# Chasing the Frontiers of Digital Technology

## Public History Meets the Digital Divide

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**ABSTRACT:** Digital technology has unquestionably become central to the enterprise of public history and cultural heritage. Yet the extent to which digital technologies have helped public historians animate higher levels of civic engagement and activism is unclear and becomes particularly problematic in the context of the digital divide. This essay examines the implications of that divide through an analysis of a community-engagement project in a distressed section of inner-city St. Louis. The experience provides a cautionary tale about the efficacy of chasing the latest digital wizardry in the pursuit of public engagement, but also suggests that digital technologies can enhance civic engagement and activism when blended strategically with more traditional formats for interaction.

**KEY WORDS:** digital history, civic engagement, urban development, public history, historic preservation

Public historians' embrace of digital media has compelled them to keep pace with a rapidly moving technological frontier. Discussions at professional meetings no longer dwell on the production of simple text-and-image websites; instead, conversations swirl around the prospects of augmented reality, 3D printing, mobile podcasting, spectral imaging, holographic reconstruction, and GIS (Geographic Information Systems) mapping.[1] Students entering the field are encouraged, if not required, to acquire fluency in database management, digitization techniques, and collaborative writing software. At a bare minimum, specialized staff at museums,

1 See for example, National Council on Public History, "Knowing Your Public(s)—The Significance of Audiences in Public History: Annual Meeting of the National Council on Public History" (conference program, 2013); National Council on Public History, "Sustainable Public History: Annual Meeting of the National Council on Public History" (conference program, 2014); National Council on Public History, "History on the Edge: Annual Meeting of the National Council on Public History" (conference program, 2015), all http://ncph.org/past-meetings/annual-meetings; Center for Cultural Heritage, University of Massachusetts Amherst, "High-Tech Heritage: Changing Visions, Media, and Rationale in the 21st Century" (conference program, May 2012), http://www.umass.edu/chs/news/Final%20Program_HTH_small.pdf.

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archives, historical agencies, and heritage organizations have gained competency in cutting-edge technologies to maintain their relevance and grow their audiences in an age of information abundance. More ambitious digerati have mastered highly sophisticated gadgetry and software to make public encounters with the past more meaningful and compelling.[2] As a result, the enterprise of public history increasingly plays out in the virtual universe of interactive 3D environments, Internet blogs, social media mashups, and mobile apps.

Riding the fast-moving digital bandwagon is not without its risks and costs. The financial expense associated with software development and top-of-the-line hardware can easily reach several hundred thousand dollars. To operate successfully in the new media environment, professionals trained in humanities disciplines must acquire new vocabularies and proficiencies. Moreover, rapid cycles of innovation and obsolescence turn learning curves into learning treadmills that demand continuous adjustment to updates, upgrades, and emergent security threats. Most critically, digital history practitioners operating in public settings must relearn how to communicate with their audiences.

Given the determination and fervor with which heritage professionals and publicly minded scholars have experimented with digital media, and considering the associated costs, it is worth asking whether the technology has improved public history's capacity to achieve one of its central goals, the animation of enlightened civic activism. While public history's big tent envelops a multitude of agendas, the attempt to leverage historical knowledge on behalf of social change has absorbed a significant segment of the field since the 1970s. Some of the most heralded work has been directed toward empowering marginalized populations, reconciling group animosities, fostering multicultural tolerance, and energizing grassroots politics.[3] The uncensored, open-access realm of cyberspace has been touted as an exemplary venue for democratic civic engagement, making it a tantalizing locus of historical intervention.[4] This article tests that assumption.

More specifically, the following account of a university-community partnership urges public historians to consider the implications of the digital divide when seeking broad levels of participation. The term "digital divide" gained traction in the 1990s to

2 Ross Parry, ed., *Museums in a Digital Age* (New York: Routledge, 2010); Bill Adair, Benjamin Filene, and Laura Koloski, eds., *Letting Go? Sharing Historical Authority in a User-Generated World* (Philadelphia: Pew Center for the Arts and Heritage, 2011).

3 For examples of this work see, Susan Porter Benson, Stephen Brier, and Roy Rosenzweig, eds., *Presenting the Past: Essays on History and the Public* (Philadelphia: Temple University Press, 1986); Dolores Hayden, *The Power of Place: Urban Landscapes as Public History* (Cambridge, MA: MIT Press, 1997); James Oliver Horton and Lois E. Horton, eds., *Slavery and Public History: The Tough Stuff of American Memory* (New York: The New Press, 2006), 50–53.

4 David M. Anderson and Michael Cornfield, eds., *The Civic Web: Online Politics and Democratic Values* (Lanham, MD: Rowman and Littlefield, 2003); Jerome Armstrong, *Crashing the Gate: Netroots, Grassroots, and the Rise of People-Powered Politics* (White River Junction, VT: Chelsea Green Publishing, 2006); Robert Cropf and William S. Krummenacher, eds., *Information Communication Technologies and the Virtual Public Sphere: Impacts of Network Structures on Civil Society* (Hershey, PA: Information Science Reference, 2011).

highlight disparities in Internet access across socioeconomic hierarchies.[5] Low rates of computer usage and Internet connectivity among low-income populations and the elderly gave cultural institutions and mass constituency organizations pause about adopting aggressive digital communication strategies. The nearly universal diffusion of networked technology in the United States since that decade has softened much of that initial reticence. Recent research, however, suggests that when it comes to computer habits, social distinctions continue to matter. A new digital divide has emerged that has less to do with access and everything to do with patterns of usage. A central finding of this research is that deficits in education and training have deprived poor, inner-city populations of the capacity and skills to fully engage with the most powerful networked technology. This retrospective account of a grassroots planning initiative in a struggling St. Louis neighborhood clarifies some of the challenges arising from the new digital divide. The project described in the following pages utilized what were arguably the two most important personal computing innovations of the new millennium: 3D immersion and social networking. A failure to animate citizen participation through these technologies exposed the dangers of rushing too quickly to adopt the latest digital wizardry. Subsequent modifications in project design, however, proved more successful and validated the efficacy of sophisticated digital tools as catalysts for productive civic engagement when blended strategically with more traditional modes of communication.

