“This volume stands at the forefront of one of the most exciting new fields of cross-disciplinary work. The editors have assembled a spectacular array of original contributions from an impressive group of authors, whose work open new routes into the emerging field known as the geohumanities. It is bound to become a landmark book.”

Anthony J. Cusato, Director, Townsend Center for the Humanities, U.C. Berkeley, USA.

“Making a compelling case for re-aligning geography with the humanities, GeoHumanities provides a series of richly-interspersed textual, visual and cartographic essays to demonstrate the creative potential of new forms of artistic, literary and historical engagement with place. Issuing a challenge to transcend disciplinary boundaries, to forge novel connections between past and present, and to re-imagine the world in novel ways, the contributors to GeoHumanities invite us to explore anew the politics and poetics of place.”

Professor Peter Jackson, University of Sheffield, UK.

GEOHUMANITIES
Art, history, text at the
edge of place

Edited by
Michael Dear, Jim Ketchum,
Sarah Luria, and Douglas Richardson


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### Mapping time

**Edward L. Ayers**

Our tools for dealing with terrestrial space are well-developed and becoming more refined and ubiquitous every day. GIS (Geographic Information System) has long established its dominion. Google permits us to range over the world and down to our very rooftops, and cars and cell phones locate us in space at every moment. It is hardly surprising that geography and mapping suddenly seem important in new ways. Historians have always loved maps and have long felt a kinship with geographers. The very first atlases, compiled 600 years ago, were historical atlases. But space and time remain uncomfortable — if ever-present and ever-active — companions in the human imagination. Maps, even in the newest technologies, grant us freedom to move in space by fixing a moment in time.

Historians reciprocate: we hold space constant whenever we move people across time. Indeed, asked the great historian Hugh Trevor-Roper, "How can one feel more 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? That is the problem." Modernist and postmodernist novelists routinely play with time and space, of course, and moviemakers jerk us all over the place temporally and geographically, but historians tend to tell our stories straight. We need our readers to know where they are in space and time and we need to keep the relationship between the two as clear as we can. That's our job, a responsibility not unlike that of geographers.1

It is possible that people simply do not have the neural bandwidth to deal with space and time simultaneously, in the same cognitive space, without the tricks of narrative or the aid of machinery. We tend to think of cause and effect in linear forms because that is how we get through life. We time travel constantly in our heads, telling ourselves stories from the past one more time to try to figure out what went wrong or what we might do differently next time. But we seem able only to tell ourselves one story at a time. We cannot sustain images of simultaneity or envision complex processes without at least writing things down or, better, drawing pictures — or much better yet, creating moving pictures. Scientists can do this no better than historians or geographers.

Scott Nesbit, Nathaniel Ayers, and I have been experimenting to see if new technologies might not permit us to approach this challenge in a new way. We began by trying to convey the unfolding patterns of the complex historical processes in the massive dislocations of the American Civil War and emancipation.2
To explain this process, I use the phrase "deep contingency." Only a process that reached throughout a society, deep into its ideology and psychology and even theology, could explain how millions of people could suddenly piece into new identities, deep enough to kill for. Only contingency could explain how unexpected events, such as the Dred Scott decision and John Brown's raid, could lead to unforeseen consequences such as the crystallization the Republican Party and the election of Abraham Lincoln. Only death and surprise could explain how two places so alike in every way but one — one had slavery, and one did not — redeployed themselves so quickly and thoroughly. Deep contingency shows how history moving technically, vast plates suddenly shifting, consequences connecting continents, people finding themselves standing on new landscapes of politics and culture and self-understanding.

Emancipation, the great and unlikely outcome of the war that began in 1861 with no mention — or hope — of ending slavery instantly and in place, embodied another deep contingency. Abraham Lincoln said he would leave no card unplayed to save the Union. He soon discovered, thanks to the bravery of escaping enslaved people, that undermining slavery in the Confederacy would be a powerful accomplishment to military action. A year and tens of thousands of deaths into the war, Lincoln proclaimed the Union effort a war to destroy slavery in the South, an act he could not have imagined only a year before.

