

ISH THE SPATIAL HUMANITIES
David J. Bodenhamer, John Corrigan, and Trevor M. Harris, editors

Geographies of the Holocaust
Edited by Anne Kelly Knowles, Tim Cole, and Alberto Giordano

Locating the Moving Image: New Approaches to Film and Place
Edited by Julia Hallam and Les Roberts

The Spatial Humanities: GIS and the Future of Humanities Scholarship
Edited by David J. Bodenhamer, John Corrigan, and Trevor M. Harris

Toward Spatial Humanities: Historical GIS and Spatial History
Edited by Ian N. Gregory and Alistair Geddes

Troubled Geographies: A Spatial History of Religion and Society in Ireland
Ian N. Gregory, Niall A. Cunningham, C. D. Lloyd,
Ian G. Shuttleworth, and Paul S. Ell

DEEP MAPS *and* SPATIAL NARRATIVES

EDITED BY

DAVID J. BODENHAMER,

JOHN CORRIGAN,

and

TREVOR M. HARRIS

INDIANA UNIVERSITY PRESS *Bloomington & Indianapolis*



INTRODUCTION

Deep Maps and the Spatial Humanities

The word *deep* has become academic kudzu, a wildly proliferating adjective that attaches itself onto everyday concepts and often makes them impenetrable to average readers. Consider the following examples:

- Deep learning: a subfield of machine learning that is based on learning several levels of representations, corresponding to a hierarchy of features or factors or concepts, where higher-level concepts are defined from lower-level ones, and the same lower-level concepts can help to define many higher-level concepts.
- Deep processing: memory-formation involving elaboration rehearsal which involves a more meaningful analysis (e.g., images, thinking, associations) of information and leads to better recall.
- Deep structure: a theoretical construct in linguistics that seeks to unify several related structures.

Deep mapping adds to this list, not from any desire to make obscure what seems plain but rather because it is the essential next step for humanists who are eager to take full advantage of the spatial turn that already has begun to shape our disciplines.

Humanities scholars are becoming increasingly aware of the importance of geographic information. We can point to a number of causes for this development—the emergence and rapid maturation of geographic information systems (GIS) as a core technology, the convergence of web and mobile technologies that moved spatial data and its manipulation

beyond the realm of specialist tools, and the explosive growth of a global economy with its demand for location-based information. We also have discovered that spatially oriented software, represented by GIS, facilitates the integration of data that is so essential to our paradigmatic shift toward interdisciplinary research. We have been reminded as well of the power of the map to display information cartographically in a manner that provides fresh perspective and new insights into the study of culture and society. For all these reasons and more, we stand at the threshold of what promises to be a new age of discovery in the humanities.

The spatial humanities are being profoundly influenced by these developments. At first glance, this argument may seem odd. It runs counter to recent critiques that GIS rests on a positivist epistemology and demands a precision in data and methods much more suited to the social sciences than to the humanities. GIS also has difficulty handling time, the *sine qua non* for most humanities disciplines. But increasingly spatial technologies are being used in tandem with web applications in ways that make them eminently suitable for humanities scholarship, and it is this combination that promises a revolution in the ways we think about the past.

Humanists view the world as extremely complex, with endless connections among events and actors and multiple causes for effects that exert continuing influence on the world of thought and behavior. This sense of weblike interrelatedness plays itself out within two dimensions—space and time. Although the past is always bound by these two elements, humanists often treat them as artificial, malleable constructs. We move freely across these spatial and temporal grids, ignoring issues of scale, as we compare and contrast one place or one time with another in an effort to recapture a sense of the whole, to illuminate differences, and to discover patterns.¹ For the humanist, space is not only physical space but occupied space, or place, and the concept, like that of time, exists not simply in a real world but in memory, imagination, and experience. Such casual use of time and space is a curious circumstance for a discipline that, in so many ways, refers to these terms continually. An explanation lies in recognizing the ends of scholarship: the historian, for example, seeks to simulate a world that is lost, not to recreate it precisely or use it for predictive purposes. Traditionally, historians have used narrative to construct the portrait that furthers this objective. Narrative encourages

the interweaving of evidentiary threads and permits the scholar to qualify, highlight, or subdue any thread or set of them. It uses emphasis, nuance, and other literary devices to achieve the complex construction of culture, past and present.

Trying to comprehend space, place, and time in concert has always proven difficult, even in the most expert narratives. Historian Hugh Trevor-Roper noted the problem decades ago: “How can one both move and carry along with one the fermenting depths which are also, at every point, influenced by the pressure of events around them? And how can one possibly do this so that the result is readable?”² Or as digital humanities pioneer Edward Ayers has asked more recently, “how might we combine the obvious strengths of geographic understanding with the focus on the ineffable, the irreducible, and the particular . . . ? How might we integrate structure, process, and event? In sum, how might we combine space, time, and place?”³

It is here where the deep map becomes important, perhaps essential. A deep map is a finely detailed, multimedia depiction of a place and the people, animals, and objects that exist within it and are thus inseparable from the contours and rhythms of everyday life. Deep maps are not confined to the tangible or material, but include the discursive and ideological dimensions of place, the dreams, hopes, and fears of residents—they are, in short, positioned between matter and meaning. They are also topological and relational, revealing the ties that places have with each other and tracing their embeddedness in networks that span scales and range from the local to the global. The spatial considerations remain the same, which is to say that geographic location, boundary, and landscape remain crucial. What is added by these deep maps is a reflexivity that acknowledges how engaged human agents build spatially framed identities and aspirations out of imagination and memory and how the multiple perspectives constitute a spatial narrative that complements the prose narrative traditionally employed by humanists.

A deep map is simultaneously a platform, a process, and a product. It is an environment embedded with tools to bring data into an explicit and direct relationship with space and time; it is a way to engage evidence within its spatiotemporal context and to trace paths of discovery that lead to a spatial narrative and ultimately a spatial argument; and it is the way we

make visual the results of our spatially contingent inquiry and argument. Within a deep map, we can develop the event streams that permit us to see the confluence of actions and evidence; we can use path markers or version trackers to allow us (and others) to trace our explorations; and we can contribute new information that strengthens or subverts our argument, which is the goal of any exploration. It is, in short, a new creative space that is visual, structurally open, genuinely multimedia and multilayered. Deep maps do not explicitly seek authority or objectivity but provoke negotiation between insiders and outsiders, experts and contributors, over what is represented and how. Framed as a conversation and not a statement, they are inherently unstable, continually unfolding and changing in response to new data, new perspectives, and new insights.

The essays in this book investigate deep mapping and the spatial narratives that stem from it. They were first delivered in an expert workshop held in Denver in March 2012; the aim was to develop a theoretical and practical understanding of deep maps and spatial narratives for an NEH Advanced Institute by that name which took place in Indianapolis over the last two weeks of June 2012.⁴ The authors come from a variety of disciplines, as befits the nature of the challenge: history, religious studies, geography and geographic information science, and computer science. Each one has an established reputation in creatively applying the concepts of space, time, and place to problems central to an understanding of society and culture.

Revised in response to critiques at the workshop and institute, these essays set forth a framework for understanding and constructing deep maps and spatial narratives, as well as for evaluating the promise they hold for the spatial humanities. Stuart Aitken and Barney Warf, both geographers, identify how deep maps work in practice, with Aitken focusing on the power of emotional mapping and Warf exploring how the deep map is an open framework for bridging expert and native knowledge. John Corrigan and David Bodenhamer, religious studies and history, respectively, raise questions about the process of emplacement and narrative structure within a deep mapping environment. GIS scientist May Yuan and historical geographer Ian Gregory discuss how humanists can mine text effectively for the purposes of deep mapping, Yuan through computer-aided parsing and Gregory through a marriage of computational linguistics and GIS.

Another GIS scientist, Trevor Harris, finds great value in the deep map as an intensive multimedia and immersive environment. Worthy Martin, a computer scientist, uses examples of early efforts at deep mapping to understand how it can create more nuanced understandings of human experience, while historians Phil Ethington and Nobuko Toyosawa provide a rich example of a ghost map in which depth is achieved by keeping the past visible in the present.

Through these essays, we can begin to grasp the potential of deep maps and spatial narratives in at least two ways. On one path, these web-based spatial technologies offer a powerful framework for managing and analyzing evidence, contributing primarily by locating historical and cultural exegesis more explicitly in space and time. They aid but do not replace the traditions developed over centuries by humanists: they find patterns, facilitate comparisons, enhance perspective, and illustrate data, among other benefits, but the results ultimately find expression primarily in the vetted forms accepted by our disciplines. On a second path, the deep map offers the potential for an open, unique postmodern scholarship that embraces multiplicity, simultaneity, complexity, and subjectivity. In it, we do not find the grand narrative but rather a spatially facilitated understanding of society and culture embodied by a fragmented, provisional, and contingent argument with multiple voices and multiple stories. The deep map offers a way to integrate these multiple voices, views, and memories, allowing them to be seen and examined at various scales. It will create the simultaneous context that we accept as real but unobtainable by words alone. By reducing the distance between the observer and the observed, it promises an alternate view of history and culture through the dynamic representation of memory and place, a view that is visual and experiential, fusing qualitative and quantitative data within real and conceptual space.

Above all, we offer these essays as an invitation to consider which path (or paths) we should take.

DB, JC, and TH

October 2013

NOTES

1. John Lewis Gaddis, *The Landscape of History: How Historians Map the Past* (New York: Oxford University Press, 2002), 53–71.
2. Quoted in K. Thomas, “A Highly Paradoxical Historian,” *New York Review of Books*, April 12, 2007, 53–57.
3. Edward L. Ayers, “Turning toward Place, Space, and Time,” in David J. Bodenhamer, John Corrigan, and Trevor M. Harris, eds., *The Spatial Humanities: GIS and the Future of Humanities Scholarship* (Bloomington: Indiana University Press, 2010), 1–13.
4. For more on the work of the NEH Advanced Institute, see “Spatial Narratives and Deep Maps: A Special Report,” *The International Journal of Humanities and Arts Computing* 7, no. 1–2 (2013), 170–227.

1



NARRATING SPACE AND PLACE

DAVID J. BODENHAMER

Over the past two decades, the humanities and social sciences especially have advanced a more complex and nuanced understanding of space. For nongeographers, this intellectual movement, often labeled the “spatial turn,” has been largely defined by a greater awareness of place, manifested in specific sites where human action occurs. Subject matter once organized largely by periods of time, with names such as the Great Depression or the Age of Discovery, now embraces themes of region, diaspora, contact zones, and borders or boundaries. Interest in the material and cultural markers of space and place has reinforced this shift. As a result, our sense of space and place has become more complex and problematic, but in the process it has assumed a more interesting and active role in how we understand history and culture.¹

It is not the first time that attention to space and time has reshaped the way we approach social and cultural questions. A similar turn occurred from 1880 to 1920 when distance-collapsing innovations—the telephone, wireless telegraph, radio, cinema, automobiles, and airplanes, among others—challenged traditional understandings of how time and space intersected with the social world. It suddenly was possible to know events as they happened, and this experience of simultaneity refashioned people’s sense of distance and direction. It also meant that individuals were no longer cut off from the flow of time; widely available film and photographic images made the past as accessible as the present, while new developments in science and the World Fairs that showcased them

made the future seem more definite and real. New scientific theories, business practices, and cultural forms reinforced the shift: Einstein's theory of relativity and Freud's conception of psychoanalysis shaped consciousness directly; time-management studies, known as Taylorism, dominated manufacturing; and James Joyce and Marcel Proust explored how to link time and space in novels, while the Cubists challenged notions of spatial perspective and form that had long dominated art.²

A continuous thread links the first spatial turn with the one we have experienced more recently, but it is likely that this second turn will have a more profound influence on the theory and practice of the humanities, in large measure because of the digital revolution that has accompanied and facilitated it. The early twentieth-century reworking of space and time had less effect on the study of heritage and culture than it did on the study of art and literature. The frontier thesis of Frederick Jackson Turner and the emphasis on the American western history it spawned were exceptions, as was the decades-long work of the *Annales* school of historiography; both reflected an intentional focus on spatial questions. But the cataclysms of the mid-twentieth century, from world wars and revolutions to mass movements for equality, spurred historians to search for the roots of momentous events in ideas and politics and technological or social change, causes for which spatial markers were less pronounced. The consideration of space did not disappear, but it became marked by particularity, an emphasis on place, as scholars began to discern how the story of change differed from one location to another. This focus on the local reflected and reinforced a postmodernist unease with the grand narrative, which created a literature that increasingly became fragmented, with analyses existing at different geographical and temporal scales and few efforts made to link them. For many humanists, space itself became less geographical, as scholars found richer meaning in conceptual space—for instance, gendered space, racialized space, or the body as space—than in categories related to the physical environment, the traditional frame of definition for spatial terms.³

Today, historians and other humanists are acutely aware of the social and political construction of space and its unique expression as place. Space is not simply the setting for historical action but is a significant product and determinant of change. It is not a passive setting but the medium

for the development of culture: "space is not an empty dimension along which social groupings become structured," sociologist Anthony Giddens notes, "but has to be considered in terms of its involvement in the constitution of systems of interaction."⁴ All spaces contain embedded stories based on what has happened there. These stories are both individual and collective, and each of them link geography (space) and history (time). More important, they all reflect the values and cultural codes present in the various political and social arrangements that provide structure to society. In this sense, then, the meaning of space, especially as place or landscape, is always being constructed through the various contests that occur over power. There is nothing new in this development—the earliest maps reveal the power arrangements of past societies—but humanities scholarship increasingly reflects what may in fact be the greatest legacy of postmodernism, the acknowledgment that our understanding of the world itself is socially constructed.⁵

At its core, the current spatial turn rejects the universal truths, grand narratives, and structural explanations that dominated the social sciences and the humanities during much of last century. Above all, it is about the particular and the local, without any supposition that one form of culture is better than another. Its claim is straightforward: to understand human society and culture we must understand how it developed in certain circumstances and in certain times and at certain places. From this knowledge, we can appreciate that the world is not flat but incredibly complicated and diverse. This view no longer seems new because humanists have embraced it eagerly; now, we all recognize the particularity of space, the importance of place. But for all the uses we make of this insight—and for all its explanatory power—the concepts of space and place employed by humanists frequently are metaphorical and not geographical. Far less often have we grappled with how the physical world has shaped us or how in turn we have shaped perceptions of our material environment.

