



## 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.<sup>1</sup> 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?”<sup>2</sup> 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?”<sup>3</sup>

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.<sup>4</sup> 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 Corigan 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

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## 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.