## Immersive Environments and Public History Applications

Flush with optimism about the educational possibilities of immersive computer environments, two historians and an architect at the University of Missouri–St. Louis (UMSL) launched the Virtual City Project (http://vcities.ite-stl.org) in 1999.[6] In subsequent years, the project team expanded with the addition of myself and a member of the Department of Mathematics and Computer Science.[7] At the moment of the project's inception, the video game industry had demonstrated the popular appeal of computer experiences that simulated auto-directed movement through space. These 3D entertainment environments were quite crude by twenty-first-century standards. Nonetheless, they inspired humanities scholars, heritage professionals, and educators to consider more socially constructive applications. Janet Murray generated considerable buzz in 1997 with the publication of *Hamlet on the Holodeck*, a book that urged serious scholars to employ cyberspace as a venue for interactive narrative. She held out particular high hope for 3D simulations in which users would engage with dramatic characters and influence literary plotlines.

5 National Telecommunications and Information Administration, US Department of Commerce, "Falling through the Net: A Survey of the 'Have Nots' in Rural and Urban America," Washington, DC, July 1995, http://www.ntia.doc.gov/ntiahome/fallingthru.html.

6 The three original team members were Louis Gerteis, Arthur Shaffer, and Davis van Bakergem.

7 My involvement in the project began in 2000 and Jerrold Siegel, professor of mathematics and computer science, joined the group in 2006. Arthur Shaffer passed away in 2002 and for a brief period was replaced by Laura Westhoff, a faculty member in the Department of History.

In addition, she envisioned the personal computer as a theater for the spontaneous reenactment of historical events.[8] Although such projections may have seemed fanciful at the time, trendsetting museum exhibit designers and educational software developers proceeded with more modest implementations. Precise and tedious laser scanning procedures enabled museums to share interactive models of remote archaeological artifacts with their visitors.[9] The late-1990s also witnessed the appearance of several websites that employed immersive environments to excite higher levels of student engagement with historical content. *The Lost Museum*, created by the American Social History Project at CUNY Graduate Center and the Center for New Media at George Mason University was among the earliest examples. Guided animations led students through the reconstructed interior of P. T. Barnum's American Museum in New York City. Along the way, they encountered objects and information that illuminated aspects of popular culture in the antebellum era.[10]

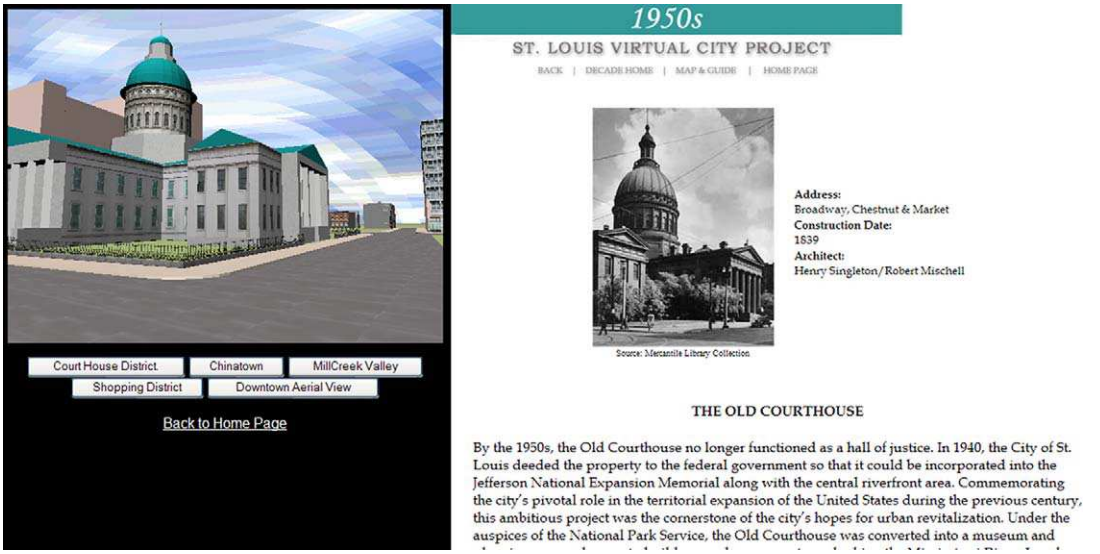
The Virtual City Project took the concept of 3D navigation one step further than these earlier projects by inviting visitors to contrive autonomous journeys through a chronological sequence of urban landscapes. Like other major digital humanities ventures, the Virtual City took shape within parameters set by institutional funders.[11] In this case, a grant from the National Endowment for the Humanities' Division of Education steered product design toward the needs and capabilities of students in K-12 classrooms. At a time when most educational websites resembled little more than books on a screen, the Virtual City offered something more visually compelling and pedagogically adventurous. Eleven computer models of downtown St. Louis, spanning the decades from 1850 to 1950, served as a 3D exploratorium for American history. Meandering through streets, gliding over rooftops, and jumping through time portals, website guests pieced together the meaning of significant historical developments by clicking on embedded hyperlinks and collecting fragments of information about people, places, and events. Elementary and secondary schoolteachers contributed grade-specific lesson plans that encouraged students to devise strategic investigative paths across time and space.

8 Janet H. Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (Cambridge, MA: MIT Press, 1997). A similar plea, more attuned to historical analysis, was advanced several years later in David J. Staley, *Computers, Visualizations, and History: How New Technology Will Transform Our Understanding of the Past* (Armonk, NY: M. E. Sharpe, 2003).

9 Maurizio Forte and Alberto Siliotti, eds., *Virtual Archaeology: Greater Discoveries Brought to Life Through Virtual Reality* (London: Thames and Hudson, 1996); Kok-Lim Low, "Making Digital History," *Innovation* 8, no. 3 (2008): 42–43; Alonzo C. Addison and Marco Gaiani, "Virtualized Architectural Heritage: New Tools and Techniques," *IEEE Multimedia* 7 (April–June 2000): 26–31; Alonzo C. Addison, "Emerging Trends in Virtual Heritage," *IEEE Multimedia* 7 (April–June 2000): 22–25; Joan Severson et al., "Exploring Virtual History at the National Museum of American History," 2004, http://homepage.cs.uiowa.edu/~cremer/papers/pdf/vsmm02.pdf.