New spatial technologies, especially geographic information systems (GIS), are aiding this rediscovery of physical space in the humanities. Within a GIS, users can discern relationships that make a complex world more immediately understandable by visually detecting spatial patterns that remain hidden in texts and tables. Maps have served this function

for a long time, but GIS brings impressive computing power to this task. Its core strength is an ability to integrate, analyze, and make visual a vast array of data from different formats, all by virtue of their shared geography. This capability has attracted considerable interest from historians, archaeologists, linguists, students of material culture, and others who are interested in place, the dense coil of memory, artifact, and experience that exists in a particular space, as well as in the coincidence and movements of people, goods, and ideas that have occurred across time in spaces large and small. Recent years have witnessed a wide-ranging, if still limited, application of GIS to historical and cultural questions: Did the Dust Bowl of the 1920s and 1930s result from overfarming the land or was it primarily the consequence of larger-term environmental changes? What influence did the rapidly changing cityscape of London have on literature in Elizabethan England? What is the relationship between rulers and territory in the checkered political landscape of state formation in nineteenth-century Germany? How did spatial networks influence the administrative geography of medieval China? What spatial influences shaped the development of the transcontinental railroad network in the United States? Increasingly, scholars have turned to GIS to provide new perspective on these and other topics that previously have been studied outside of an explicitly spatial framework.⁶

Despite this flurry of interest and activity, the humanities pose epistemological and ontological issues that challenge the technology in a number of ways, from the imprecision and uncertainty of humanities data to humanists' reliance on time (and time linked to space) as an organizing principle. Essentially, GIS and its related technologies currently allow users to determine a geometry of space; fuzzy data, conceptual space, and relative time pose often-insurmountable problems for these tools. In the context of the humanities, it will be necessary to replace this more limited quantitative representation of space with a view that emphasizes the intangible and socially constructed world and not simply the world that can be measured. It also will be essential to match technologies with the traditions of argument and narrative employed by humanists.

The goal of humanities scholarship is not to model or replicate the past but rather to pursue the fullest possible understanding of heritage and culture. Questions drive historical scholarship, not hypotheses, and the

questions that matter most address causation: why matters more than whom, what, or when, even though these latter questions are neither trivial nor easy to answer. The research goal is not to eliminate explanations or to disprove the hypothesis but to open the inquiry through whatever means are available and by whatever evidence may be found. This sense of eclectic borrowing has long informed humanities scholarship and even finds strong advocates among some of the most well-known theorists in the humanities, hence the advice offered by Paul de Man to develop "a new kind of skill . . . the capacity to use and feel at home in a whole series of different critical and theoretical codes and systems, as one would use a particular foreign language, without remaining rigidly locked into any one of them, but rather developing the capacity to translate those findings into different codes, systems, critical positions, as the case may require."⁷

Humanists develop knowledge through the process of argument, but a well-presented argument often does not settle a question; it may complicate it or open new questions that previously were unimagined. Similarly, humanists are hard-pressed to identify a preferred method because each avenue of investigation yields different evidence and thus different insights. Their approach is recursive, not linear: the goal is not so much to eliminate answers as to admit new perspectives. These methods doubtless appear quixotic to nonhumanists because they do not lead to finality. But for humanists, the goal is not proof but meaning. The goal of scholarship is less to produce an authoritative or ultimate answer than to prompt new questions, develop new perspectives, and advance new arguments or interpretations.⁸

Traditionally, humanities scholars have used narrative to construct the portrait that furthers this objective. Narrative encourages the interweaving of evidentiary threads and permits the scholar to qualify, highlight, or subdue any thread or set of them—to use emphasis, nuance, and other literary devices to achieve the complex construction of past or present worlds. An ancient device common to most cultures, narrative allows us to make sense of complexity, to find structure and meaning in the otherwise chaotic rush of events that occur in all times and places. Historical narratives, the foremost form among humanities disciplines, share much in common with fictional narratives, except for their claim to objectivity and their reference to evidence or works beyond the narrative itself.

In each narrative form, historical or fictional, the story is told, not lived, with textual unity imposed by the storyteller, not by history or culture itself.⁹ And like their fictional counterparts, they require a sympathetic imagination that allows us “to see small and think big,” as literary critic Adam Gopnik terms it, as well as to disassemble the big nouns into the small acts that make them up.¹⁰

But what is a narrative? It is not merely a sequence of events arranged chronologically. A list of this sort is a chronicle, which we recognize easily but have difficulty comprehending. Our nature requires that we seek meaning in events; we search for connections among events that will lead to something we can use to solve a problem, to understand an enigma, or simply to frame what we know. The story, a plot, serves as this framing device; it allows us to evaluate the relative significance of events and to relate them to whatever concerns us. It is the plot that marks the shift from chronicle to narrative: its classical form, as Aristotle noted, “has beginning, middle, and end”—and the “end is everywhere the chief thing” because it provides unity and meaning, thereby allowing us to judge an action by its results.¹¹

The Western style of narrative emerged over five thousand years ago from an oral tradition and maintained many of its characteristics for centuries. Its classic expression was the epic, a category that contains a number of forms—sacred myths, legends, and folktales, among them—but its central purpose was to recreate the traditional story. The narrator’s obligation was not to fact or entertainment, but to the *mythos* itself (*mythos* is the ancient Greek word for the story or plot). “Knowing, and thus being able to tell,” film theorist Edward Branigan reminds us, “is a fundamental property of narration.”¹² Over time, this narrative form evolved in two antithetical directions—the empirical and the fictional, the first marked by an emphasis on accurate measurement in time and space and on causality and the second by its allegiance to an ideal, truth, or beauty, instead of fact. By the seventeenth and eighteenth centuries, a new synthesis had emerged in the novel, which sought to reconcile these two threads. Since then, the novel has become the dominant form of literature and has had a powerful influence on the way humanists use narrative to conceptualize a story, illustrate reality, provide perspective, and develop meaning.¹³ It also has shaped the way we represent space.

From the time of Kant, Western society has regarded time and space as the two fundamental categories that structure human experience. Narrative theory privileges the former by emphasizing the sequence of events—“Narrative gives us what may be called the shape of time”¹⁴—and all narratives imply a world of spatial extension. Some theorists, however, recognize an explicit linkage of time and space, such as is reflected in Mikhail Bakhtin’s concept of the *chronotope* (time space) as the “intrinsic connectedness of temporal and spatial relationships,” with time supplying the fourth dimension of space.¹⁵ In this view, narrative is the “representation of movement within the coordinates of space and time,” with events marked by the intersection of horizontal and vertical axes in a dynamic interplay between surface and depth.¹⁶

Narrative space, however, is not a simple construct, a mere representation of the world (fictional or real) that acts as a container for events; instead, it encompasses several types of spaces, all of which have implications for spatial narratives. It is the setting or the physically existing environment in which actions occur and through which people move, but even this concept involves more than we might assume intuitively. This spatial setting, or spatial world, of the narrative unfolds temporally as readers progress through the text: it includes a *spatial frame*, the shifting scene of the action; the *story space*, the composite of all the spatial frames and other locations mentioned in the text; the *story world*, the story space as constructed the reader’s knowledge of and experience with the real world; and the *narrative universe*, the world presented as actual by the text plus all of the counterfactual worlds encompassed in the characters’ beliefs, ideas, fears, or speculations.¹⁷ This spatial world, the scene of the story, is fundamental to what happens in it, as the story’s actions are always consistent with its setting.¹⁸

Narratives, then, are not only inscribed on spatial objects, they are in fact spatially situated, and as readers, we construct mental maps to keep us oriented within the narrative world. It is a natural response because humans organize space by using the body as a reference point, and our language contains numerous words—up, down, left, right, back, forward, etc.—that keep us oriented physically to the environment we are in, whether actual or created in text. Indeed, an increasingly large body of thought known as embodied cognition suggests that what we know

cannot be separated from what our bodies perceive as we move through space.¹⁹ But we also orient ourselves in other ways, such as with spatial markers that represent a symbolic geography governed by beliefs, ontologies, or otherwise created relationships—sacred and profane, colonizing and colonized, or town and country, for instance. Narrative arises when a character or event crosses these symbolically charged spaces. Yet another set of spatial markers involves perspective, the point of view, which may refer to characters within the story, the narrator, or the reader.²⁰

The point is clear, at least from narrative theory: the stories we construct are inherently spatial. Given this circumstance, what sorts of spatial stories are we telling? Deconstructionists have argued that narrative is so basic to our cultural beliefs that our stories bear little resemblance to reality. "The past is not an untold story," Louis Mink once noted; we are so trapped within our narrative discourse that we have no way to reach a past that exists outside of our cultural assumptions.²¹ The German philosopher Martin Heidegger offered another view, one more attractive to humanists who are uncomfortable with the postmodern divorce between stories and an inherent reality. In this view, we have no other way to experience reality other than through our narratives; it is a natural human impulse, as a result, "we live in an endlessly storied world."²²

And in this storied world, most of the narratives we construct focus not on space, an abstract geometrical concept, but rather on place, the particular expression of geographical space. Humanists embrace the concept of place because of its power in our individual and collective lives. What is authentic about us—our very identity—is inextricably bound up with the places we claim as our own. As novelist Eudora Welty once observed, "place has a more lasting identity than we have, and we unswervingly attach ourselves to identity."²³ Even if we wanted to, we cannot escape place. "The world comes bedecked in places," philosopher Edward Casey has noted. "It is a place-world to begin with."²⁴

The concept of place appeals to humanists, who see it as the carrier of culture, which implies that no one class or group controls it. Instead, places are particular and inclusive; they are "organized worlds of meaning," characterized by experience, emotion, and memory.²⁵ A place exists in past, present, and future time, whereas a space exists only in the present. In fact, place blends spatial and temporal characteristics, a quality we des-

ignate as spatiotemporal or, as geographer Doreen Massey has termed it, time-spaces, by which she means the essential conflation of the attributes that define places as distinctive.²⁶ We confound time and distance when we discuss space—sometimes we refer to time as a surrogate for the nearness or farness of an object—but we can use either attribute to measure space. Our sense of place depends upon the simultaneous connection of both time and space. One attribute alone, either time or space, is not sufficient to define it. Time as a part of place does not need to be precise or even factually accurate, but, unlike space, which exists independent of time, place exists only in time. Time gives specificity to space. The association with the past creates the particularity that space requires to become place, a meaningful location with three distinct attributes—location (fixed coordinates), locale (the material and visual space associated with a location, or its setting), and a sense of place (the historical and emotional characteristics tied to a defined space).²⁷

Geographer Yi Fu Tuan argues that "space" and "place" require each other for definition.²⁸ Although undoubtedly true, this cryptic notion can obscure as well as illuminate because the two concepts, if mirror images of each other, also depend on the meaning attached to them by culture. Take, for example, the different ways white explorers and Indians viewed the land and sea, as recounted by travel writer Jonathan Raban as he retraced Captain George Vancouver's explorations along the Pacific coast of Canada in 1792. Vancouver was bewildered by what he considered the natives' aimless tracks across the open, undifferentiated ocean, not realizing that they were maneuvering among friendly and unfriendly spirits.²⁹ For the Indians, the ocean was place; for Vancouver, it carried no such cultural meaning and simply was space. In this instance, these concepts of space and place were mirror images within each culture and across cultures as well.

