

# CARTOGRAPHIC POSTINGS: GPS, PHOTOGRAPHY, AND LANDSCAPE

The past several years have seen an extraordinary rise in civilian access to personal locational technologies—from on-board GPS-enabled communication systems in cars to the widespread use of GPS on personal mobile phones. Whether at home or while traveling, individuals have the ability to pinpoint their location with a remarkable degree of accuracy and, in conjunction with mapping software built into phones and cars, can identify not only location but determine direction. Whether on foot, in a car, 100 miles or 25 yards from a destination, one can easily follow, in nearly real time, a route suggested for optimum travel conditions.

As newly accessible technologies such as GPS, Google maps, and iPhone apps permeate everyday life, artists are using the technology and the concepts behind it to inspire their creative endeavors. These new technologies have certainly contributed to the current deluge of mapping projects and publications in artistic, theoretical, and literary realms. For example, the inclusion of GPS coordinates in artistic projects can signal an engagement with the very fundamental questions of what it means to locate oneself in the landscape, and in particular, to locate oneself with an accuracy of greater than one meter. But what do these coordinates actually tell us? Does  $36^{\circ}48.229'N$ ,  $118^{\circ}11.620'W$ , or the even simpler  $42^{\circ}30'N$ , mean something to us?

Those particular coordinates happen to be from Los Angeles-based Andrew Freeman's "(Manzanar) Architecture Double" series (2005) and photographer Frank Gohlke's collaboration with the poet Herbert Gottfried, "A Line on the Land: 42.30 North and the Massachusetts Landscape" (2002–present).<sup>1</sup> Freeman and Gohlke, working photographically, each incorporated either a full coordinate of latitude and longitude (Freeman) or an indication of latitude alone (Gohlke) in his working process as well as in the textual framing of the image. They reference GPS differently but both toward an end that evokes an intersection of precision with uncertainty, eliciting an unsettling combination of the purposeful and the arbitrary.

Global Positioning System (GPS) technology was developed as a military navigational system but has been available to civilians for almost a decade. On May 2, 2000, the Clinton White House announced it would disable the selective availability restriction to civilian GPS units. The restriction had inserted timing errors into non-military transmissions, thereby reducing accuracy as a deterrent to potential enemy threats,

but also affected coordinate readings available to civilians.<sup>2</sup> The scientific and commercial benefits and applications of this switch have been tremendous. We are all well aware of some of the commercial civilian applications: GPS technology is integrated into commercial airplanes, private cars, and mobile phones, which reduces the need for even a separate hand-held GPS device. Less well-known applications include measuring seismic activity near fault lines, conducting geologic surveying, and locating mobile phones for emergency services.



With roots in radio navigational technologies of the 1940s, GPS became fully operational in 1995 and involves the continuous global orbit of twenty-four active satellites and four "spares." The program, run by the United States Air Force, has monitoring stations in Hawaii, the Kwajalein Atoll in the west central Pacific Ocean, Ascension Island in the South Atlantic Ocean, the island Diego Garcia in the Indian Ocean, Cape Canaveral, Florida, and a Master Control station at Schriever Air Force Base near Colorado Springs, Colorado. Depending on where it is in its 12-hour orbit, each satellite may be closer or farther from a particular user. For example, each time an iPhone user, a driver with an in-car GPS system, a UPS delivery truck, or a geocacher<sup>3</sup> asks



for a location, the device “locates itself” by finding and measuring the distance and location of four different satellites, and calculating the amount of time it takes for each satellite signal—radio waves traveling at the speed of light—to reach the receiver.