10 Joshua Brown, "From the Illustrated Newspaper to Cyberspace: Visual Technologies and Interaction in the Nineteenth and Twentieth Centuries," *Rethinking History* 8 (June 2004): 263–66.

11 Luke Waltzer, "Digital Humanities and the 'Ugly Stepchildren' of American Higher Education," in *Debates in the Digital Humanities*, ed. Matthew K. Gold (Minneapolis: University of Minnesota Press, 2012), 340–41.




Page from Virtual City Website, circa 2004. (Image courtesy of the author.)

Between the awarding of the NEH grant in 2001 and the product's web release in 2005, state-of-the-art technology zoomed past the Virtual City Project's capabilities. Speedier microprocessors continued to improve personal computer graphic displays, heightening consumer expectations for visual splendor and realism. At the same time, more robust networked infrastructures supported a torrent of applications and services that coalesced under the banner of Web 2.0. blogs, RSS feeds, media-sharing websites, and wikis emerged as popular platforms for the collective creation and modification of shared information spaces.[12] E-learning advocates interpolated these innovations into a roadmap leading toward a more participatory culture within formal educational settings. Web 2.0 pedagogy resulted in an explosion of online courses along with the utilization of wikis, blogs, and multiauthored websites in brick-and-mortar classrooms. Some of the most forward-thinking discussions centered on the knowledge production that occurred organically and informally through peer-to-peer networks. The key question in this regard was how to harness the loosely structured interchanges among experts, novices, activists, and recreationalists within the ultrademocratic realm of cyberspace.[13]

High-end computer graphics intersected with the participatory impulse of Web 2.0 in a number of place-based history and heritage applications, although few of them leveraged the appeal of immersive 3D. Rather, attempts to crowdsource the production of place-based historical visualizations gravitated toward

12 Paul Anderson, *What is Web 2.0? Ideas, Technologies, and Implications for Education* (n.p.: JISC Technology and Standards Watch, 2007), http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf.

13 Cathy N. Davidson and David Theo Goldberg, *The Future of Thinking: Learning Institutions in a Digital Age* (Cambridge, MA: MIT Press, 2010), 5–19.

two-dimensional cartographic representations. A critical development in this regard was the growing interest among historians in GIS technology. With its capacity to plot historical events along real-world latitude and longitude coordinates, GIS software offered analytical precision for scholars following the "spatial turn" in humanities scholarship.[14] It also organized historical information within a framework that was familiar to nonprofessionals, thereby facilitating collaboration among academic researchers, heritage professionals, students, genealogists, and amateur history buffs. Among the most ambitious realizations of this collaborative potential is HyperCities, a joint venture of the University of California, Los Angeles, and the University of Southern California. Described by its architects as "a digital research and educational platform for exploring, learning about, and interacting with the layered histories of city and global spaces," HyperCities encompasses esoteric academic research along with expressions of community and political activism.[15] Although HyperCities accommodates three-dimensional architectural models, including an impressive reconstruction of the Roman forum, circa 404 CE, the vast majority of embedded content clings to flat maps. Likewise, the enormously popular website Historypin employs a Google street-view interface as a canvas for crowdsourced photographs from a bygone era. Largely with the aid of personal scanners, the contents of old scrapbooks and family albums are digitized and pinned to appropriate map locations where other visitors can add their own commentary. Although casual users represent the majority of contributors, heritage organizations also make use of the service to showcase their archival image collections.[16]

Cognizant of these new directions in computing and eager to distribute production of its 3D cities, the Virtual City Project revamped its software. Specific inspiration came less from GIS technology than from the advent of interactive immersive-environment applications such as Second Life. Developed by Linden Labs in 2003, Second Life invites networked subscribers to role-play in 3D worlds of their own making. Although this fantasy domain primarily serves as a venue for casual social interaction, its virtual "islands" are also populated for serious purposes such as art exhibitions, religious services, college instruction, and even presidential campaign offices.[17] If the wild success enjoyed by Second Life suggests the potential for historical reenactments within three-dimensional cyberspace, the Virtual City

14 David J. Bodenhamer, "The Spatial Humanities: Space, Time, and Place in the New Digital Age," in *History in the Digital Age*, ed. Toni Weller (London: Routledge, 2013), 23–38.

15 Todd Presner, "HyperCities: A Case Study for the Future of Scholarly Publishing," *OpenStax CNX*, May 14, 2010, http://cnx.org/contents/99660835-05d1-4faa-a0a4-9bbb6813e5ca@3/HyperCities-A-Case-Study-for-t; Elizabeth Losh, "Hacktivism and the Humanities: Programming Protext in the Era of the Digital University," in Gold, *Debates in the Digital Humanities*, 165–66.

16 Sam Leith, "With Historypin, Photography Has Entered the Fourth Dimension," *Guardian*, July 10, 2014, http://www.theguardian.com/artanddesign/2010/jul/04/historypin-photography-sam-leith; John-Paul Flintoff, *Sunday Times* (London), July 18, 2010, 22–25, 27.

17 Steven Totilo, "Do-It-Yourselfers Buy Into This Virtual World," *New York Times*, November 11, 2004; John Preston, "Second Life: Unreality Check," *Sunday Telegraph* (London), November 11, 2007, 26.

would set its sights on a slightly less ambitious undertaking: the development of web-based tools to simplify the digital re-creation of historic buildings, neighborhoods, and towns. At the time, three-dimensional modeling required proficiency in complicated and expensive computer-aided design software. The Virtual City aimed to widen the orbit of cyber-architects with a set of easy-to-use forms and tracing devices that extracted historical data from fire insurance maps and archival images.[18]

Once again, funding imperatives circumscribed the scope of work. In 2007, the Virtual City Project received a generous grant from the Institute of Museum and Library Services to develop a tool kit for museums that would enable them to create 3D displays of lost landscapes. This new project orientation addressed a pressing need. Increasingly, museums and heritage sites were turning to 3D graphic displays to enhance onsite visitor experience and to offer remote guests an opportunity to inspect landmark architecture and archaeological artifacts from the comfort of their computer consoles.[19] These digital renderings, however, were costly to produce and required technological competencies that often exceeded the capacity of museum staff. The Virtual City grant proposal outlined a process to digitally reconstruct historical environments "for a variety of exhibit purposes at low cost with a minimum of technical expertise." Potential end uses included animations projected on large screens and walk-up kiosks where visitors auto-navigated historical renderings. The second iteration of the Virtual City, like its predecessor, would allow institutional clients to link multimedia information to landscape features. In the spirit of Web 2.0, our new editing tools encouraged collaborative authorship, a mode of production we prepared to test though pilot projects with local St. Louis museums.[20]