What may not be apparent at first glance is the terms we use are themselves highly contested: space and place are everywhere, and their names and definitions have been legion. In modern practice, space and place have become ideological battlegrounds, divorced from the geography and history that embraces them both. The separation first began at the end of the eighteenth century when, with the emergence of modern science, place became transformed into location or, simply, position, a spatial notion. In

Newtonian physics, space is abstract until it can be fixed, a characteristic that allows it to be measured and verified, thus giving it value within scientific method. It can be evaluated with other points for patterns that reveal a universal law. Places offered variations that were not interesting except as local cases; the pattern among them was what was interesting and useful.

Humanists found this meaning of place especially unappealing. During the nineteenth century, scholars began talking about the sense of place, often in romantic terms, as a way to understand the value of the local. By the late-twentieth century, the humanistic revolt against the space-place distinction of the Newtonian model was in full force, with Edward Casey arguing convincingly that the experience of place actually precedes knowledge of space. Resurrecting an ancient insight that it is through the experience of place that we perceive the world, Casey concludes that humans are "ineluctably place-bound." We are, in his playful phrase, "more even than earthlings, we are placelings." Far from being particular, place is "something general, perhaps even universal."³⁰ Place-making is not an event to be measured; rather, it is a process of being in a "configurative complex of things."³¹ We are continually making place by our acts of living in space. Massey has even argued that place is an open and hybrid concept, a product of interconnecting flows and not something that is rooted or fixed.³² We invest these places with meaning, but they do not exist as isolated and independent spaces. Instead, they are both general and particular. We all experience place, but the places we experience are all different. The world, in brief, is diverse and complex, and we can understand it only through an appreciation of the uniqueness of places and the events and cultures that they hold.

The notion of diversity and complexity tracks well with humanists' view of reality as weblike, to use philosopher Michael Oakeshott's phrase, in which everything is related in some way to everything else. Interdependency is the lingua franca of the humanities, and most recently it has become embodied in practice theory, or in the view of one of its leading proponents, historian William Sewell, "social life may be conceptualized as being composed of countless happenings or encounters in which persons or groups of persons engage in social action." In this view, societies and social systems are "continually shaped and reshaped by the creativity and stubbornness of their human creators."³³ Another historian, Ed Ayers,

has labeled this concept "deep contingency," an effort to understand society as a whole with "all structures put into motion and motion put into structures."³⁴

The problem comes when we try to use a linear form, the written narrative, to capture this complex reality. It is not simply that we cannot mimic with words the chaos or simultaneity of lived existence—Thomas Carlyle lamented in 1830 that an observation is successive in its recounting, whereas "things done were not in a series but a group"³⁵—but that we construct our stories with an end in mind. The narrative carries with it a teleological imperative to explain events as a consequence of past actions or causes and to derive some meaning from the story, lessons that we can use in some way to understand who we are. Our aim, then, is not to reveal fluid and dynamic deep contingencies per se but rather to advance an argument. Writing does this superbly by linking action to consequence, cause to effect. But its linear structure also forces a narrowing or a selectivity among the evidence we use to fashion our account, no matter how thick our descriptions or how evocative our language, thereby giving truth to poet William Blake's lines:

If the doors of perception were cleansed, everything would
appear to man as it is: infinite.
For man has closed himself up, till he sees all things
thro' narrow chinks of his cavern.³⁶

Mapping, the tool long favored by geographers, offers a different way to achieve the goal of capturing complexity. It is visual and integrative in a way that words cannot mimic. It also comports well with the aims and methods of humanists. Representation of the past, suggests historian John Lewis Gaddis, is a kind of mapping where the past is a landscape and history is the way we fashion it. The metaphor, one consistent with disciplinary traditions across the humanities, makes the link between "pattern recognition as the primary form of human perception and the fact that all history . . . draws upon the recognition of such patterns."³⁷ In this sense, mapping is not cartographic but conceptual. It permits varying levels of detail, not just as a reflection of scale but also of what is known at the time. Like the map, history becomes better and more accurate as we continue to accumulate more detail, observe its patterns, and refine

our knowledge. But mapping, except as metaphor, requires a map, which David Harvey notes, "are typically totalizing, usually two-dimensional, Cartesian, and very undialectical devices."³⁸

Does this mean then that we remain in the same position we currently occupy, forced to choose between competing narratives or maps? Or do geospatial and other digital technologies offer a means of avoiding our dilemma through a medium that encourages multiplicity, competing perspectives, and alternate worldviews?³⁹ Traditional GIS with its emphasis on precise measurement and spatial models is not the solution; neatly categorizing geographic complexity into entities, fields, and objects contrasts starkly with the humanities emphasis on ambiguity, complexity, nuance, and plurality. To this end, GIS scientists have made recent advances in spatial multimedia, GIS-enabled web services, geovisualization, cyber geography, and virtual reality, among other tools, that provide capabilities far exceeding the abilities of GIS on its own. Geo-visualization especially offers an approach useful to humanists because its arena is mental representations, not maps of precisely measured objects; it also aims not to chart what is known but rather to explore what is unknown.⁴⁰ Collectively, these technologies also allow us to probe the situated knowledge that resides in dynamic and contested memories and to understand what Stuart Aitken has called the affective or emotional geographies of space and place.⁴¹ They have the potential, in brief, to revolutionize the role of place in the humanities by moving beyond the two-dimensional map to explore dynamic representations and interactive systems that will prompt an experiential, as well as rational, knowledge base.

Humanists work largely with texts, so a key challenge is to learn to frame narratives about individual and collective human experience that are spatially contextualized. Not only is the vast bulk of human experience recorded as text rather than numbers, words are the preferred medium of both ordinary and scholarly communication, regardless of topic or field. Finding ways to make the interaction among words, location, and quantitative data more dynamic and intuitive will yield rich insights into complex sociocultural, political, and economic problems, with enormous potential for areas far outside the traditional orbits of humanities research. All texts exist in both metaphorical and geographic space, so textual analysis itself may be framed by reciprocal transformations from

text to map and map to text, as suggested by the novel mappings and *spatial imaginaire* of cultural and literary studies.⁴²

We already have hints of what development along these lines can offer to the humanities. Within the field of cultural heritage, archaeologists have used GIS and computer animations to reconstruct the Roman Forum, for example, creating a three-dimensional world that allows users to walk through buildings that no longer exist, except as ruins. We can experience these spaces at various times of the day and seasons of the year. We see more clearly a structure's mass and how it clustered with other forms to mold a dense urban space. In this virtual environment, we gain an immediate, intuitive feel for proximity and power. This constructed memory of a lost space helps us recapture a sense of place that informs and enriches our understanding of ancient Rome.⁴³ A similar, although more ambitious, project uses laser-scanning technology (LiDAR—light detection and ranging) to create three-dimensional models of major heritage sites and allows scholars and others to roam this virtual environment at will.⁴⁴ Elsewhere, scholars are mining texts for spatial references and using them to repopulate the Dublin of James Joyce's *Ulysses* or William Shakespeare's London with the sense of life and possibilities embedded in the past, what Paul Carter has called "intentional history."⁴⁵

Virtual environments are only one way that GIScience is moving us beyond conventional uses of GIS and mere mapping. The geospatial web also holds considerable potential for the spatial humanities to automate the identification and mapping of people, events, places, and spatial relationships from textual resources. Similarly, the ability to transform unstructured text into structured maps suggests that maps may become portals into narratives rather than illustrations of what scholars have written, making spatially aware semantic connections among data and moving toward more complex forms of spatiotextual analysis. Spatialization techniques such as self-organizing maps and text clouds identify clusters in text documents that share similar characteristics in both geographical and metaphorical space. Text-to-map transformations reflect both absolute and relative space by extracting spatial relationships embedded in text and then using this information to go beyond strict map making.⁴⁶ Gaming engines also offer ways to reconceptualize the role of space in the humanities by privileging agent-based exploration rather than linear

movement as a means of discovery. Spatial stories in this environment are "held together by broadly defined goals and conflicts and are pushed forward by the character's movement," not by the structure of an argument.⁴⁷ Truth and authenticity are measured not by standards of causality but by the game's ability to "conjure up experiences of space" that expand and improve our understanding of a complex and multifaceted reality.⁴⁸

These developments from GIScience and related disciplines are important because they quickly are moving us beyond the constraints of a positivist technology that is ill-suited for much humanities research. The same cannot be said with as much assurance about time, which has long been the central lens through which historians view change. The spatial and temporal turns (the New Historicism) go together, and it is unwise to separate the two or prioritize one over the other. GIS has struggled to adequately handle the complexities of these spatiotemporal needs, with the result that the software emphasizes space and treats time as categorical and discontinuous. But the spatial humanities require both time and space: to speak of history as dealing with time, and geography with space, is too simplistic a divide. Massey's idea of exploring multiple trajectories through space and time⁴⁹ is much more suited to humanities research, but GIS struggles to provide an environment in which this integrated space-time can be explored profitably.

Central to the emergence of the spatial humanities is a trust that the contingent, unpredictable, and ironic in history and culture can be embodied within a context that incorporates space alongside of time. What we require is a spatial narrative that acknowledges how engaged human agents build spatially framed identities and aspirations out of actions, behaviors, imagination, and memory. At its core, this narrative focuses on spatial patterns as a means of understanding social interaction. It reflects a geography of the constant interaction between structure and process, a continuous interplay between society and the individual and/or group within a spatial environment that both shapes and is shaped by social norms and by individual or group agency. This narrative also must accommodate time and contingency; the social interactions influenced by and influencing space represent, in fact, a web of choices, and the narrative becomes a braided thread (or multiple threads) of those choices over time. But the real question is not the definition of a spatial narrative but how to

tap digital and spatial technologies to move narrative beyond the linear constraints of written language into a more fluid and reflexive process in which we can see and experience change and development as a way of understanding an event or a place more fully. If the current scholarly interest in networks is understood as an initial foray into the analysis of important interactions, the spatial narrative can be envisioned as a much richer and complex presentation, one that is geared to the analysis of vast datasets and undertaken in such a way as to maximize experimentation with evidence of contingency, contradiction, and change over time.⁵⁰

Here is where the deep map becomes important. Stemming from the affective stance of unitary urbanism and psychogeography associated with the Situationist International in 1950s France, this approach "attempts to record and represent the grain and patina of place through juxtapositions and interpenetrations of the historical and the contemporary, the political and the poetic, the discursive and the sensual."⁵¹ What is required, the Situationists argued, is an understanding "of the specific effects of the geographical environment, consciously organized or not, on the emotions and behavior of individuals."⁵² The idea of deep mapping has a counterpart in geography in the work of Yi Fu Tuan's *Topophilia: A Study of Environmental Perception, Attitudes and Values*,⁵³ which proposed exploring the connectedness and ties between human emotion and the physical fabric of landscape. As a new creative space, deep maps have several qualities well-suited to a fresh conceptualization of GIS and other spatial technologies as they are applied to the humanities. They are visual, time-based, and structurally open; they are inherently unstable, continually unfolding and changing in response to new data, new perspectives, and new insights. Their aim is not objectivity or authority but rather a negotiated conversation between insiders and outsiders, experts and contributors, over what is represented and how. In their essence, deep maps are the means by which we represent the contested meanings of space and place, as well as the dynamics that produce them. They are curated products—reflexive and self-conscious, historically informed, yet critical and alert to the politics of mapping. As such, they contain the seeds of their own subversion.

The similarity between a deep map and advanced spatial technologies seems evident. Traditional GIS operate as a series of layers, each representing a different theme and tied to a specific location on planet earth.

