand to hosting programs during which agency representatives disseminate the information. In an example that involves both, a librarian scheduled a program featuring a public talk by a representative from an agency that deals with violence against women. Although no one attended the program, the librarian placed brochures from the agency in conspicuous places around the branch. She knew domestic violence occurred in the neighborhood served by the branch and was not surprised to find that some of the brochures disappeared over the following days. The combination of marketing and scheduling, and then making information about it available seemed to serve the information need despite the apparent "failure" of the program. When asked whether the library would offer the "unsuccessful" program—that had no attendees—again in the future, the librarian enthusiastically said, "Yes!", explaining how important it is for libraries to make space for dialog about difficult topics. Having the program on the library events calendar and making brochures available announces that the library is a safe space for confronting seemingly taboo topics. In essence, the branch manager describes the "unsuccessful" program as yet another stage—perhaps a pre-requisite one—that could eventually lead to a more traditional reference interview, one(s) focused on domestic violence or related topics.

In another example, the data reveal evidence of how librarian administrators strategically make information available based in part on the library's ability to collaborate with a community service agency. One librarian described having worked to increase library users' access to a gang intervention group with the understanding that this group had been striving to help meet the city's objective to deter violence. When the gang intervention group lost funding and ceased to exist, the librarian increased efforts to make anti-violence information available—through brochures, signage, videos, etc.—rather than simply including it the library collection. This level of effort had been consistently used to make information about growing/planting healthy foods available because the need existed, yet no community service agency had been providing information about that one aspect of a broader topic, healthy eating—another city objective, to residents.

The data reveal librarian administrators using a set of practices to manage their collaborative efforts with a broad range of community services, including: community groups; educational institutions; faith-based organizations; federal, state and local governmental agencies; foundations; non-profit organizations; and, many more. These practices include: monitoring what services were available in the community; aiming to augment and not duplicate services as determined by community needs; evaluating each community service agency for its dependability, integrity, quality, and stability before establishing a relationship with it; managing library resources (calendars of events, displays, spaces, staffing,

etc.) to ensure patrons' access to community service agencies; and, as necessary, changing or ending—i.e., “weeding”—the library's reliance on the community service agency for meeting information needs. The practices used resemble those used to manage traditional collections—briefly, identify desired scope, determine gaps in coverage, obtain relevant items, evaluate coverage by title/publisher, remove outdated items (typically referred to as ‘weeding,’ etc.

When asked about ending the library's collaboration with a community service agency, one participant stated, “I'm thinking about how we even need to weed that collection [of community service agency collaborators] at times.” Another, explained that the library occasionally ends such collaborations and seeks a different agency with which to work when that agency ceases to exist (of course) or undergoes change that leads to differences in dependability, instrumental values, leadership, or operational direction. This discussion shows how the data reveal that the librarian participants leverage library collection planning skills to manage collaborations with community service agencies.

Embedded within the evidence of these practices are a set of issues that librarians negotiate throughout the collaboration with a community service agency. These included:

- the nature of why an agency exists (e.g. it provides services that urban poor library users need, targets the neighborhood served by that branch, is known and trusted in the community, supports civic goals, etc.),
- the quality of service an agency provides (availability of agency materials or ability to create opportunities in which library users can talk with specialists), and
- outcomes yielded from the library's and the agency's combined efforts (increase library usage, leveraged available resources, or generate additional resources).

These practices help ensure the quality of information provided and, to some extent, the experience library users have while gaining access to information that a community service agency makes available. Indeed, initial analysis of interview data from library users suggests that the information delivery, generated from these collaborations, is viewed seamlessly. Most library users do not distinguish between the various persons from whom they obtain information while in the library. The term “library” for the users refers to the building and all material resources therein; “Librarian” refers to whoever ‘worked’ at the library whether librarian, non-librarian staff, security staff, or community service agency representatives in the library providing information during a library program. One respondent who did not participate in library “programs” later described having obtained information to resolve a problem by talking with someone during a library “event.” Additionally, library users discussed community service agency

providers in ways similar to how they discussed library digital, print, service and spatial resources. For example, one community member respondent who was interviewed inside the library described ‘going here, there and over there’ to get information in the library while gesturing to the computer work stations, a room that mainly used to host library programs—frequently with a community service agency(s), and the library circulation desk. In sum, while these responses showed the library being prominent among service providers they used, these users did not seem to distinguish between library staff and community service agency staff.