Three museums signed up as project partners. Place-based heritage constituted part of the interpretive mission of each institution, although the three museums diverged in their digital media ambitions. The Jefferson National Expansion Memorial, operated by the National Park Service, wanted to geolocate digitized images from its rich photographic collection in a model of St. Louis's riverfront district as it existed prior to construction of the Gateway Arch. A small house museum once occupied by Robert Campbell hoped that a virtual representation of long-demolished adjacent homes would give visitors a sense of the subdivision as it looked when the wealthy fur trader lived there in the 1850s. Finally, a community organization serving a transitional inner-city neighborhood anticipated that

18 The Virtual City project team did not seize upon Google Earth as a delivery vehicle for its 3D models until 2012 when experiments with an independently built 3D viewer ran aground.

19 Severson et al., "Exploring Virtual History at the National Museum of American History"; Erik Champion and Bharat Dave, "Dialing Up the Past," in *Theorizing Digital Cultural Heritage*, ed. Fiona Cameron and Sarah Kenderdine (Cambridge, MA: MIT Press, 2007), 333–48.

20 Louis Gerteis and Andrew Hurley, "Putting Museums in Virtual Context," Institute for Museum and Library Services, Leadership Grant proposal, January 2006.

a computer display depicting the area as it changed over time would enhance a small history exhibit it maintained in its office.

## From Museum Displays to Community-Engaged Planning

Our partnership with the community organization the Old North St. Louis Restoration Group also offered intriguing possibilities for animating civic activism through digital history. Like many other struggling inner-city neighborhoods in the nation's Rust Belt, Old North St. Louis suffered from decay and abandonment in the decades following World War II. The Restoration Group, founded in 1981, sought to reverse urban decline by promoting the rehabilitation of older homes and by rebranding the neighborhood as a historic district. Between 2000 and 2004, faculty and students at UMSL contributed to this enterprise by recording oral histories, organizing archaeological excavations, and curating a set of interpretive products: a booklet, a bicycle tour, a video documentary, and a small museum display. A central premise of the collaboration was that historical research would translate into a more socially conscious historic preservation strategy. Community leaders wanted to make sure that the crusade to save old buildings did not become a pretext for gentrification. Understanding how the evolving configuration of streets, buildings, and green spaces influenced ethnic, racial, and class diversity in the past better attuned local planners to the social implications of their preservation decisions. Virtual City software, with its capacity to reproduce those configurations for visual inspection and analysis, ushered this community-university partnership into the digital age.

The software also appeared to be consistent with the Restoration Group's commitment to grassroots deliberation and decision making. From its inception, the organization championed local control of the neighborhood's redevelopment agenda, first as a counterforce to federal highway and urban renewal programs, and later as a hedge against private schemes to suburbanize the inner city. Its transition from an all-volunteer organization to one with professional staff allowed it to assume a more direct role in orchestrating redevelopment. By the early twenty-first century, it was operating as a community development corporation, purchasing endangered properties and finding suitable investors to renovate them in conformance with locally devised guidelines. This interventionist turn only strengthened the imperative for broad-based community input and support. At the same time, it heightened the urgency of effective marketing beyond the neighborhood. With a boundless capacity for information dissemination and a configuration built for instantaneous two-way communication, the Internet obliged both mandates.

Thus, by the time of the Virtual City's beta release in 2010, the Restoration Group had already taken the cyberspace plunge with an established presence on the World Wide Web and preliminary forays into the realm of social media. Its leadership recognized that for many prospective residents, especially those

relocating from distant regions, the first encounter with the neighborhood was likely to take place on a computer screen. Beginning in 2005, the organization's website emerged as the primary vehicle to establish the neighborhood's brand for outsiders. Among the first items linked to its home page was an electronic version of a neighborhood history trail that had been created several years earlier for print distribution. This static feature, along with a capsule narrative of the area's chronological development, helped the neighborhood promote its credentials as a historic district.[21] With the advent Web 2.0, the Restoration Group anticipated additional outlets for publicizing events and new venues for community dialogue. A series of YouTube videos released in late 2008 and early 2009 showcased a local farmers' market and advertised an upcoming house tour.[22] Within two years, Twitter and Facebook accounts were activated. Increasingly, however, the organization's digital strategy revolved around a regularly updated blog that alerted residents to upcoming events, trumpeted preservation triumphs to the outside world, and invited visitors to add commentary.[23]

The Virtual City's appeal lay in its potential to exhibit local architectural heritage and facilitate grassroots planning. It occurred to both Restoration Group staff and the Virtual City project team that if the application could depict streets and buildings as they once existed, it could also display imagined landscapes. A computer-generated diorama would allow users to interrogate proposed redevelopment schemes from a variety of angles and thereby assess their visual compatibility with surrounding landscape features. This was an intriguing function given the Restoration Group's proactive role in jump-starting large-scale commercial and housing ventures.[24] On the heels of two successful initiatives, one to revive a residential enclave with a combination of historic rehabs and architecturally consistent infill and another to resuscitate a moribund commercial corridor, the organization prepared to target additional areas. Among them was a row of vacant lots behind the revitalized shopping strip. The Restoration Group had recently acquired these properties from the City of St. Louis and was unsure how to dispose of them. Through a series of digital models displayed in the Virtual City, the organization sought to spark a community conversation about the most appropriate way to proceed.

Considering future development in the context of previous transformations in the built environment was critical to a neighborhood that promoted itself as a historical district. Hence, Restoration Group staff paid particularly close attention to the historical reconstruction of targeted properties and surrounding blocks. If new development was to reference older forms and styles, it was crucial that citizens

21 Old North St. Louis Restoration Group website, http://www.onsl.org.

22 Old North St. Louis Restoration Group, "OldNorthSTL" (YouTube channel), https://www.youtube.com/channel/UC2kB2zzA3IkcXOeY9_waiKg.