These layers are transparent, although the user can make any layer or combination of layers opaque while leaving others visible. The advent of light-field photography offers another helpful analogue: it uses hundreds of microlenses to capture all the visual information in a scene, with the photographer bringing into focus later whatever parts of the image that interest her, thus permitting multiple perspectives on an event or object.⁵⁴

A deep map of heritage and culture, centered on memory and place, ideally would work in a similar fashion. The layers of a deep map need not be restricted to a known or discoverable documentary record but could be opened, Wiki-like, to anyone with a memory or artifact to contribute. However structured, these layers would operate as do other layers within a GIS, viewed individually or collectively as a whole or within groups, but all tied to time and space that provide perspectives on the places that interest us. It is an open, visual, and experiential space, immersing users in a virtual world in which uncertainty, ambiguity, and contingency are ever present but all are capable of being braided into a narrative that reveals the ways in which space and time influences and is influenced by social interaction. This space is one in which both horizontal and vertical movement is possible, with the horizontal providing the linear progression we associate with rational argument and vertical movement providing the depth, texture, tension, and resonance of experience.⁵⁵ In the deep map, we understand space and place as the product of interrelationships, coexistence, and process, always changing and always in the state of becoming. It permits us to see what literary theorist Raymond Williams has termed a "knowable community," in which what is known is not only a function of objects but also of subjects and observers, of what is desired and needs to be known.⁵⁶ It also defines place, in Christopher Tilley's phrase, as "sedimented layers of meaning," the accumulation over time of the events and actions that have happened in a particular space.⁵⁷

Yet deep mapping is not an end in itself. Ultimately, we must use it to construct a spatial narrative and embed within it an argument, which is, in sum, the lingua franca of scholarship. What, then, are the requirements for this narrative? Although the structure may vary widely, it must reveal the influence of real and constructed space on human society and culture, as well as how cultural and social forms shape our understanding of space

and place. It must acknowledge that actions occur not simply in time but in space and that events—and our interpretation of them—stem from the confluence of space and time as exposed within a place. This narrative, as a result, must be sensitive to scale: we cannot causally impute local consequences, for instance, to behaviors or events in play across a region or a nation. It also should be alert to the basic ways in which we analyze space—movement, direction, proximity, and connection, among others—and discover the patterns that occur within and among places. And without falling into the trap of spatial determinism, the narrative must reveal how space and place matter to our understanding of society and culture. It must develop a sophisticated argument that gives space-time its own agency, a recognition that we all are place-bound and that the world, in fact, is not flat but endlessly varied and local.

How we construct these narratives will depend, in part, on the richness of our evidence and the tools at our command, but deep mapping can be an ideal storyboard for humanists. It goes beyond traditional uses of GIS and seeks to capture the essence of place and a humanistic sense of distance, direction, and identity. It moves the user from the GIS world of observation to one of experience and enables scholars to engage the material world rather than observe it, as well as to understand more completely how people both create their material world and, in turn, are created by it. Grounded in experiential as well as objective space, deep mapping will provide a representation of society and culture, past and present, with all its rich contradictions and complexities. It will, above all, be a conceptual, technological, and spatial framework that is sensitive to the needs of scholars to tell stories about place.

NOTES

1. A number of recent titles explore this spatial turn in the humanities, including: David J. Bodenhamer, John Corrigan, and Trevor M. Harris, eds., *The Spatial Humanities: GIS and the Future of Humanities Scholarship* (Bloomington: Indiana University Press, 2010); Michael Dear, Jim Ketchum, Sarah Luria, and Douglas Richardson, eds., *GeoHumanities: Art, History, Text at the Edge of Place* (New York: Routledge, 2011); Stephan Daniels, Dydia DeLyser, J. Nicholas Entrikin, and Douglas Richardson, eds., *Envisioning Landscapes, Making Worlds* (New York: Routledge, 2011); Ian N. Gregory and Paul S. Ell, *Historical GIS: Technologies, Methodologies, and Scholarship* (Cambridge: Cambridge University Press, 2008). Also see Peter Doorn, "A Spatial Turn in History," *GIM International* 19, no. 4 (April 2005), http://www.gim-international.com/issues/articles/id453-A_Spatial_Turn_in_History.html (accessed September 12, 2013).

2. For more on this earlier spatial turn, see Stephen Kern, *The Culture of Time and Space, 1880–1918* (Cambridge: Harvard University Press, 1983).
3. Tim Cresswell, *Place: A Short Introduction* (Malden, Mass.: Wiley-Blackwell, 2004) offers a good brief introduction to the postmodern construction of place. Also see Karen Haulttunen, "Groundwork: American Studies in Place," *American Quarterly* 58 (March 2006), 1–15; Richard Biernacki and Jennifer Jordan, "The Place of Space in the Study of the Social," in Patrick Joyce, ed., *The Social in Question: New Bearings in History and the Social Sciences* (New York: Routledge, 2002), 133–150; Peta Mitchell, *Cartographic Strategies of Postmodernism: The Figure of the Map in Contemporary Theory and Fiction* (New York: Routledge, 2008), 23–26.
4. Anthony Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Oxford: Oxford University Press, 1984), 364.
5. Michel de Certeau reminds us that "space occurs as the effect produced by the operations that orient it, situate it, temporalize it, and make it function as a polyvalent unity of conflictual programs or contractual proximities." And stories are the constructive means we use to transform spaces into places or places into spaces. See Michel de Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1984), 117–118.
6. See Anne Kelly Knowles, ed., *Placing History: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship* (Redlands, Calif.: Esri Press, 2008) for a good sample of the application of GIS to various topics in the humanities. Also see the special issue of *The International Journal of Humanities and Arts Computing* 3, nos. 1–2 (2009), which is devoted to the use of GIS in a number of humanities disciplines.
7. Paul de Man's quote is available at <http://chronicle.com/blogPost/how-theory-damaged-the-humanities/6178> (accessed October 27, 2013).
8. Holocaust historian Saul Friedländer captured this aim succinctly: "Commentary," he suggests, "should disrupt the facile linear progression of the narration, introduce alternative interpretations, question any partial conclusion, withstand the need for closure. . . . Such commentary may introduce splintered or constantly recurring refractions of a traumatic past by using any number of different vantage points." Saul Friedländer, "Trauma, Transference and Working-Through," *History and Memory* 4 (1992), 39–55.
9. Louis Mink, "Narrative Form as a Cognitive Instrument," in Brian Fay, E. O. Golob, and Richard T. Vann, eds., *Historical Understanding* (Ithaca, N.Y.: Cornell University Press, 1987), 22; Frank Ankersmit, "Historiography," in David Herman, Manfred Jahn, and Marie-Laure Ryan, eds., *Routledge Encyclopedia of Narrative Theory* (London: Routledge, 2005), 217–221.
10. Adam Gopnik, "Inquiring Minds: The Spanish Inquisition Revisited," *The Atlantic*, December 2011, 73.
11. Aristotle, *Poetics*, in *The Complete Works of Aristotle: The Revised Oxford Translation*, ed. Jonathan Barnes, 2 vols. (Princeton, N.J.: Princeton University Press, 1984), 2:2321.
12. Edward Branigan, *Narrative Comprehension and Film* (London: Routledge, 1992), 53.
13. Robert Scholes, James Phelan, and Robert Kellogg, *The Nature of Narrative*, rev. and expanded (New York: Oxford University Press, 2006), 3–16.
14. H. Porter Abbott, *The Cambridge Introduction to Narrative* (Cambridge: Cambridge University Press, 2002), 11.
15. M. M. Bakhtin, *The Dialogic Imagination: Four Essays*, ed. Michael Holquist, trans. Caryl Emerson and Michael Holquist (Austin: University of Texas Press, 1981), 278.

16. Susan Stanford Friedman, "Spatialization: A Strategy for Reading Narrative," *Narrative* 1, no. 1 (Jan. 1993), 12–13.
17. Marie-Laure Ryan, "Space," in Peter Hühn et al., eds., *The Living Handbook of Narratology* (Hamburg: Hamburg University), <http://www.lhn.uni-hamburg.de/> (accessed May 7, 2014).
18. Kenneth Burke, *A Grammar of Motives* (Berkeley: University of California Press, 1969), 6–7; William Cronon, "A Place for Stories: Nature, History, and Narrative," *Journal of American History* 78, no. 4 (March 1992), 1347–1376.
19. Barbara Tversky, "Spatial Cognition: Embodied and Situated," in Philip Robbins and Murat Aydede, eds., *Cambridge Handbook of Situated Cognition* (Cambridge: Cambridge University Press, 2009), 201–217; Barbara Tversky and Bridgette M. Hard, "Embodied and Disembodied Cognition: Spatial Perspective-taking," *Cognition* 110, no. 1 (2009), 124–129.
20. Sabine Buchholz and Manfred Jahn, "Space in Narrative," in *Encyclopedia of Narrative Theory*, 550–555.
21. Mink, "Narrative Form as a Cognitive Instrument," 22.
22. William Cronon, "A Place for Stories," 1368; Stuart Elden, *Mapping the Present: Heidegger, Foucault, and the Project of Spatial History* (London: Continuum, 2001), 93–111.
23. Eudora Welty, "Place in Fiction," *The Eye of the Storm: Selected Essays and Reviews* (New York, 1990), 119. Roberto Maria Dainotto discusses the postcolonial connection of place and literature in "All the Regions Do Smilingly Revolt: The Literature of Place and Region," *Critical Inquiry* 22, no. 3 (Spring 1996), 486–505.
24. Edward S. Casey, "How To Get from Space to Place in a Fairly Short Stretch of Time: Phenomenological Prolegomena," in S. Feld and K. H. Basso, eds., *Senses of Place* (Santa Fe, N.M.: School of American Research Press, 1996), 43.
25. Philip J. Ethington, "Placing the Past: 'Groundwork' for a Spatial Theory of History," *Rethinking History: The Journal of Theory and Practice* 11, no. 4 (Dec. 2007), 481. The quote is from Yi Fu Tuan, *Space and Place: The Perspective of Experience* (Minneapolis: University of Minnesota Press, 1977), 179.
26. Doreen Massey, *For Space* (London: Sage, 2005), 177–180.
27. Tim Cresswell, *Place: A Short Introduction* (London: Blackwell Publishers, 2004), 7–8.
28. Tuan, *Space and Place*, 6.
29. Jonathan Raban, *Passage to Juneau: A Sea and Its Meanings* (New York: Pantheon Books, 1999), 103, as cited in Cresswell, *Place*, 11.
30. Casey, "How To Get from Space to Place in a Fairly Short Stretch of Time," 19.
31. *Ibid.*, 25.
32. Doreen Massey, "A Global Sense of Place," in Trevor Barnes and Derek Gregory, eds., *Reading Human Geography* (London: Hodder Arnold, 1997), 315–323.
33. William H. Sewell, Jr., *Logics of History: Social Theory and Social Transformation* (Chicago: University of Chicago Press, 2005), 110–111.
34. Edward L. Ayers, "Turning toward Space, Place, and Time," in Bodenhamer, et al., *The Spatial Humanities*, 7.
35. Thomas Carlyle, "On History," in Fritz Stern, ed., *The Varieties of History: From Voltaire to the Present* (New York: Vintage Books, 1972), 95.
36. William Blake, "The Marriage of Heaven and Hell," in David V. Erdman, *The Complete Poetry and Prose of William Blake*, electronic ed. (Institute for Advanced Technology

- in the Humanities, University of Virginia. 2001), <http://www.blakearchive.org/blake/erdman.html> (last accessed October 27, 2013).
37. John Lewis Gaddis, *The Landscape of History: How Historians Map the Past* (New York: Oxford University Press, 2002), 33.
38. David Harvey, *Justice, Nature and the Geography of Difference* (Oxford: Blackwell, 1996), 4.
39. See Claudio Fogu, "Digitalizing Historical Consciousness," *History and Theory* 47 (May 2009), 103–121.
40. Alan M. MacEachren, Mark Gahegan, and William Pike, "Visualization for Constructing and Sharing Geo-scientific Concepts," *Proceedings of the National Academy of Sciences* 101, no. 1 (2004), 5279–5286.
41. James Craine and Stuart Aitken, "The Emotional Life of Maps and Other Visual Geographies," in Martin Dodge, Rob Kitchin, and Chris Perkins, eds., *Rethinking Maps: New Frontiers in Cartographic Theory* (New York: Routledge, 2009), 168–185.
42. Franco Moretti, *Graphs, Maps, Trees: Abstract Models for a Literary History* (London: Verso, 2005); Barbara Piatti, "Mapping Literature: Toward a Geography of Fiction," ftp://cartography.ch/pub/pub_pdf/2009_Piatti_Geography_of_Fiction.pdf (last accessed May 7, 2014).
43. Digital Roman Forum Project, <http://dlib.etc.ucla.edu/projects/Forum/> (last accessed October 27, 2013).
44. Information about this use of LiDAR is available at http://www.ted.com/talks/ben_kacyra_ancient_wonders_captured_in_3d.html (last accessed October 27, 2013).
45. Paul Carter, *The Road to Botany Bay* (London: Faber and Faber, 1987), 3.
46. Trevor M. Harris, L. Jesse Rouse, and Susan Bergeron, "The Geospatial Semantic Web, Pareto GIS, and the Humanities," in Bodenhamer, et al., *The Spatial Humanities*, 124–142; May Yuan, "Mapping Text," in Bodenhamer, et al., *The Spatial Humanities*, 109–123; Ian N. Gregory and Andrew Hardie, "Visual G1sting: Bringing Together Corpus Linguistics and Geographical Information Systems," *Literary and Linguistic Computing* 26 (2011), 297–314. Also, see Edward L. Ayers, "The Pasts and Future of Digital History," <http://www.vcdh.virginia.edu/PastsFutures.html> (last accessed October 27, 2013).
47. Henry Jenkins, "Game Design as Narrative Architecture," <http://web.mit.edu/cms/People/henry3/games&narrative.html> (last accessed October 27, 2013). Also see Connie Veugen and Felipe Quérette, "Thinking out of the Box (and back in the Plane): Concepts of Space and Spatial Representation in Two Classic Adventure Games," *Eludamos. Journal for Computer Game Culture* 2, no. 2 (2008), <http://www.eludamos.org/index.php/eludamos/article/view/v012n02-6/86> (last accessed October 27, 2013).
48. Christoph Classen and Wulf Kansteiner, "Truth and Authenticity in Contemporary Historical Culture," *History and Theory (Theme Issue)* 47 (2009), 3.
49. Doreen Massey, *For Space*, 9–15; Doreen Massey, "Space-Time, 'Science' and the Relationship between Physical Geography and Human Geography," *Transactions of the British Geographical Society, New Series* 24 (1999), 261–276. A useful discussion also may be found in Donna Peuquet, *Representations of Space and Time* (New York: The Guildford Press, 2002).
50. See John Corrigan, Trevor M. Harris, and David J. Bodenhamer, "The Spatial Humanities" (white paper, National Science Foundation, Directorate for Social, Behavioral and Economic Sciences, 2010 [SBE 2020: ID 163]), http://www.nsf.gov/sbe/sbe_2020/submission_detail.cfm?upld_id=163 (last accessed October 27, 2013).