The Importance of the Library to Community Service Agencies

A third set of data gathered from a focus group of community service agency representatives reveals that these participants considered the library key in their efforts to disseminate information about their agency and social services in general. Dissemination activities varied from supplying the library with informational materials about the agency to offering information or services to community members while on-site at the library at a scheduled time or periodically—typically monthly or weekly. Focus group participants commented that an advantage of the latter includes being able to have conversations with community members in a convenient and safe space. These participants commented repeatedly about the accessible nature of the library with regard to it being approachable (non-intimidating), centrally located, safe, sufficiently spacious to hold privacy concerns at bay, and well-staffed.

Discussion and implications

Preliminary analysis of the data reveals that urban public librarians engage in traditional practices like providing reference services and marketing resources to meet the information needs of underserved, urban poor populations. Data also reveal that the librarians and other staff make time to talk with this population, at times about library and non-library topics. Additionally, librarians rely on community service agencies to help meet these information needs.

Library administrators independently described steps taken to manage information that emerged from the library’s collaborations with community service agencies so consistently that they are practices. Given the institutional context in which librarianship is carried out, these practices constitute an institutional convention that puts these resources on par with more traditional sources of information. LIS literature provides a few different ways to interpret this finding. First, it supports the call for additional research into studies explaining information interactions (Savolainen, 2007; Wilson, 1997). Next, Talja (2005) suggests that the reliance on community service agencies constitutes an information practice by noting how it brings sociological and contextual factors of information interactions into focus. Or, a more constructionist

approach (McKenzie, 2003) would note how these information interactions involve libraries making information available through community service agencies in ways that involve dialog or communicative acts. The library ensures information needs are met by facilitating conversations between the agencies and library users. These interpretations highlight the importance of oral information alongside traditional library resources. Put differently, the data additionally supports how Lankes reframes the value libraries offer by asserting that "...it's not about stuff..." (Lankes, 2012), but more about the full range of library resources—including professional staff skills sets—that help facilitate access to information.

Another consideration of how librarians rely on community services agencies involves recalling how librarianship traditionally provided access to information in text-based publications vetted through peer review and other publishing processes. The proliferation of technology has led to information becoming available that increasingly bypasses such processes. For example, authors act as publishers once did in assuming responsibility for distributing their own works. Alternate processes—including social media based ones—instead help determine the quality, usefulness, validity, and more of information that becomes available. Or, information becomes available without any vetting. Librarians continue striving to provide quality information in recognition of these changes. They teach library users skills for evaluating information, referred to as information literacy. And, as reflected in the data herein, librarians rely on local community service agencies as purveyors of quality information.

Other research similarly reports that where information was traditionally made available through books, it is now conveyed in a fuller range of ways (PEW, 2013). Westbrook (2015) refers to the emerging trend to incorporate social services in libraries as *information support* designed for people in crisis. The data supports this assertion, yet reveals that programs provide social service information for a range of situations, that may or may not include crises. Even the American Library Association has noticed a significant increase in public library programming and created an office to study it and articulate standards by which to measure programming quality (Fournier, 2014). This study helps show that librarians interact with community service agencies (including government agencies, nonprofit organizations, philanthropic groups, religious associations, etc.) in a way that suggests those agencies assume the traditional role of publisher. The library recognizes that these agencies vet information and also assumes a vetting role reflected in steps taken to evaluate agency information before making that information available to library users.

This investigation occurs as new ways of validating information continue to emerge. In the effort to remain relevant in an age where information is no longer made available through a limited number of processes or types of

documents, libraries have introduced a great deal of change. For example, libraries consolidate or reduce space once reserved for shelving and service desks to make room for cafes, computing devices, demonstration kitchens, and makerspaces. And, they provide information through programs instead of only through traditional documents. These changes amount to a blurred line between information dissemination and service provision. And, these changes lead to questions.