23 Conversation with Sean Thomas, executive director of the Old North St. Louis Restoration Group, April 3, 2013.

24 For more elaboration on this partnership, see Andrew Hurley, *Beyond Preservation: Using Public History to Revitalize Inner Cities* (Philadelphia: Temple University Press, 2010).

knew how the neighborhood appeared and functioned in the past. At the same time, the organization's leadership was eager to dispel some common misperceptions that were driving and constraining the local preservation agenda. In large part, these misperceptions arose from strictures embedded in the process of designating historic districts. The National Historic Preservation Act of 1966 allowed ordinary neighborhoods like Old North to acquire a listing on the National Register of Historic Places on the basis of their architectural heritage and character. These criteria did not insist upon the presence of singular artistic triumphs. They did, however, require applicants to identify distinctive vernacular styles that imparted a coherent aesthetic. Moreover, it was incumbent upon nominators to associate representative specimens with a past era, known as the "period of significance." Typically, nominations for inner-city neighborhoods assigned significance to the years of formative development.[25] Old North St. Louis exemplified this practice; each of three historic districts established in the neighborhood between 1980 and 1982 highlighted the two-story, red-brick, multifamily structures that proliferated in the late nineteenth century.[26] Historic preservation was thus legitimized within narrow architectural parameters. By implication, deviant styles and forms undermined the neighborhood's historical status. This formulation chafed against the ambitions of those in the Restoration Group who wanted future development to draw from a more variegated palette. Indeed, the picture of architectural homogeneity suggested by the district nomination process and embraced by some community members belied the historical record.

To correct misguided impressions, two aspects of historical change warranted especially accurate representation in the Virtual City. The first pertained to the density of the built environment. Data from fire insurance maps indicated fairly rapid settlement after the Civil War with the appearance of scattered homes, shops, churches, saloons, and factories. It was not until the early twentieth century that the area reached its peak intensity. In addition to the residential structures hugging block perimeters, an array of sheds, stables, water closets, and alley houses jammed interior spaces. After World War II, population flight and disinvestment manifested in the steady attrition of built structures. During the 1970s, the specific properties designated for redevelopment had been converted into off-street parking spaces. Fluctuations in density occurred in the context of a constantly changing mélange of architectural styles. Wooden frame houses and simple brick structures built during

25 David Hamer, *History in Urban Places: The Historic Districts of the United States* (Columbus: Ohio State University Press, 1998), 18–20, 35–38.

26 Laura Aldenfelder and Carolyn Toft, "SS. Cyril and Methodius Historic District," National Register of Historic Places Inventory-Nomination Form, Landmarks Association of St. Louis, Inc., St. Louis, Missouri, 1980; Jane M. Porter and Mary M. Stiritz, "Old North St. Louis Historic District," National Register of Historic Places Inventory-Nomination Form, Landmarks Association of St. Louis, Inc., St. Louis, Missouri, 1980; Mary M. Porter and Carolyn Toft, "Mullanphy Historic District," National Register of Historic Places Inventory-Nomination Form, Landmarks Association of St. Louis, Inc., St. Louis, Missouri, 1982.

the initial spurt of growth stood alongside more ornate brick flats and a few multistory structures by the start of the twentieth century.

The task of constructing the 3D models fell to a series of student interns from area universities who received training in the software and then performed their work under the supervision of Restoration Group staff.[27] This arrangement was not quite what Virtual City team members originally had in mind, and it was the first indication that user adoption would not be as effortless as anticipated. Because the software package was specifically designed to distribute authorship among multiple editors, opening city-building tasks to the organization's membership, or at the very least organizational staff and selected volunteers, seemed a reasonable proposition. Fear of sloppy or inaccurate data entry, however, deterred the Restoration Group from turning the program loose on the general membership. The overwhelming demands on staff time further contributed to the transfer of responsibility for creating the computer model to student interns who consulted regularly with the organization's community development specialist. Although the Virtual City's crowdsourcing capacities were not fully employed, the project nonetheless exploited the software's ability to produce interactive 3D landscape renderings at minimal expense to clients.

Once completed, these renderings placed redevelopment alternatives at the tail end of an unfolding visual narrative. By making use of Google Earth's free viewing software, users were able to scroll through time and watch the target properties pass through stages of growth, abandonment, and imagined renovation. The translation of fragmentary historical data from maps, construction permits, and archival photographs into a comprehensive and linear reconstruction called for some interpretive license on the part of editors, but the historical reconstruction adequately captured general trends in form, function, and appearance. By advancing the temporal slider beyond the current date, users entered three distinctive landscapes of possibilities. The first, a row of mixed-use, two-story brick structures, extended the concept that had guided the organization's previous revitalization schemes by hewing closely to prevailing notions of architectural authenticity. The second and third marked more radical departures. Depictions of eco-friendly detached homes and then a modernistic multistory loft apartment complex asked visitors to contemplate different futures and assess their compatibility with the physical remnants of earlier epochs.