51. Mike Pearson and Michael Shanks, *Theatre/archaeology* (London: Routledge, 2001), 64–65. Also see David J. Bodenhamer, "Creating a Landscape of Memory," *International Journal of Humanities and Arts Computing* 1, no. 2 (2008), 97–110.
52. "Definitions," in Ken Knabb, ed., *Situationist International Anthology* (Berkeley: Bureau of Public Secrets, 1981), 45, as cited in Mitchell, *Cartographic Strategies of Postmodernity*, 119n44.
53. Yi Fu Tuan, *Topophilia: A Study of Environmental Perception, Attitudes and Values* (1974; repr., New York: Columbia University Press, 1990).
54. Rob Walker, "Deep Focus: How a New Camera Will Revolutionize Photography," *The Atlantic*, December 2011, 16. Although it sounds futuristic, such a camera, the Lytro, appeared in 2012. Also see Peta Mitchell, "The Stratified Record upon Which We Set Our Feet: The Spatial Turn and the Multilayering of History, Geography, and Geology," in Dear, et al., *GeoHumanities*, 71–83.
55. For another view of how the use of Web 2.0 tools will reshape traditional notions of authority, see Ian Johnson, "Spatiality and the Social Web: Resituating Authoritative Content," in Dear, et al., *GeoHumanities*, 267–276. Also see the various essays in Arno Scharl and Klaus Tochtermann, *The Geospatial Web: How Geobrowsers, Social Software, and Web 2.0 Are Shaping the Network Society* (London: Springer, 2007).
56. Raymond Williams, *The Country and the City* (New York: Oxford University Press, 1973), 165.
57. Christopher Tilley, *A Phenomenology of Landscape: Places, Paths and Monuments* (Oxford: Berg Publishers, 1994), 27.



DEEP GEOGRAPHY—DEEP MAPPING

Spatial Storytelling and a Sense of Place

TREVOR M. HARRIS

Maps are more than pieces of paper. They are stories, conversations, lives and songs lived out in a place and are inseparable from the political and cultural contexts in which they are used.

INTRODUCTION

Deep mapping, spatial storytelling, and spatial narratives are incomplete terms struggling to capture and imbue meaning to abstract thoughts of a more profound, insightful, reflexive, multimediac, perhaps quixotic representation of humanistic space than currently prevails. To focus on the term *deep mapping* emphasizes William Least Heat-Moon's¹ and Barry Lopez's² admonition to throw away the "wrong sort" of superficial "thin" maps and to seek a "less suspicious" deep map, but it also encourages an emblematic continuation of a mapped representation of space. Spatial storytelling and spatial narratives provide rich connotations and attachments to the humanities' storied-narrative style, though, despite a potential gamut of methodological approaches, narratological representations of space continue to seek a conceptual core. For a number of reasons then, I opt for the term *deep geography* to encompass deep mapping, spatial storytelling, and spatial narrative and to situate these themes within a conceptual and methodological framework that can be brought to bear to define, refine, and explore these nebulous concepts.

To counteract the magnetic allure of addressing the "how to" element of implementing manifestations of these terms, themes, and ideas, it is im-

portant to first understand the critical question as to "why" the concepts, techniques, practices, and usages of deep geography are important and the purpose(s) in pursuing them. I suggest that the ultimate goal is to explore and attain a deeper understanding of place, as distinguishable from that of space. Place and sense of place, place-making, and experiencing place are well-established fields within geography and deep mapping links these to humanistic examinations of deep contingency. Current approaches to examining place and especially historical place, draw upon advances in local history, microhistory, historical geography, cartography, and geographic information systems (GIS). GIS offers considerable potential for the spatial humanities but the challenge is to shift from a view of humans as entities or data points to an examination of behavior, the material and imaginary worlds, and the relationships that compose notions of a nuanced, nonreductionist, deeply contingent, and scaled conception(s) of place.³

I suggest a number of approaches and possible methods to examine deep geography that draw from a smorgasbord of qualitative GIS, ethnography, virtual environments, storyboarding, critical GIS and participatory GIS (PGIS), and neogeography and its related component parts of the geospatial web, crowd sourcing, and volunteered geographic information (VGI). I also suggest that several metaphors can provide additional insight and motivation as to possible methodological implementations of deep mapping and spatial storytelling.

THIN MAPS

Use of the term *deep map* requires unpacking as it relates to some affective implied association between the cartographic map and the mapping process and contingent humanistic behavior. Maps have come to represent the embodiment and outward visual expression of the geography of an area. While not always limited to the cartographic mapping of geographical space, the act of mapping features to convey information is embedded in our everyday consciousness and usage. Maps have intrinsic characteristics and properties that have contributed to their success as a communication medium, for they possess a considerable capacity to store and display vast quantities of spatial data on a single sheet or image. Furthermore, the graphical expression of often complex spatial information can be rapidly

and intuitively interpreted because the human eye is a very effective and powerful image processor.

Traditional map content tends to be dominated by the physical fabric of society and, as bureaucratic and management tools, has been used extensively to map infrastructural features such as roads, railways, and transmission lines; physical features such as the terrain, hydrography, and vegetation cover; places of population and settlement; and a host of other features traditionally found on a topographic map sheet. These cartographic products are largely intended for general audiences. Thematic maps draw more heavily on choropleth mapping and other cartographic representations and focus on specific themes that often include cultural and social data. Although challenged by the plethora of mapping opportunities now available to non-cartographically trained map creators enabled by the broader availability of GIS and the geospatial web, these cartographic representations are steeped in an extensive praxis of design, aesthetics, science, and technology that ostensibly seek to model aspects of reality and communicate that information to a, usually defined, audience.⁴ While Robinson⁵ would suggest that good map design is premised on having an intended audience in mind, it is MacEachren⁶ who stresses that a good map should imply authenticity and show multiple elements that reinforce relationships in the map and thus its value and significance. These cartographic products are characterized by a focus and concern for precision and accuracy. These maps can be construed as thin maps in that they are conceived, designed, created, and maintained by experts for both general and specific audiences, often to meet specific governmental or corporate needs, and are heavily focused on the material and physical characteristics of landscape and society. For several reasons, I favor the term *thin map* to describe these cartographic products rather than "shallow map," which is the antonym to deep map. The term *shallow*, when applied to these maps, intentionally or otherwise, implies a meaning of superficiality and inconsequentiality and that they are lightweight and lacking in substance. There is overwhelming evidence to disprove these latter descriptions and any consideration of the impact of GIS on contemporary society validates the value and contribution of these maps across a range of societal endeavors. These maps and their map content have formed the backbone of GIS and national spatial data infrastructures

and have proven invaluable in numerous areas of government, business, environment, and community applications.

DEEP MAPS

In contrast to these surficial thin maps, deep maps represent an alternative form of mapping and of content. As Lopez commented:

I would like to tell you how to get there so that you may see all this for yourself. But first a warning: you may already have come across a set of detailed instructions, a map with every bush and stone clearly marked, the meandering courses of dry rivers and other geographical features noted, with dotted lines put down to represent the very faintest of trails. Perhaps there were also warnings printed in tiny red letters along the margin, about the lack of water, the strength of the wind and the swiftness of the rattlesnakes. Your confidence in these finely etched maps is understandable, for at first glance they may seem excellent, the best a man is capable of; but your confidence is misplaced. Throw them out: They are the wrong sort of map. They are too thin. They are not the sort of map that can be followed by a man who knows what he is doing. The coyote, even the crow, would regard them with suspicion.⁷

The intellectual roots of deep maps lies in a combination of eighteenth-century antiquarian approaches to geography, history, people, culture, and place; in the detailed local histories of historical geographers such as W. G. Hoskins⁸; in the thick description of William Least Heat-Moon's *PrairyEarth*⁹; in the insightful observations into deep mapping and performance drama of Pearson and Shank¹⁰; in Certeau's¹¹ spatial stories and practices of everyday life; in Yi Fu Tuan's *Topophilia*¹²; and in the early work of the Situationists International¹³ and psychogeography.

The short-lived Marxist avant-garde Situationist International of mid-twentieth-century Europe sought to resist advanced capitalism and the perceived spectacle of the fake reality that they claimed masked capitalism's degradation of people's lives by seeking alternatives through the "constructedness of situations."¹⁴ Guy Debord, the principal leader and theorist of Situationist International used the term *situation* to suggest a critical evaluation of everyday life, moments of life, which he suggested are transformed into a superior and self-desired quality. In similar vein to Marx's commodification of the material and the symbolic world, the Situationists asserted that advanced capitalism also commodified exper-

rience and perception and that a mass media-induced image-laden reality produced fake models that were at odds with everyday experience. Alternative pathways to creating life experiences were proposed by the Situationists such as psychogeography that sought to evaluate the effects of the geographical environment on the emotions and behavior of people. As Debord wrote in his *Introduction to a Critique of Urban Geography*:

Geography . . . deals with the determinant action of general natural forces, such as soil composition or climatic conditions, on the economic structures of a society, and thus on the corresponding conception that such a society can have of the world. Psychogeography could set for itself the study of the precise laws and specific effects of the geographical environment, whether consciously organized or not, on the emotions and behavior of individuals. The charmingly vague adjective psychogeographical can be applied to the findings arrived at by this type of investigation, to their influence on human feelings, and more generally to any situation or conduct that seems to reflect the same spirit of discovery.¹⁵

In this regard, psychogeography combines both objective and subjective knowledge and through the theory and action of *dérive* or drift, a technique of rapid passage through varied ambiances, people would let go of conscious actions, relations, and movement and be drawn to the attractions of the terrain and the encounters to be found there.¹⁶ Thus in *unitary urbanism*, the Situationists rejected Euclidian projections of space and suggested that as travelers traversed an urban environment, they would allow themselves to be guided by their emotional responses to the environment and to the encounters within it. Thus the Situationists and the concepts surrounding psychogeography can be seen as both critique and challenge to the current stream of geospatial technology and data production. If, through the extensive mapping of space premised on authenticated spatial data infrastructure and GIS,¹⁷ and the use of mobile location-based services and geotagged VGI, all items in space could be mapped, would it still be possible to understand and experience place? And what of the chance encounters that the ambience of place and place-making can engender through sound, emotion, smell, contact, interaction, and movement?

Given the privileged role given to thin maps and the mapped world of the physical environment is it possible to know a location even if every

object and measured space were mapped? The social theoretic critique of the GIS and Society debates in the 1990s, and more lately critical GIS, posed these very same questions about the emphasis and privileged position given to the Boolean logic of the Turing machine and of positivist GIS and the cartographic metaphor.¹⁸ While we may know the space, how well do we understand the place and movement between places? Does our (thin) mapping of the environment become the essence of the virtual tourist, experiencing place vicariously and by proxy but without the sounds, sights, interactions, encounters, and emotions associated with place?