Even as the war consumed a generation of young men, slavery's future remained uncertain, the consequences of emancipation undetermined. Indeed, while the coming of the Civil War was like a lens, focusing everything that came before in what we now call the "antebellum era," emancipation was like a shattered mirror. Every family, black and white, followed its own path through these years, picking its way through the broken images and sharp edges of history.

Emancipation might be imagined as something like the Big Bang. We have to follow the patterns of emancipation the way astronomers trace the expansion of the universe, extrapolating mass, size, speed, force, and dark matter from observable if faint points of evidence and perturbations of expected patterns. Just as we can no longer see the Big Bang we can no longer see emancipation, even though it occurred under our feet less than 150 years ago. We have only faint traces on pieces of paper, lost markings on the landscape. We have only scattered and incomplete testimony from the people making themselves free. Those 4 million people tend to dissolve into images of figures waiting for history to happen to them.

To capture the first decisions of freedom, we began with standard techniques of GIS to locate people on landscapes and put them down one layer after another: of race, of wealth, of literacy, of watercourses, of roads, of railroads, of soil type, of voting patterns, of family structure. We located newly freed people on the landscape, with greater detail than anyone else has ever attempted. We mapped churches, schools, and social networks. We mapped the relationships that newly freed people announced to the Freedmen's Bureau, showing how their marriages stretched far back into the darkness of slavery.

To set them in motion, we have begun to experiment with forms of mapping that are more fluid, dynamic, and cinematic. My colleague Cindy Bukach, a cognitive neuroscientist, tells us that "our perceptual system is not designed to perceive the
Augusta County
Race of household head, according to census:

![Map of Augusta County showing race distribution](image1)

Figure 23.2 Augusta County, Race of Household Head.
Source: Census Bureau.

passage of time, but it is designed to see the movement of objects through space. By converting time to motion, we can visualize the passage of time (as one watches the hands of a clock move). This same principle can operate not only on the scale of seconds, minutes and hours, but also on the scale of years."

Our brains like seeing these patterns, it seems, because maps of time take advantage of our "multimodal cognitive system." Motion and temporal sequencing are key to our constant triangulation of causation. "These dynamic patterns can be simultaneous, allowing inferences of common causes, or they can be sequential, suggesting causal relationships," Bullock points out. "Motion captures attention. Displaying
historical information in a motion map guides the viewers' attention to changes in a somewhat automatic way, guiding even the most na"ıve observer to perceive the relevance of emerging trends and relationships."

The techniques we have used thus far are simple - morphs and dissolves - but they represent something closer to the moving images of historical processes we imagine when we try to picture vast numbers of people reacting to significant changes. They are something like time-lapse photography of plants opening, of leaves unfurling in particular shapes, of vines reaching to grasp a nearby structure, of diseased or thwarted processes. Or perhaps they are like models of streams and rivers, with currents folding back on themselves, of flows around submerged objects. They cannot move on the pages of a paper book, so the examples that follow need to be understood as stills from moving images that can only be seen live in electronic environments.

Let's look at a few stills that focus on the period between Reconstruction and the Great Migration. In most accounts of US history, those decades are lost in African American history. They are the time simply of sharecropping, of immobilization, of waiting for history to happen. But let's look at the pattern of population movement between 1880 and 1910.

Two static maps, from 1880 and 1900, for example, might suggest that nothing much happened in that time. The great majority of black Americans remained black Southerners. And the great majority of them lived where their parents had lived in slavery, in a vast band from the largest slave state—Virginia—to the Mississippi River and beyond. But playing the film slowly, and moving over the same time with several passes, we see that as many black people moved during these years as they did during the Great Migration of World War I and following. The difference was that they moved within the South, to the very places we think of as being the Old South (the Delta, for example) but that were in fact new places for black people. Texas, Arkansas, Louisiana—these were places of promise. We see a dispersion and then a reconcentration, an escaping from the South into the West and the North. And we see a large population growth, as the maps of population density grew brighter and more intense.