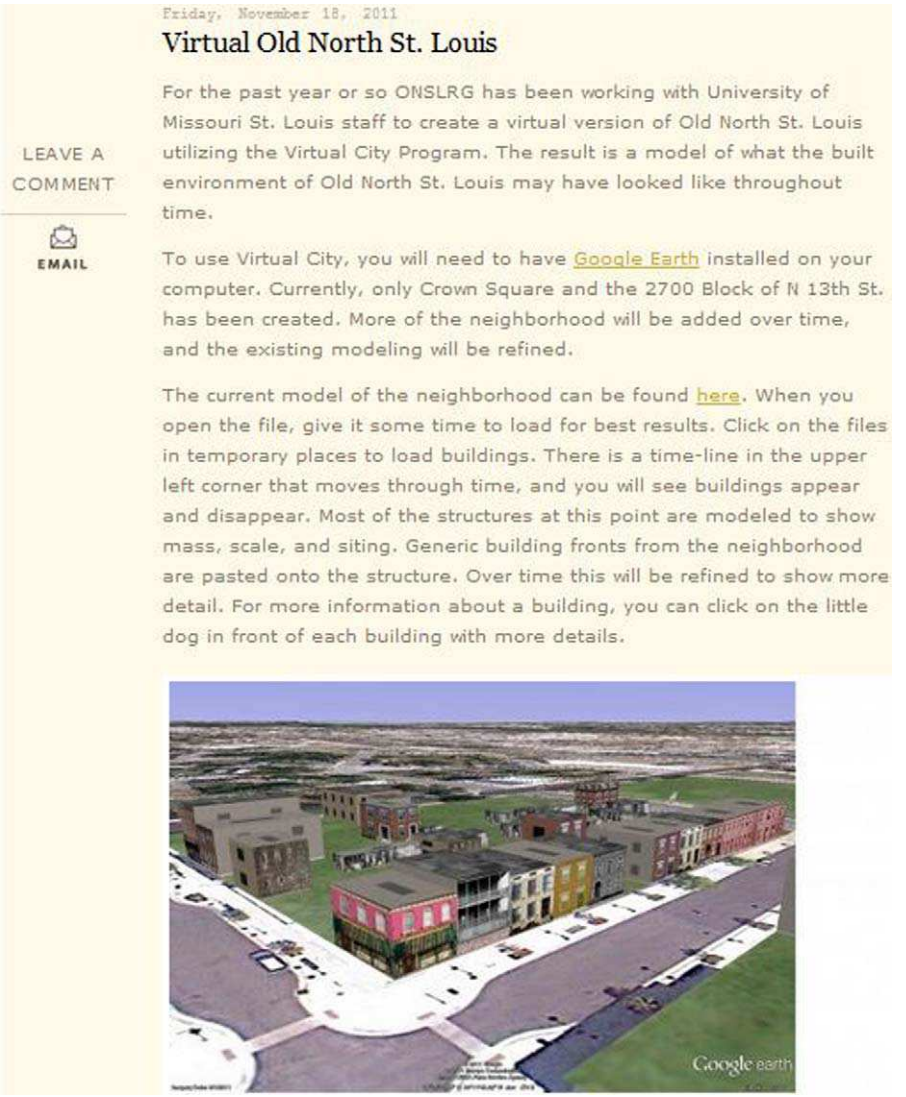
## Virtual City Hits the Digital Divide

In November 2011, the Restoration Group posted instructions for downloading the Google Earth file on its weekly blog and invited visitors to initiate an online conversation. The response was abysmal; the blog post yielded one measly comment. Even more disappointing, the solitary respondent was not a local resident

27 The primary student interns who worked on the project were Eric Barr and Paige Fensterman (now Paige Fensterman Ballard) from the University of Missouri–St. Louis and Angela Kress and Annie White from Washington University.


Virtual City Model of Old North St. Louis, Period of Peak Development, 1925. (Image courtesy of the author.)


Virtual City Traditional Mixed-Use Redevelopment Scheme. (Image courtesy of the author.)




In November 2011, the Restoration Group posted instructions for downloading the Google Earth file on its weekly blog. (Image courtesy of the author.)

and his brief statement merely expressed appreciation for the 3D display.[28] A postmortem conducted by Restoration Group and Virtual City representatives identified several possible explanations for the fiasco: the frequency of blog updates limited the amount of time information on the project was prominently displayed; the blog was a poor mechanism for community dialogue; the Google Earth download apparatus was cumbersome and required a prohibitively high level of digital literacy.

28 Old North St. Louis Restoration Group, "Virtual Old North St. Louis," November 18, 2011, http://onsl.org/blog/2011/11. The comments associated with the blog post have long been disabled.

Had project leaders kept abreast with the latest research on electronic media usage, some missteps might have been avoided. A burgeoning literature exposed the ways in which class, race, educational attainment, and gender correlated with Internet behavior. Beginning in the 1990s, research showed that people with higher incomes, more education, and whiter skin enjoyed significantly higher connectivity rates than their poorer, less educated, and darker counterparts. According to those who raised the alarm, the consequences for civil society were serious. Households unable to afford computers or Internet provider accounts were cut off from the educational and employment resources that were rapidly migrating to the World Wide Web. Moreover, people on the unwired side of the divide remained isolated from the social media platforms that were emerging as critical forums for public discussion and effective tools for political action. Technology that was supposed to democratize knowledge and bring people together was having the opposite effect.[29]

With the advent of Wi-Fi and modestly priced mobile devices in the twenty-first century, access to the Internet broadened dramatically in the United States and concerns about inequality receded. Continuing research, however, confirmed the persistence of a digital divide, even as its attributes changed. Higher-income households employed the Internet for a greater variety of functions (financial management, purchasing) and thus gained familiarity with a wider range of software. Higher levels of broadband access among wealthier Americans reinforced that pattern. Hence, by the 2010s, the problem had become defined less by discrepancies in Internet access than by divergent habits of online use. Indeed, one of the major revelations of ongoing research was that privileged socioeconomic groups were more likely than marginalized population segments to use digital media interactively and produce content. This critical distinction spawned neologisms such as the "digital production gap" and the "participation gap" as refinements on the original digital divide designation.[30]

Independent of this literature, on-the-ground experience was tempering the Restoration Group's enthusiasm for an online communication strategy. Strong anecdotal evidence indicated that its website and blog were quite effective in marketing the neighborhood to outside audiences but less useful for outreach within the neighborhood. Some households still lacked personal computing

29 Writing in 2006, Daniel Cohen and Roy Rosenzweig acknowledged the challenge associated with Internet access disparities but expressed considerably more alarm about the monopolization of history content by corporate conglomerates on the production side of the equation. See Daniel J. Cohen and Roy Rosenzweig, *Digital History: A Guide to Gathering, Preserving, and Presenting the Past on the Web* (Philadelphia: University of Pennsylvania Press, 2006), xx.