From the concepts of the Situationist International, the divergence between thin maps and deep maps—between space and place—becomes clearer and more focused. As Debord reflects, “We live in a spectacular society, that is, our whole life is surrounded by an immense accumulation of spectacles. Things that were once directly lived are now lived by proxy. Once an experience is taken out of the real world it becomes a commodity. As a commodity the spectacular is developed to the detriment of the real. It becomes a substitute for experience.” The trends being experienced in GIS toward an exhaustive mapping of the physical environment, “the world on your desktop,” predominantly reinforce the mapping of the material to the exclusion of the intangible, of emotion and experience, and the contingent human encounter with the physical, symbolic, and imaginary landscapes. The “virtual tourist” takes on particular connotations when the physical is privileged over the human experience, which is transformed to that of data points, entities, and objects. Deep maps reflect the complex interaction of the physical and human environments and their relations and behaviors that are nuanced, nonlinear, branching, and so very difficult to map. In many ways, deep maps seek to “map” the unmappable and therein lies the challenge.

By way of illustration, I liken these space-place and thin map-deep map issues to the role of place names in mapping. The etymology of Native American place names, for example, provides a rich understanding and descriptive use of terms that reflect the physical and cultural worlds that Native Americans inhabited. Certainly physical features such as lakes and mountains are represented, but these are interwoven into morphologically complex and semantically rich forms and tied to stories (both remembered

and forgotten) in folklore and the ethnocentric descriptions of places.¹⁹ The polysynthetic character of many Native American languages often enables these complex and semantic nuances to be captured in one lexical term. As Bright suggests, "Of the linguistic artifacts and distinct semantic domains in lexicons of all the world's languages, place names tell us something not only about the structure and content of the physical environment itself but also how people perceived, conceptualized, classified, and utilized that environment."²⁰ To use a well-known Welsh place name example: *Llanfairpwllgwyngyllgogerychwyrndrobwilllantysiliogogoch*, which translated means "[St.] Mary's Church (*Llanfair*) [in] the hollow (*pwll*) of the white hazel (*gwyngyll*) near (*goger*) the rapid whirlpool (*y chwyrndrobwill*) [and] the church of [St.] Tysilio (*llantysilio*) with a red cave (*[a]gogo goch*)." At fifty-eight letters long, this place name is one of the longest in the world and while it serves the purpose of my point here it should be acknowledged that it was an artificially contrived nineteenth-century publicity stunt to attract tourists to the area. Nonetheless, toponyms provide valuable insight into the ways in which humans experience the world and appropriate images of the landscape to describe, interpret, and communicate their experiences of the physical and social environment.²¹ As Harrington, who examined the ethnogeography of the Native American tribe of the Tewa, powerfully suggests: "The Tewa have a marked fondness for geographical conversation."²²

I metaphorically liken these humanized usages of place names to the toponymic equivalent of the deep map and certainly so when made in comparison with other forms of place-naming nomenclature. A comparison to the naming conventions used in Antarctica, for example, takes one to the U.S. Board on Geographic Names.²³ In the largely unexplored and uninhabited land of Antarctica where human encounter with the landscape has largely been a result of exploration and research centers, place names mostly demarcate features or locations based on the names of these very same explorers and "deserving people." Indeed the three-tiered naming conventions are illustrative of this. First-order place names that are allocated to physical features are based on a select group of expedition leaders, discoverers of outstanding significance, contributors to science, and financial backers of expeditions. In the second naming tier come ships' captains, those who exhibited acts of heroism, heads of learned societies,

and those who contributed to the acquisition of equipment. Finally, in the third order of name determination come members of expeditions and teachers and administrators who contributed to the training of polar explorers. Interestingly, natural features are similarly tiered with first-order coasts, seas, plateaus, mountain ranges, and glaciers; second-order prominent mountains, capes, gulfs, harbors, straits; and third-order features comprising cliffs, nunataks, minor shore features, anchorages, bays, and coves. The white space of the Antarctic to be found (literally) on the maps of Google Earth or Google Maps, and most other maps and atlases for that matter, are an extreme example of the thin map. The extreme nature of the landscape, which contains the barest elements of geography, settlement, or history, albeit a fascinating geopolitical record, could indeed assume the label of white map, or light map, or thin map.

A second intellectual origin for deep maps lies in eighteenth-century antiquarian approaches to geography and history. Pearson and Shank,²⁴ for example, suggest that historically, place included history, folklore, natural history, and hearsay, and as such their deep map "attempts to record and represent the grain and patina of a location [through the] juxtapositions and interpenetrations of the historical and the contemporary, the political and the poetic, the factual and the fictional, the discursive and the sensual; the conflation of oral testimony, anthology, memoir, biography, natural history and everything you might ever want to say about a place." In addition, Pearson and Shank provide other conceptual themes that give insight into the character and attributes embedded in deep maps: the *life-world*, which is the totality of a person's direct involvement with the places and environments experienced in everyday life; *thick description*, which is the detailed and contextual description of cultural phenomena necessary to discern the complexities behind the action including the codes at work and the possible structures of meaning; *blurred genre*, which is a mixture of scientific practices and narration and an integrated interdisciplinary, intertextual, and creative approach to recording, writing, and illustrating the material past; and finally *scene-of-crime*, which is a cordoned area where anything might be meaningful and potentially constitute evidence.

In providing a methodological framework capable of exploring encounters with landscapes through personal narrative, biography, folklore, text, physical geography, family history, and performance drama, Pearson and

Shank²⁵ highlight what they consider to be the “affective ties between people and space . . . and their cultural and physical environment.” The conjoining of encounter and landscape and the use of mixed methods to examine the physicality of site and context and related human emotion and reflection are indicative of the Situationist concepts of Debord. In his text *In Comes I*, Pearson explores the landscape through a first-person narrative as a matrix of related stories where there is no last word on the topic. Using performance as an agent for engaging place, Pearson seeks to make sense of the “multiplicity of meanings that resonate from landscapes and memories; providing a mechanism for enacting the intimate connection between personal biography, social identities and the biography of place—at a variety of scales of rhetoric, within different scales of landscape.”²⁶ Surely, herein lays a powerful analogy and perspective on deep maps.

While the conceptual propinquity of deep maps to performance art and archaeology may at first glance seem ambiguous, Harvie²⁷ suggests that the combination of geography, natural history, and accounts of the history and lived experience of the inhabitants of a given area are the very basis of deep maps. These aspects are perhaps best seen in the performance work of Brith Gof and his exploration of Welsh identity. Gof insisted on locating performance art in the real and lived environments where the memories that produced those identities first originated. Thus the association of the physical environment with human experience is made explicit through holding performances in “environments of social, industrial, and economic activity (or forced inactivity) which so significantly constituted many people’s—especially men’s—experience of Welsh identity” rather than in purpose-built theaters.²⁸ What is clear about thin maps is that while the map content may be rich in specific ways, the inability to disentangle multiple realities represents a serious challenge to its effectiveness as a deep map on its own. Mapping and tracking these multiple pathways, truths, realities, and the multivocality of the deep map is no easy matter to accomplish.

The meta-media Three Landscapes Project with its focus on integrating multiple media including painting, photography, poetry, and performance within cultural and historical geography, archaeology, and art history is a further example of a deep map that assists in teasing out notions of place

and identity.²⁹ In the Three Landscapes Project, the investigators pursue a critique of landscape as a reflection of the relationships among environment, land, place, and history: Three Landscapes. In producing a large 8 feet by 42 feet collage that combines “a variety of mappings, aerial surveys, photographs, journal and journey, with a single figure in the landscape and several orders of text,” *A Map on a Wall* (figures 2.1 and 2.2) gives a graphical emphasis to the creation of a deep map not least through the juxtaposition and layering of materials that represent the complexities of place. As McLucas suggests, the graphic is the “beginning of an attempt to develop new techniques for representing places, peoples, and event—techniques that are both more complex and (dis)located than those associated with the landscape painting, the photograph, or the conventional map.”³⁰

The hybridity of methods involved in assessing the experiential and the encounter between the tangible physical environment and the intangible symbolic, contested, and imaginary worlds has clear connotations for deep maps. The insightful perspectives on deep maps of the artist Cliff McLucas are significant:



FIGURE 2.1. *A Map on a Wall* (<http://metamedia.stanford.edu/~mshanks/galleries/map-on-a-wall/toc.html>).



There are ten things that I can say about these deep maps. First, deep maps will be big—the issue of resolution and detail is addressed by size. Second, deep maps will be slow—they will naturally move at a speed of landform or weather. Third, deep maps will be sumptuous—they will embrace a range of different media or registers in a sophisticated and multilayered orchestration. Fourth, deep maps will only be achieved by the articulation of a variety of media—they will be genuinely multimedia, not as an aesthetic gesture or affectation, but as a practical necessity. Fifth, deep maps will have at least three basic elements—a graphic work (large, horizontal or vertical), a time-based media component (film, video, performance), and a database or archival system that remains open and unfinished. Sixth, deep maps will require the engagement of both the insider and outsider. Seventh, deep maps will bring together the amateur and the professional, the artist and the scientist, the official and the unofficial, the national and the local. Eighth, deep maps might only be possible and perhaps imaginable now—the digital processes at the heart of most modern media practices are allowing, for the first time, the easy combination of different orders of material—a new creative space. Ninth, deep maps will not seek the authority and objectivity of conventional cartography. They will be politicized, passionate, and partisan. They will involve negotiation and contestation over who and what is represented and how. They will give rise to debate about the documentation and portrayal of people and places. Tenth, deep maps will be unstable, fragile and temporary. They will be a conversation and not a statement.³¹

The ghost maps of Ethington³² provide a similar rich and highly detailed visual layering of graphics, representations, texts, and maps that attempt to capture the multiple associations of meanings and inscriptions related to a location and to efforts to recall the past of a place.

SPATIAL STORIES, SPATIAL NARRATIVE, AND GEONARRATIVE

A deep map then is more than a topographical product in that it interweaves physical geography and scientific analysis with biography, folklore, narrative, text, memories, emotions, stories, oral histories, and so much more to contribute to a richer, deeper mapping of space and place. Spatial stories weave pathways through deep maps to track, organize, and record

FIGURE 2.2. A Map on a Wall—an experiment in deep mapping (<http://metamedia.stanford.edu/~mshanks/threelandscapes/largemap.html>).

people's experiences and relationships with places. The deep map and spatial storytelling take the process of deep mapping further than would an abstract mashup of cultural and physical geographies. If, as Spielberg would suggest, "people have forgotten how to tell a story," how more complex then is it to grapple with the telling of spatial stories? Mark Twain³³ in his harsh criticism of Fenimore Cooper's writings made several suggestions or rules for storytelling, prime among them being:

1. A tale shall accomplish something and arrive somewhere.
2. The episodes of a tale shall be necessary parts of the tale, and shall help develop it.
3. The personages in a tale, both dead and alive, shall exhibit a sufficient excuse for being there.
4. When the personages of a tale deal in conversation, the talk shall sound like human talk, and have a discoverable meaning, and discoverable purpose.
5. Events shall be believable; the personages of a tale shall confine themselves to possibilities and let miracles alone; or, if they venture a miracle, the author must plausibly set it forth so as to make it look possible and reasonable.
6. Finally, the author shall make the reader feel a deep interest in the personages of his tale and their fate; and that he shall make the reader love the good people in the tale and hate the bad ones.

Drawing on these storytelling points, there is a difference to be discerned between deep maps and spatial stories and, I would suggest, between spatial stories and spatial narrative. Some would suggest that storytelling represents the oldest form of human art and was a critical tool in human development and the march toward human understanding. Indeed, when Einstein was asked how best to develop intelligence in young people his response was to say, "Read fairytales. Then read more fairy tales." Storytelling is often simplistically stated as a story having a beginning, middle, and an end; and yet, through these structural elements, there runs a strand or thread that connects the human and the spatial elements of the tale. Film director James Cameron declared that the mind hates fragmentation, so overcoming the chaos of data overload through the provision of some organizing theme such as a spatial story as one traverses a series of events

and places is valuable. As Martin³⁴ suggests, for a good story to be told, the plot or storyline must be clearly present. Stories provide a link between the storyteller and the listener and give structure to events that are channeled toward an end that provides a message and a meaning when the destination is reached. In the telling of a story, the intent is to achieve a specific purpose or an ending which the storyteller has deemed worth recalling. A geographic organizing theme might be a major historical feature such as the national road (U.S. 40) that connects multiple places and stories.³⁵ The spatial story thus takes a complex flow of events and places and organizes these into an understandable and meaningful form that can be communicated to others. It also elevates the importance of the message and the recounting of events by giving some segments of the deep map greater emphasis, meaning, and purpose. Stories are invariably embedded within a temporal framework, and historians have been adept at using the storytelling and biographical style to appreciate and understand the basis and outcomes of human behavior. Other media outlets including film, theater, art, literature, and music can also use a storied theme to communicate powerful messages.