We also see something that doesn't fit the usual stories: the emergence of cities. As it turns out, the New South period saw a growth of small towns and cities faster than that of the United States as a whole. There were more small towns in the South a hundred years ago than there are now. Look at this very different kind of map, one that looks more like what you might expect a historian or a social scientist to show (Figure 23.4).

Moving back and forth across time, we see patterns of great sublety that would be hard to see in other ways. Entire regions of the South turned into places laced by small towns. We see the Carolinas Piedmont, now the home of Charlotte, taking shape around textile mills. We see Florida and Texas change quite substantially. We see the cotton belt changing less rapidly than the areas to its north and south.

We can see the reason for this change on this map (Figure 23.5).

In 1870, the South had many fewer rail lines than the North (even though the South was still the third most railminded society in the world, after the United States and England, in 1860). But when the movie plays we see that the South is more
transformed than the North in these decades of the Gilded Age. During a time when supposedly so much was happening in the South, rail lines were racing through Texas, between the North and the South, through the coal fields of Appalachia, into the new citrus groves of Florida, up and down the Mississippi. By 1890, 9 out of every 10 Southerners lived in a county with a railroad. The scale, suddenness, and complexity of this bright lattice of rail lines is more compelling and its effects more comprehensible if we can see it unfold before us. If we overlay the small-town map on the railroad, we see a strong correlation between town growth and railroads.

Two other maps show that we discover things with dynamic mapping that we could not see otherwise. In the first (Figure 23.6, top), we have counted the number of reported lynchings by subregion.

This period was the heyday of this incredible brutality, in which black men were seized and murdered somewhere in the South virtually every day. This map shows some surprising patterns: lynching rates were not highest in the areas with the most black men, nor in the notoriously brutal cotton belt, but rather in the Gulf Coastal Plain, in the moonshiners of Appalachia, and in the newly settled plains of northern Louisiana.

In the second map (Figure 23.6, bottom), we show where the largest proportion of black Americans managed to acquire the most land.

Looking at the two maps in conjunction, we see a surprising juxtaposition: the areas with the most lynchings were also some of the areas with the greatest amount of black landholding. The areas of the greatest terrorism, in other words, were the areas where black people, despite all the odds against them, managed to save enough money, through heroic means, to buy small pieces of land.

So where does this point us in our understanding of geography and history and the other humanities? How might we use maps for discovery, not just the representation of what we already know? How might we combine the obvious strengths of geographic understanding with the traditional strengths of the humanities — the focus on the ineluctable, the irreducible, the singular? How might we integrate structure, process, and event?

Perhaps we can return to the notion of deep contingency and use a metaphor from GIS, that of the “layer.” In GIS, we imagine layers for topography, for rivers, for people. That metaphor is a fiction, of course, since the layers continually interact and the “top” layer of humans constantly changes the “bottom” layer of landscape. But it is a useful fiction, since it reminds us of the structural depth of time and experience.

GIS is about patterns and structures; history is about motion. By integrating the two, we can see layers of events, layers of the consequences of speededakalloy. Deep contingency is a contingency that penetrates all those layers.

The great historian Marc Bloch wrote that time is the “very plasma in which events are immersed, and the field within which they become intelligible.” Historians are obliged to deal with time. The beauty and utility of history is that it deals with the all-important fourth dimension in which we live, and of which we humans, alone of living things, are aware. With history, time can be mapped as it cannot be in our own lives — and history is the only tool we have to even guess at where our location in time might be.
Despite—or perhaps because of—the sometimes uneasy relationship between space and time in our neural machinery, deepening our understanding of one dimension deepens our understanding of the other. Combining them, we might be able to glimpse the passage of time in which we move and live.

Notes

2 For electronic versions of the maps that follow, see www.vcdl.virginia.edu/emancipation/.
3 Personal communication from Baksh to Ayers, November 15, 2007.