30 Jen Schradie, "The Digital Production Gap: The Digital Divide and Web 2.0 Collide," *Poetics* 39 (April 2011): 145–68; Eszter Hargittai and Gina Walejko, "The Participation Divide: Content Creation and Sharing in the Digital Age," *Information, Communication, and Society* 11 (March 2008): 239–56; Nicole Zillien and Eszter Hargittai, "Digital Discussion: Status-Specific Types of Internet Usage," *Social Science Quarterly* 90 (June 2009): 274–91; Ali Modarres, "Beyond the Digital Divide," *National Civic Review* 100 (Fall 2011), Wiley Online Library, 2011, http://onlinelibrary.wiley.com/doi/10.1002/ncr.20069/abstract.

devices, a fact underscored by the schoolchildren who routinely wandered into the organization's headquarters inquiring as to whether they might make use of unattended computer stations to complete their homework assignments. Realizing that many of the neighborhood's poorest inhabitants, often people of color, were either unable or unwilling to consult the organization's blog on a regular basis, Restoration Group staff rededicated itself to an old-fashioned method of publicizing meetings and other community events: door-to-door distribution of paper fliers. The Restoration Group was also disappointed by the blog's poor performance in sparking internal community dialogue beyond the Virtual City exercise. The reticence among local residents to employ the Internet as a forum for civic debate appeared to reflect the participation gap noted in the academic literature. Indeed, a local nonprofit corporation, Computer Village, had recently identified Old North St. Louis as an area suffering from a deficit in advanced technological skills. By early 2011, it had opened a state-of-the-art learning center to instruct low-income residents in robotics, software development, computer repair, and basic digital proficiency at no charge.[31]

Taking stock of previous mistakes, the Restoration Group and the Virtual City team returned to the drawing board. In the first of several adjustments to the planning exercise, the Virtual City team overhauled its software, adding features to ease access to the 3D models and simplify navigation. In 2012, it released a new application that embedded the Google Earth display in preset web-based tours. Users still needed to download a plug-in to activate the Virtual City, but they needed no prior Google Earth experience to explore the 3D environment. Secondly, the Restoration Group decided to abandon the Internet as the primary forum for community discussion. To accommodate a more inclusive and directed conversation, the Virtual City display would be integrated into more conventional, face-to-face presentation and conversation formats.

Phase two of the Virtual City experiment commenced in the fall of 2013 with a new focus on a four-block area located just west of Old North's revitalized commercial corridor. This shift in geography aligned with proposals to establish an urban streetcar line linking the neighborhood with St. Louis's downtown business district and other major employment hubs in the city. With the assistance of an UMSL graduate student, polygonal models were fashioned to represent the physical evolution of properties straddling the anticipated streetcar route.

The Restoration Group's Real Estate Committee also adjusted its menu of future design alternatives to reflect current thinking about redevelopment. Its members were increasingly coming to the recognition that the viability of their historic neighborhood was less about preserving architectural integrity than in promoting attributes of social diversity and interaction that made the district thrive in an earlier era. The Restoration Group had recently collaborated with Habitat for Humanity to construct twenty-nine low-income infill homes that, while referencing the color and

31 Joia Williamson, "Computer Village Shoots for the Moon," *St. Louis American*, January 6, 2011.

Virtual City Low-Income Redevelopment Alternative. (Image courtesy of the author.)

scale of indigenous architectural forms, deviated from the formula of replicating lost structures. Sacrificing architectural tradition for affordability, the Restoration Group asserted the primacy of two planning goals: recovery of population density and maintenance of socioeconomic diversity. The Restoration Group was especially pleased to see the new units fulfilling its vision of transitioning local renters to homeowners.[32] At the same time, leadership within the organization observed growing disenchantment with the traditional architectural styles on the part of another group seen as vital to maintaining social diversity, younger members of the creative class. Thus, in addition to a proposed redevelopment scheme that featured replica housing and the rehabilitation of salvageable stock, the revised Virtual City model offered more affordable, LEED (Leadership in Energy and Environmental Design)-certified housing as a second option and modernistic high-density apartments as a third.

The opportunity to unveil the new visualization occurred in spring 2014 when the Restoration Group launched its annual house tour. This yearly event, advertised across the St. Louis metropolitan area, showcased the neighborhood's finest architectural specimens with special attention to recently restored historic structures and innovative new construction. Its primary purpose was to draw attention to the area and spark interest among potential investors, with a secondary function of solidifying a local sense of identity. The Virtual City gave the spring 2014 tour

32 Old North St. Louis Restoration Group, "Huge Year for Old North in 2010—Part 1," December 31, 2010; Old North St. Louis Restoration Group, "Habitat for Humanity Starts New Project in Old North," March 14, 2010; Old North St. Louis Restoration Group, "Old North Bustling with Activity," March 31, 2012, all Old North St. Louis Restoration Group blog, at http://onsl.org/blog.


Virtual City Loft-Style Redevelopment Alternative. (Image courtesy of the author.)

a slightly different twist. After making their rounds, visitors were invited to enjoy a free bowl of ice cream and a Virtual City presentation at the Restoration Group headquarters. For a three-hour period in the afternoon, groups of two-to-five people sat for a ten-minute demonstration of the software, led by the student intern who had worked closely with the Real Estate Committee in building the 3D model. With the Google Earth display of the four-block landscape projected on a wall, the intern piloted viewers through time, noting the intensification of structures—alley houses, stables, sheds, and outhouses—over the nineteenth and early twentieth centuries, along with the diversity of land uses, which included factories, lumber yards, residential homes, and shops. The guided animation followed the depiction of mid-twentieth-century evisceration with views of the revitalized commercial district and then a series of alternative futures, one embodying the strategy of combining spot rehab with replica housing, a second featuring small, detached, affordable homes, and a third depicting a modern high-density apartment building with sleek, glass walls.

The format chosen for the house tour exercise minimized direct interaction with the software and procured feedback through the primitive technology of pen-and-paper surveys. Spectators who wanted to interrogate the 3D display from different viewer perspectives or spend more time exploring a particular era of development were invited to do so on a laptop after the formal exposition. Most participants, however, proved content to voice their navigational desires to the intern during the short guided presentation. Overall, the display elicited a positive reception. Members of an older generation who had some familiarity with the neighborhood

frequently interrupted the presentation with recollections that confirmed the visual representations. Younger men and women expressed surprise at the dramatic changes in density, architectural style, and activities. Before leaving the office, visitors were asked to record their thoughts about neighborhood redevelopment on a survey form. Some declined, but thirty-four individuals took the additional ten minutes to jot down their impressions and their preferences.