Spatial stories and spatial narratives might at first blush be considered synonyms, but I suggest that differences exist between a story and a narrative for a spatial narrative is more a neutral recounting of a series of sequential events; a "literal" telling of events. In contrast to a spatial narrative, there are elements to stories that involve the selective arrangement of events and information. As anyone who has read good fiction will know, the plot is a necessary part, but there has to be more than plot to engage the reader and to draw them in. Perhaps the major distinction between spatial story and spatial narrative is that the spatial storyteller will have a point of view which is relayed through story content, writing style, or emotion. The positionality of the storyteller is thus critical in terms of whose story is being told, to whom, and for what purpose, for ultimately the storyteller seeks to deliver a message to the reader. The ability to recount multiple realities and to give voice to multiple groups is a critical element in deep mapping and spatial storytelling for it begins to break down the considerable emphasis given to meta-narratives and to universal truths.

There are obvious similarities with the term *geonarratives* as used by Kwan and Ding.³⁶ The integrated analysis of narrative text, stories told

about peoples' lived experiences of past events which are sequenced within a mixed-methods approach and set within a spatiotemporal setting, helps us understand how GIS might include oral histories, life histories, biographies, and emotions. The style and structure of serious game engines can also contribute significantly to this discussion on spatial stories for they too invariably require the user to create their own self-scripted spatial journey through a usually imaginary world. As with Twain's first rule of storytelling, there is a structured theme running through these "games" whereby the story often unfolds in the form of a quest or journey to achieve a series of goals within the defined geography and resources of the virtual scene. The story is bounded by the geography and by a series of rules that apply to the participants representing a bounded complexity. This structured storytelling stands in contrast to a highly unstructured gaming environment where there are no structures or rules, which produces, in the terminology of serious gaming, a "sandbox" in which users can move freely anywhere and for any purpose.

Spatial stories stem from the universal cultural need to describe, recount, and narrate a particular stream of thought that is situated within, or impacted by, a place or series of places. As with deep maps, a spatial story is enriched by multiple forms of representation and cuts across maps and scales. The narrative voice refers not to layers of information or to media but to the themes, interaction, and experiences that run through such geographies that link the physical and cultural worlds with the fictional, symbolic, and the imaginary. Who determines the content, the strand of spatial thoughts that unites the story and who then owns that story or the information and private things that may have been revealed, represent critical questions in a geocoded world.³⁷ Given the adversarial and unequal power relations of society, the personal experiences revealed in media-rich deep maps may provide greater diversity of opinion and insight, but in the process, they also become more susceptible to surveillant scrutiny.

Michael de Certeau in his *Spatial Stories: The Practice of Everyday Life*³⁸ suggests that narration and space cross and connect sites through itineraries: what might be called a spatial trajectory where the stories about places are structured in a linear and interlaced series. Space connects places, but place is also imbued with temporal qualities that spatial stories

traverse and organize and link into the story form. I would suggest that John Gay's³⁹ poem *Trivia: or, the Art of Walking the Streets of London*, a topographical poem describing the perils of walking the streets of London in the eighteenth century, provides a fascinating instance of Certeau's traversing of events and places. Gay's poem refers to the characteristics of the city footmen and ballad singers of London, England, and touches upon such things as the everyday problems of falling masonry, chamber pots being emptied out of windows, overflowing gutters, pickpockets and wig thieves, and what boots to wear:

Through Winter Streets to steer your Course aright,
How to walk clean by Day, and safe by Night,
How jostling Crouds, with Prudence to decline,
When to assert the Wall, and when resign,
I sing: Thou, Trivia, Goddess, aid my Song,
Thro' spacious Streets conduct thy Bard along;
By thee transported, I securely stray
Where winding Alleys lead the doubtful Way,
The silent Court, and op'ning Square explore,
And long perplexing Lanes untrod before.⁴⁰

In *Trivia*, the reader is taken on a walk through the London of John Gay and reads about contemporary eighteenth-century perspectives on the dirty, crowded, and fascinating street scenes that Gay describes. Using the insights provided by the poem, a twentieth-century historian, geographer, a literary scholar, and gender and costume scholars are collected in the work by Brant and Whyman⁴¹ and provide insightful comment, interpretation, and reflections on Gay's work: "Together, these elements allow the heat, grime, and smells, of the underbelly of 18th century London to come alive in new ways."

While a linear travelogue may comport to a known and mapped geography through which a story unfolds, the analogy of spatial storytelling and deep maps to a modern-day tour guide is worthy of consideration. Such a guide is often more than just a tourist map, for in its rich multimedia and multivocal format, the travel guide does not just map features and place names of a particular location or city. It also provides a richer description of a place that may contain information about cultural heritage, anecdotes, local personalities, shopping, entertainment, eating places, fic-

tional works, and itineraries, along with facts and history about the place. The tour guide may even include multiple languages and a phrase book. All of this is told through a rich media mix of textual narrative, imagery, and maps. The tour guide may be the ultimate place-based spatial story and there is a reason that people take tour guide books on their travels and yet leave geography texts on their home bookshelves. The unfolding spatial story of a place revealed in numerous and interrelated forms are attractive in relating the experience of a place captured through a story guide of that place—a storied geography.

METHODOLOGICAL APPROACHES TO
DEEP MAPS AND SPATIAL STORIES

But as Shakespeare's Hamlet would reflect: "Devoutly to be wish'd . . . perchance to dream: ay, there's the rub." Having identified images and visions of what deep maps and spatial storytelling might comprise, the question becomes how to convert such imaginaries and concepts into tangible and reproducible forms. Therein lies perhaps the greater challenge. Many approaches might be identified and proposed to achieve deep mapping or spatial narratives. An extensive investigation of these options is beyond the realms of this chapter but options and trajectories are necessary, otherwise this discussion is more one of optimistic wistfulness with little direction toward a means of implementation. I suggest nine immediate options and avenues perhaps worthy of pursuit.

First, the traditional hallmarks of intensive local historical investigation of cultural geography lies within the domain of historical geography. The work of Hoskins⁴² in particular, with his focus on local history, archaeology, and historical geography, in many respects represents one of the very first examples of deep geography. Second, the map remains a powerful vehicle with which to interpret space and place, and especially so for storytelling. Examples from the Weave project where maps are linked to an explanatory voice-over are powerful forms of spatial storytelling.⁴³ The maps and accompanying explanation of elections in the United Kingdom, for example, convey a revealing and illuminating story to the reader. Kwan and Ding's⁴⁴ linkage of GIS, mixed-methods, and narrative forms provides a similarly revealing insight beyond the traditional spatial analytic forms of GIS. Third, ethnographic geographies combine much of the

biographical storytelling embedded within everyday geographies. The work of Ghazi-Walid Falah,⁴⁵ for example, reconstructs the geographies of his childhood spent in Palestine to provide an experiential window into the exploration of memory, space, and attachment to place from the perspective of an indigenous inhabitant. Falah not only contributed to the making of place recounted through his experiences and childhood memories but he also subsequently used his story as a catalyst for political resistance to the forces of the state.

Fourth, the emerging field of qualitative GIS⁴⁶ provides both a conceptual base and a methodological platform to combine both the quantitative and qualitative traditions within geography and mapping. The theoretical base for qualitative GIS was born out of the GIS and Society debates of the 1990s and of critical GIS and critical cartography and the techniques were forged in the practice of PGIS.⁴⁷ In addition to the use of GIS, PGIS draws extensively on the local knowledge of communities in all the complex and qualitative forms that individuals and communities use to store and recall information and experiences. Qualitative GIS and PGIS with their emphasis on text, multiple media, representation, multiple truths, and mixed-method analysis may provide valuable options to explore deep mapping and spatial storytelling.

Fifth, a conceptualization of spatial stories and deep maps invariably involves some base in multimedia or geovisualization. An embedded media-rich digital environment would seem to be essential for much that is envisioned here in deep mapping. Spatial multimedia or multimedia GIS may be significant contributors to the implementation of these new forms of geographic expression. The power of virtual reality and the immersive and experiential capability provided by computer analysis and visualization environment systems would seem to be particularly applicable, and especially so when combined with the pursuit of a "sensual and reflexive GIS" that seeks to enhance the privileged visual with equal emphasis on sound, smell, and touch.⁴⁸ Sixth, and in a related vein, *The Wilderness Downtown*⁴⁹ is a particularly fascinating project that illustrates ways in which spatial science might be blended with other multiple media forms and personal experiences. In creating a real-time weave of location with moving images, virtual creations, aerial imagery, Google Streetscene, text, sound, and personal messaging in a creative and engaging style suggests

ways in which new technologies such as HTML5 might provide exciting possibilities for deep mapping and spatial storytelling.

Seventh, I suggest that a storyboard environment for linking much of this material is critical to advancing the concepts of deep mapping and spatial storytelling. I have long advocated the use of the Prezi zooming presentation platform to be an excellent prototype for this approach.⁵⁰ ChronoZoom provides similar capability and possibilities.⁵¹ The Prezi software enables objects, including text, imagery, video, and sound to be inserted within a presentation mode that has “infinite” depth. Within this storyboarding space, linkages and pathways can be established between and through the “presentation.” While linear tracking is understandable given its primary presentation purpose, it does limit the types of woven stories that can be produced as alluded to previously. I embed this type of storyboard capability within a framework model provided at the end of this paper, but what is required is that consideration be given to the topology and greater freedom of navigation through the objects that are recorded and displayed.

Eighth, neogeography represents the confluence of geographic knowledge production and populist communication and interaction technology. New technologies premised on a socially networked Web 2.0 provide opportunities for a powerful geospatial web. The geospatial web represents a loose coupling of map mashups enabled through web mapping application programming interfaces. What initially appears to be a mishmash of concepts, data, and technologies can in reality contribute to a radical departure from traditional notions of spatial mapping. Geotagged social networking media from sites such as Flickr, YouTube, OpenStreetMap, Facebook, Wikis, and blogs can now be integrated with mapping platforms such as Google Earth, Google Maps, or Esri's MapsOnLine. The central characteristics of neogeography are threefold. First, “neogeography is about people using and creating their own maps, on their own terms and by combining elements of an existing toolset.”⁵² The creators and publishers of this data seek to create maps for themselves, the primary consumers of this data, using the building blocks of Web 2.0 technologies. Turner's second characteristic of neogeography is the user desire to share locational information with friends and visitors that helps shape context and understanding “through the knowledge of place.” The emphasis on

“sharing between equals” reinforces the vision of neogeography as a grassroots, plebian, and popular movement. The focus on the layperson is in stark contrast to the expert, professional, specialized, and almost aristocratic nature of GIS as it has evolved to date. Finally, in contrast to the claimed lackluster nature of GIS, Turner suggests “neogeography is fun” because of its accessibility to the amateur and the use of mashups that give personal meaning and context to space and place.

Ninth, and connected to neogeography and, I would suggest a potential major contributor to the conceptual development of deep maps and spatial storytelling, is the role of citizen sensors and VGI as providers of personalized information about place. Using cheap handheld global positioning system-enabled devices, the layperson can now geotag most data with a digital spatial coordinate. Digital collection devices such as “smart” cell phones, digital cameras, and digital audio recorders now greatly ease the earlier difficulty of collecting, transferring, and uploading spatial data to the internet. Even the least technology-savvy person can now upload geotagged images to a social media sharing site for multiple viewing and download. Furthermore, these location-aware devices increasingly include critical metadata such as collection time and date and collection device, and keyword tags can be added automatically. Spatial information can also be tagged with latitude and longitude coordinates even without access to a global positioning system by using online resources such as address matching and sophisticated geocoders. All of these technological breakthroughs in social media technologies have occurred in rapid progression. The ability to upload media to social media websites such as Flickr and YouTube coupled with advances in cloud computing and storage have accelerated this trend since storage costs and media delivery are no longer a big obstacle to the average person. In addition, mapping these data through online mapping systems to create individualized mashups is equally accessible through the geospatial web. The cumulative impact of these user-generated content capabilities, coupled with spatial data services, social media technologies, and application programming interfaces-enabled online systems is that more local data is geotagged, stored online, and made retrievable by multiple users than at any other time in history.