The first set of questions emerging from the study outcomes focus on library education. How are future librarians preparing for the changes in practices articulated by this study? LIS educators traditionally taught reference interview techniques and increasingly teach advocacy. Should educators teach skills that combine these two areas of professional responsibility in order to ensure that librarians have the skills needed to manage relationships with community service agencies? Doing so may convince library administrators of the importance of informing parent organizations—city councils, county boards of supervisors, etc.—and other stakeholders about library efforts to fill gaps in community services. Next, LIS educators have taught about skills for managing library collections. Should LIS educators also teach how such skills can be leveraged to manage collaborations with community service agencies, as was observed?

Finally, a second set of questions consider the *document* concept. One way of determining whether an artifact constitutes a *document* in the LIS literature is by identifying practices used to interact with it (Frohmann, 2004). Librarian administrators' practices of managing community service agencies enable libraries to meet the information needs of underserved library users just as their practices of managing traditional library documents enable libraries to meet information needs. These practices raise a question about libraries' relationships with community service agencies: are they some type of document? Or, is some aspect of those library collaborations a document? Identifying these relationships as such would require identifying a meaningful boundary for or scope. Would such a document include the agency itself, the information it helps make available, the library's relationship with it, or the library user's relationship with the agency? Related, would a temporal boundary of that document be limited to times when agency information is represented or used in the context of library resources (within its facilities or via its website)?

Additional research is needed to determine whether some aspect of library's relationships with community service agencies can be considered a document. Likewise, research is needed to make sense of other, less traditional resources libraries now use to meet information needs. Additional investigation will help paint a better picture of librarians as they go about their work today and how LIS educators can adapt curricular strategies for preparing future librarians for that work.

Conclusion

Recognizing that libraries no longer make information available by relying solely on traditional objects, this study examines what practices libraries use to meet today's information needs, especially for people who prefer to talk when accessing information. Framed in the social constructionism metatheory and its explanation that knowledge emerges, in part, from actions like practices, this research relies on the participant action research method. The researcher identified practices by gathering interview and focus group data from library administrators, eligible library users, and community service agencies.

Analysis of data leads to the understanding that librarians meet information needs of underserved library users, who prefer to talk when interacting with information, by finding ways to give them access to oral information, whether through a seemingly unrelated greeting or a library program featuring a community service agency. Evidence of the prior suggests that librarians engage in multi-staged reference interviews, of which informal greetings are only a part. In the latter, librarians facilitate conversations in which community service agency representatives provide library users with needed information. Librarians manage their relations with these agencies in such a systematic manner that it constitutes a practice. Further examination of practices surrounding collaborations with these agencies invites consideration of whether such collaboration constitutes a kind of document, similar to those managed in traditional library collections.

Further research is needed to substantiate research outcomes reported herein: that librarians leverage traditional, collection development skill sets to make information available; that new forms of documents emerge from the ways that librarians collaborate with community service agencies, and, that efforts to educate future librarians needs to continue to account for on-going change in LIS.

References

- American Library Association (ALA). (1996 [originally adopted in 1939]). Library Bill of Rights. Chicago: ALA. Retrieved from <http://www.ala.org/advocacy/intfreedom/librarybill>
- ALA. (2008 [originally adopted in 1939]). Code of Ethics of the American Library Association. Chicago: ALA. Retrieved from <http://www.ala.org/advocacy/proethics/codeofethics/codeethics>
- ALA. (1979). Statement of Professional Ethics. Chicago: ALA. Retrieved from <http://www.ala.org/advocacy/proethics/history/index6>
- Berry, J. N. (2004, February 15). Dewey's ALA Motto Still Works Fine. *Library Journal*, 129(3), 8.
- Burrell, J. (2012). *Acting with Technology: Invisible Users: Youth in the Internet Cafes of Urban Ghana*. Cambridge, Massachusetts: The MIT Press.