Among the revelations were a tolerance for architectural diversity and a reticence to return to the cramped land-use arrangements that characterized the neighborhood at the peak of its development in the early twentieth century. The most popular of the three alternative designs was the one that would take the neighborhood further down the path of preserving and reinvigorating its late nineteenth-century aesthetic. In contrast, the modernistic alternative received the fewest votes. These results came as no surprise to the Real Estate Committee. Its members had anticipated that the audience of house tour adventurers would be inclined toward more conventional formulas for reviving historic neighborhoods. More unexpected and heartening to the committee were the large number of respondents who believed that there was a place for all three types of redevelopment in the neighborhood's future. In other words, preference for the more traditional rehab and infill did not signify opposition to moderate doses of new construction in the more modernistic and utilitarian styles. Another predilection revealed by the surveys was the desire for open space. Almost all respondents wanted buildings to replace many of the vacant lots interspersed throughout the neighborhood. At the same time, they wanted some of the vacant parcels to remain in their undeveloped state. Even those who yearned for traditional row houses wanted ample green space for gardens, yards, and pocket parks. Interestingly, a consensus emerged in favor of restoring density to levels that existed around the time of the Civil War rather than during the more congested phases of growth that had previously guided redevelopment goals.

At the time of this writing, the Restoration Group has yet to settle on a redevelopment plan for the four-block tract, but the Virtual City exercise has emboldened its leadership to push the definitional boundaries of historical urbanism. After a seven-year hiatus punctuated by the Great Recession, the organization resumed its North Market Place housing initiative with the scheduled construction of three single-family, infill homes along nearby Monroe Street. Rather than follow the conservative architectural guidelines originally established for the project, designers opted for something slightly more adventurous and contemporary. Building setbacks, height, and mass approximated those of surrounding extant structures, but exterior façade treatments featured composite and cedar siding in place of the iconic and nearly ubiquitous red brick. An open floor plan on the first level extended the modernistic theme into the house interior. As Community Development Specialist Matt Fernandez explained, "[o]ur focus for this development is much more on urban design, than any one style of architecture. . . . While contemporary in nature, the homes will still nicely complement the historic buildings on the block and in the

neighborhood."[33] With these staged tests of public tolerance for architectural innovation, the first in cyberspace and the second in the real-world North Market Place expansion initiative, the Restoration Group continues to implement heritage-based revitalization on its own terms.

## Conclusion

Although the Virtual City exercise in Old North St. Louis can be read as a cautionary tale about the hasty deployment of advanced digital technologies in marginalized communities, it also suggests their utility when coupled imaginatively with more tried and tested public history methods. Cutting-edge computer applications that offer novel ways of sharing, manipulating, and displaying historical information hold considerable appeal for professionals who wish to deepen the engagement of public audiences. They can be especially enticing to public historians guided by an activist calling. Collaborative production platforms and social media networks make it easier for public historians to apply the model of shared authority to community-based projects. More powerful personal computers multiply the ways that the elements of the past can be represented, reproduced, and reconfigured to enhance civic dialogue and deliberation. Virtual reality applications, in particular, offer exciting opportunities to infuse community-planning exercises with a historical dimension that is often missing. Three-dimensional immersive environments enable people to encounter long-demolished places in holistic ways that approximate lived experience.[34] As such, acquired historical knowledge translates more fluidly into imagined futures. Through advances in computer technology, then, the past operates less as a constraint than as a repository of useful ideas and wellspring of inspiration.

As practitioners gain more in-the-field experience with electronic media, however, they are discovering it is not the case that "if we build it, they will come." For some, this realization has spurred more aggressive marketing through Internet search engines. For others, it has prompted a retreat from highly advanced media platforms to "low-tech" digital strategies emphasizing text messaging and voice mail.[35] Three-dimensional imaging interfaces, with their steep learning curves and high-end hardware requirements, may be more likely than other applications to alienate public audiences. Highly structured and carefully guided encounters,

33 Matt Fernandez, "New Housing Construction Begins in Old North," *Community News* (Old North St. Louis Restoration Group), Winter 2014, 1, 4.

34 Lisa Snyder, "Experience, Exploration, and Engagement: Historic Urban Environments in Three Dimensions" (paper presented at Society for American City and Regional Planning History Association, Sixteenth National Conference on Planning History, Los Angeles, November 5–8, 2015).

35 Stephan Robertson, "Putting Harlem on the Map," in *Writing History in the Digital Age*, ed. Jack Dougherty and Kristen Nawrotzki (Ann Arbor: University of Michigan Press, 2013), 186–97; Shawan Graham, Guy Massie, and Nadine Feuerherm, "The HeritageCrowd Project: A Case Study in Crowdsourcing Public History," in Dougherty and Nawrotzki, *Writing History in the Digital Age*, 222–32.

however, can effectively unleash their ability to create visceral connections with the past and expose the spatial dynamics of everyday landscape change. If there is one overriding takeaway from the Virtual City Project's experiment in Old North St. Louis it may be that public historians would do well to focus less on what new technology can do than how it might help improve what they are already doing.

There is another reason to incorporate unfamiliar and potentially difficult software into community projects. Public historians working with underserved populations have a unique opportunity to expand digital literacy.[36] The foregoing analysis suggests the persistence of a digital divide, despite the expansion of social media networks across divisions of class, age, gender, and race on account of wireless communication and the proliferation of modestly priced hand-held devices. As Angelina Russo and Jerry Watkins insisted at the outset of the social media explosion in 2007, the payoff from universal access to online services yields few social benefits in the absence of effective educational programs and training. Their call for proactive collaboration among professionals and novices in the "consumption and creation of digital content," while not fully achieved in the Virtual City exercises, nonetheless resonated with the application of sophisticated three-dimensional computer visualizations to collective analysis and discussion.[37] In places like Old North St. Louis, exposure and limited interaction with robust and powerful digital tools can only enhance the capacity of citizens and residents to act as agents of cultural production.

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36 For an example of a public history project that sought to advance digital literacy through structured interaction between university and high school students, see Trudi Abel, "The Digital Durham Project: Creating Community through History, Technology, and Service Learning," *AHA Perspectives on History* (May 2009), https://www.historians.org/publications-and-directories/perspectives-on-history/may-2009/intersections-history-and-new-media/the-digital-durham-project.

37 Angelina Russo and Jerry Watkins, "Digital Cultural Communication: Audience and Remediation," in Cameron and Kenderdine, *Theorizing Digital Cultural Heritage*, 150–64.