To demonstrate how these elements might come together to form a deep map, I suggest a framework in figure 2.3 to illustrate how these vari-

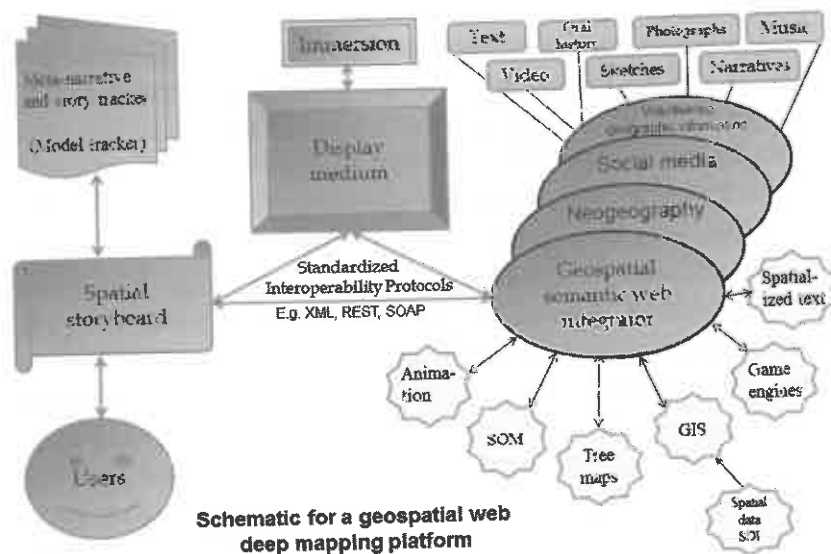


FIGURE 2.3. A geospatial web framework for deep mapping and spatial stories.

ous elements connect. The framework is premised on the power of the geospatial web to integrate disparate sources and multiple media based on now widely available application programming interfaces. Thus data might come from VGI, social media websites, authenticated spatial data, personal submissions, animations, images, text, tweets, and so forth, but all these can be combined through the integrative power of the geospatial web. A storyboard of infinite depth, such as Prezi, provides a medium through which to link the materials which can then be displayed on standard display devices or powerful immersive stereo-enabled systems such as a computer analysis and visualization environment. A more flexible topological system for developing differing linkages between the materials is critical. As noted previously, metadata is also critical to enable the tracking of material and the pathways taken, through the deep map and yet this is likely to remain one of the most challenging aspects of deep mapping. Neogeography and VGI represent a paradigm shift in spatial data generation and online mapping that collectively closes the gap between data producers and data consumers and provides a valuable framework in achieving a deep map.

PULLING IT ALL TOGETHER

Having laid out a conceptual base for deep maps and spatial storytelling and having identified possible methodologies, platforms, and approaches by which deep maps may be created, there remains a need to demonstrate how deep maps might be accessed and traversed to create spatial stories that resonate to specific users developing their own spatial themes. To this end, I suggest a metaphor to illustrate how such a weave of deep maps and spatial stories might take place. The Johnny Cash Project is a global collective art project where the theme is based on Cash's final studio recording of "Ain't No Grave."⁵³ The original video made of Cash recording this song was disassembled frame by frame and made available for download on the project website. Contributors were asked to select any one frame from this sequence and to render the drawing in any style they wished using a special drawing tool. These art styles range from pointillism to realism to sketch to abstract forms. The project grows as more people submit their drawings, which are integrated into a collective whole. The resulting art sequence, played to Cash's song, contains multiple frames of drawings of the video where each contribution is unique (figure 2.4). Listed below the timeline that tracks the music video are a series of boxes each of which represents a submitted drawing. In all instances, there are multiple submissions made for each frame. As the video-song is played, differing routes can be taken through the sequence of frames based on differing drawing genres, or by most recent submission, highest-rated submissions, or purely random tracks that generate differing combinations of frames. In this analogy, then, the totality of the frames represents the deep map where multiple "voices" have contributed media to the whole, in this instance a rendered frame, but, in reality, this could be any form of media. The story represents the sequence of frames traversed through the playing of the video based on some theme or objective such that no one pathway through the totality of frames need necessarily be the same for each journey through the sequence. Given the analogy I pose here for deep mapping and spatial storytelling, differing voices could be represented in the deep map through data, multimedia, and object frames. Thus multiple stories and multiple storylines can be tracked through the deep map and no one universal meta-narrative necessarily dominates. Within this structure, individual frames can be examined or themes and



FIGURE 2.4. Image taken from the Johnny Cash Project (<http://www.thejohnnycashproject.com/>) in which the multiple frames submitted can be replayed in differing ways through the playing of the video and song.

tracks selected which provide a deeper understanding of the media or knowledge and which guide the selection of frames. The system is an ever-evolving, ever-changing, dynamic set of contributions and tracked pathways through the deep map.

In the context of deep mapping and spatial stories, the Johnny Cash Project provides a powerful metaphor illustrating how deep maps and spatial stories may be constructed and accessed to provide a series of spatial stories through the deep map of user contributions. The deep map has the potential to be transformative in telling a story that is imbued with sound, images, maps, and a host of media that captures how people and organizations know about the world and represent that knowledge. In its

original recorded form, the Johnny Cash Project tells a personal story, an emotional story. In its recast crowd-sourced form, it incorporates multiple reflections in the redrawn images that contribute richness and alternative understandings to the story. The ability to select themes through these series of contributed frames enables the story to be retold in differing ways and with potentially alternative perceptions and insight. Extending this metaphor to deep maps and storytelling provides one possible framework for imbuing deep maps and spatial stories with a powerful way in which to capture and represent multiple voices and ways of knowing.

NOTES

Note to epigraph: Warren (2004) cited on page 5 in G. Rambaldi, "Who Owns the Map Legend?" *URISA Journal* 17 (2005), 5–13.

1. William Least Heat-Moon, *PrairyErth: A Deep Map* (New York: Mariner Books, 1999).
2. B. H. Lopez, *Desert Notes: Reflections in the Eye of a Raven* (Riverside, N.J.: Andrews McMeel Publishers, 1976).
3. T. M. Harris, J. C. Corrigan, and D. Bodenhamer, "Challenges for the Spatial Humanities: Toward a Research Agenda," in D. Bodenhamer, J. Corrigan, and T. M. Harris, eds., *The Spatial Humanities: GIS and the Future of Humanities Scholarship* (Bloomington: Indiana University Press, 2010).
4. See M.-J. Kraak and F. Ormeling, *Cartography: Visualization of Spatial Data* (Upper Saddle River, N.J.: Prentice Hall, 2002); M. Monmonier, *Mapping It Out* (Chicago: University of Chicago Press, 1993); A. H. Robinson, *Elements of Cartography* (New York: John Wiley & Sons, 1953); T. Slocum, *Thematic Cartography and Geographic Visualization* (Upper Saddle River, N.J.: Prentice Hall, 2003).
5. Robinson, *Elements of Cartography*.
6. Alan M. MacEachren, *Some Truth with Maps: A Primer on Symbolization & Design*. (University Park: The Pennsylvania State University, 1994).
7. Lopez, *Desert Notes*, 85.
8. W. G. Hoskins, *The Making of the English Landscape* (Leicester, U.K.: Penguin Books, 1955).
9. Heat-Moon, *PrairyErth*.
10. M. Pearson and M. Shanks, *Theater/archaeology* (New York: Routledge, 2001).
11. M. De Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1984).
12. Yi Fu Tuan, *Topophilia: A Study of Environmental Perception, Attitudes, and Values* (New York: Columbia University Press, 1974).
13. See K. Knabb, ed., *Situationist International: Anthology*. (Berkeley: Bureau of Public Secrets, 2006).
14. Knabb, *Situationist International*, 40.
15. G. Debord, *Introduction to a Critique of Urban Geography* (1955), reprinted in Knabb, *Situationist International*, 8.
16. Knabb, *Situationist International*.

17. T. M. Harris and H. Franklin Lafone, "Toward an Informal Spatial Data Infrastructure: Voluntary Geographic Information, Neogeography, and the Role of Citizen Sensors," in Kristyna Cerbova, ed., *SDI, Communities, and Social Media* (forthcoming).
18. T. M. Harris, D. Weiner, and T. Warner, "Pursuing Social Goals through Participatory GIS: Redressing South Africa's Historical Political Ecology," in J. Pickles, ed., *Ground Truth: The Social Implications of Geographic Information Systems* (New York: Guilford Press, 1995), 196–223; W. Craig, T. M. Harris, and D. Weiner, eds., *Community Participation and Geographic Information Systems* (London: Taylor and Francis, 2002).
19. W. Bright, *Native American Place Names of the United States* (Norman: University of Oklahoma Press, 2004); T. F. Thornton, "Anthropological Studies of Native American Place Naming," *American Indian Quarterly* 21, no. 2 (1997), 209–228.
20. Bright, *Native American Place Names of the United States*, 16.
21. Thornton, "Anthropological Studies of Native American Place Naming."
22. J. Harrington, "The Ethnogeography of the Tewa Indians," quoted in Bright, *Native American Place Names of the United States*.
23. See U.S. Board on Geographic Names at <http://geonames.usgs.gov/antarctic/index.html> (last accessed October 2013).
24. Pearson and Shanks, *Theater/archaeology*.
25. M. Pearson, *In Comes I* (Exeter, U.K.: University of Exeter Press, 2007); M. Pearson, *Site-specific Performance* (Basingstoke, U.K.: Palgrave Macmillan, 2010).
26. Pearson, *In Comes I*, 17.
27. J. Harvie, *Staging the UK* (Manchester, U.K.: Manchester University Press, New York: Palgrave New York, 2005).
28. Harvie, *Staging the UK*, 45.
29. Three Landscapes is available at <http://metamedia.stanford.edu/~mshanks/three-landscapes/index.html> (last accessed October 2013).
30. A Map on a Wall (2001) is available at <http://metamedia.stanford.edu/~mshanks/threelandscapes/map-on-a-wall.html> (last accessed October 2013).
31. C. McLucas is quoted at <http://metamedia.stanford.edu/~mshanks/projects/deep-mapping.html> (last accessed October 2013).
32. P. J. Ethington, "Ghost Neighborhoods: Space, Time, and Alienation in Los Angeles," in M. Roth and C. Salas, eds., *Looking for Los Angeles: Architecture, Film, Photography, and the Urban Landscape* (Los Angeles: Getty Research Institute, 2001).
33. M. Twain, "Fenimore Cooper's Literary Offenses" (1895), <http://twain.lib.virginia.edu/projects/rissetto/offense.html> (last accessed October 2013).
34. P. Martin, *How To Write Your Best Story—Advice for Writers on Spinning an Enchanting Tale* (Milwaukee, Wis.: Crickhollow Books, Great Lake Literary, 2011).
35. See <http://www.route40.net/page.asp?n=1> (last accessed October 2013).
36. M-P. Kwan and G. Ding, "Geo-narrative: Extending Geographic Information Systems for Narrative Analysis in Qualitative and Mixed-Method Research," *The Professional Geographer* 60, 4(2008), 443–465.
37. John Pickles, *A History of Spaces: Cartographic Reason, Mapping, and the Geo-Coded World* (Boca Raton, Fla.: Taylor & Francis, 2003).
38. Certeau, *The Practice of Everyday Life*.
39. J. Gay, *Trivia: or, the art of walking the streets of London* (1716 ed., Google Books), reprinted in C. Brant and S. E. Whyman, *Walking the Streets of Eighteenth Century London* (Oxford, U.K.: Oxford University Press, 2009).

40. John Gay, Book 1 in Brant and Whyman, *Walking the Streets of Eighteenth Century London*, 164.
41. Brant and Whyman, *Walking the Streets of Eighteenth Century London*, 1.
42. W. G. Hoskins, *The Making of the English Landscape*.
43. Information about Weave (Web-based Analysis and Visualization Environment) is available at <http://oicweave.org/> (last accessed October 2013)
44. Kwan and Ding, "Geo-narrative."
45. G. Falah, "The 1948 Israeli-Palestinian War and Its Aftermath: The Transformation and De-signification of Palestine's Cultural Landscape," *Annals of the Association of American Geographers* 86, 2 (1996), 256–285.
46. M. Cope and S. Elwood, *Qualitative GIS: A Mixed Methods Approach* (Thousand Oaks, Sage Publications, 2010).
47. Harris, Weiner, and Warner, "Pursuing Social Goals through Participatory GIS"; Craig, Harris, and Weiner, *Community Participation and Geographic Information Systems*.
48. T. M. Harris, L. J. Rouse, and S. Bergeron, "Humanities GIS: Adding Place, Spatial Storytelling and Immersive Visualization into the Humanities," in M. Dear, J. Ketchum, S. Luria, and D. Richardson, eds., *Geohumanities: Art, History, Text at the Edge of Place* (New York: Routledge, 2011), 226–240.
49. *The Wilderness Downtown* is available at <http://thewildernessdowntown.com> (last accessed October 2013).
50. Prezi's website is <http://prezi.com> (last accessed October 2013).
51. ChronoZoom is available at <http://eps.berkeley.edu/~saekow/chronozoom> (last accessed October 2013).
52. A. Turner, *Introduction to Neogeography* (Sebastopol, Calif.: O'Reilly Media, Inc., 2006), 3.
53. The Johnny Cash Project is available at <http://www.thejohnnycashproject.com/> (last accessed October 2013).