- Case, D. O. (2007). *Looking for information: A survey of research on information seeking, needs, and behavior* (2nd ed.). Boston, Massachusetts: Elsevier/Academic Press.
- DiTomaso, N. (2012). *The American Non-Dilemma: Racial Inequality without Racism*. New York: Russell Sage Foundation.
- Farrell, T. J. (1978). Differentiating writing from talking. *College Composition and Communication*, 29(4), 346-350.
- Fidel, R., & Green, M. (2004). The many faces of accessibility: engineers' perception of information sources. *Information Processing and Management*, 40, 563–581.
- Frisby-Greenwood, D. (2013, April 5). Connecting Philly [web log]. Retrieved from <http://www.knightfoundation.org/blogs/knightblog/2012/4/6/connecting-philly/>.
- Fournier, M. D. (2014, December). *National Impact of Library Public Programs Assessment (NILPPA) report* (white paper). Chicago: American Library Association. Retrieved from <http://www.ala.org/programming/research/NILPPA>
- Hall, J. K. (1993). The role of oral practices in the accomplishment of our everyday lives: the sociocultural dimension of interaction with implications for the learning of another language. *Applied Linguistics*, 14(2), 145-166.
- Huotari, M-L., & Chatman, E. (2001). Using everyday life information seeking to explain organizational behavior. *Library & Information Science Research*, 23(4), 351-366.
- Ikoja-Odongo, J. R., & Ocholla, D. N. (2004). Information needs and information seeking behavior by informal sector/small businesses in Uganda. *Libri*, 54(1), 54-66.
- Kemmis, S., McTaggart, R., & Nixon, R. (2014). *The Action Research Planner: Doing Critical Participatory Action Research*. New York: Springer Science + Business Media.
- Lankes, R. D. (2012). *Expect More: Demanding Better Libraries for Today's Complex World* (eBook). Retrieved from <http://quartz.syr.edu/blog/wp-content/uploads/2014/01/ExpectMoreOpen.pdf>
- McKenzie, P. J. (2009). Informing choice: The organization of institutional interaction in clinical midwifery care. *Library & Information Science Research*, 31, 163–173.
- McKenzie, P. J. (2003). A model of information practices in accounts of everyday-life information seeking. *Journal of Documentation*, 59(1), 19-40.
- Meehan, A. J. (2000). Transformation of the oral tradition of the police subculture through the introduction of information technology. In J. T. Ulmer (Series ed.), *Sociology of Crime, Law and Deviance*, 2 (pp. 107-132). Amsterdam, New York: JAI.

- Mirivel, J. C., & Tracy, K. (2005). Premeeting talk: An organizationally crucial form of talk. *Research on Language and Social Interaction*, 38(1), 1-34.
- Pezeshki-Rad, G., & Zamani, N. (2005). Information-seeking behaviour of Iranian extension managers and specialists. *Information Research*, 10(3), paper 229. Retrieved September 12, 2006, from <http://informationR.net/ir/10-3/paper229.html>
- Savolainen, R. (2007). Information behaviour and information practice: leviewing the 'umbrella concepts' of information-seeking studies. *The Library Quarterly*, 77(2), 109-132.
- Sole, D., & Edmondson, A. (2002). Situated knowledge and learning in dispersed teams. *British Journal of Management*, 13(S), S17-S34.
- Talja, S., Tuominen, K., & Savolainen, R. (2005). "Isms" in information science: Constructivism, collectivism and constructionism. *Journal of Documentation*, 61(1), 79-101.
- Turner, D. (2012). Oral documents in concept and in situ, part II: Managerial decrees. *Journal of Documentation*, 68(6), 864-881. Retrieved from <http://dx.doi.org/10.1108/00220411211277082>
- Wiegand, W. (1986). *The politics of an emerging profession: the American Library Association, 1876-1917*. New York: Greenwood Press.
- Wilson, T. D. (1997). Information behavior: an interdisciplinary perspective. *Information Processing and Management*, 33(4), 551-572.
- Westbrook, L. (2015). "I'm Not a Social Worker": An Information Service Model for Working with Patrons in Crisis. *The Library Quarterly: Information, Community, Policy*, 85(1), 6-25. Retrieved from <http://www.jstor.org/stable/10.1086/679023>
- Wolfson, T. (2013). Poverty, Inequality, and the Social and Political Effects of the Digital Divide in Urban America. Unpublished paper presented at The Symposium on Urban Informatics, Drexel University, Philadelphia, Pennsylvania.