Each GPS satellite has an atomic clock on board to ensure precise accuracy in transmission signals, down to 20-30 nanoseconds. However, GPS receivers are equipped with quartz clocks and must compensate for this discrepancy. The receiver can calculate its shortcomings by aligning the four different incoming signals. The receiver’s clock constantly resets itself and then determines location by estimating the size of each satellite’s sphere, calculating their relative distance from one another and then determining the only point at which the spheres

Between 2001 and 2004 Freeman tracked down and photographed the now-scattered barracks from Manzanar—the World War II internment camp in California’s Owens Valley where Americans of Japanese descent were sent to live from 1942 to 1945—and conceptually reunited these historic structures in the wake of their postwar dispersal across the state of California. This project involved a tremendous amount of research, as well as a significant amount of informed guesswork on the artist’s part. But the photographs themselves seem factually certain—at least most of the time. In one photograph from the series, Freeman stands at some distance from the former barrack in question. The upper half of the image is turned over to an elaborate criss-crossed network of utility lines, the deep blue sky, and the eastern Sierras that are present throughout the series. A pale green building, over half in

deep shadow, is ostensibly our subject. To its left is an old yellowed Ford truck, to its right is a red dump truck, and marking a large pile of dirt and some building equipment to the side of the former barrack is a bright orange construction fence. A sunlit, red-brick chimney emerging from the shaded building rounds out this lovely color study found in the most unlikely of places. Freeman’s elaborate title, as throughout the series, is a crucial component of the work. In this case we are looking at #11.13.01—*Skip shed and old offices Bishop Municipal Airport, Bishop, California, 37°22.277’N, 118°21.982’W*. The title informs us of the month and year the image was made (November 2001), the sheet number within the month (thirteen), a description of the site, and its precise location as measured by Freeman’s hand-held GPS receiver.<sup>5</sup>

Why is all of this information necessary? The narrative description is the most conventional element of the title and provides the most conventionally useful information: we learn that this barrack, which used to house interned Japanese citizens at Manzanar, now has a new life as a skip shed and offices at the Bishop Municipal Airport. This alone is a fascinating architectural repurposing, as are the other dispersed barracks seen in the project, which now serve as apartment buildings, private homes, motels, restaurants, churches,

conference center dormitories, retail establishments, maintenance buildings, and even an art gallery. These incongruencies in purpose are one of the great delights of Freeman’s series. But the rest of the information included in the title is less conventional and serves a less obvious purpose. The series of numbers at the beginning indicates the project’s archival thrust; rather than the more expected format of following the descriptive title with “November 2001,” Freeman indicates through the establishment of a consistent numeric system that the published and printed images are part of a larger structure that is framed in an archival context, one that is perhaps more stable and fixed than the buildings themselves have been.



could intersect. This process, called three-dimensional trilateration, results in a point that is the device’s—and the user’s—location.<sup>4</sup> In short, it is a complex system, and despite its premium on exactitude, is still subject to error from a myriad of sources including atmospheric disturbances, equipment miscalculation, intervening radio waves, solar flares, tall buildings, and even car window-tinting films.

**Above**

#10.19.03—Looking east to residences on Tuttle Creek Road, Lone Pine, California, 36°36.212’N, 118°04.324’W (2003) by Andrew Freeman; courtesy the artist





In their book, *The Nature of Maps: Cartographic Constructions of the Natural World* (2008), cartographer John Fels and cartographic historian Denis Wood describe what they call a “posting,” or the “fundamental cartographic proposition that *this is there*.”<sup>6</sup> Freeman’s coordinates act as a kind of cartographic posting. He has already given us the city and the general location (the Bishop Municipal Airport), but the latitude and longitude data cement the location in an *absolute* way. Barracks can come and go, as can airports and other structures, but the GPS coordinate is impervious to cultural whim and societal shift. Regardless of whether the buildings are in flux, the numbers are not. As Wood and Fels continue, “To claim that *this is there* is to make a powerful claim precisely because it implies the ability to perform an existence test: *you can go there and check it out*.”<sup>7</sup> But it’s hard to imagine someone being compelled to track down Freeman’s precise position based on the GPS data, rather than the seemingly easier method of going to Bishop, finding the airport, and seeking out the skip shed and offices by asking or looking around. In this way, the GPS coordinate provides a *surplus* of information, and perhaps an unusable one at that.

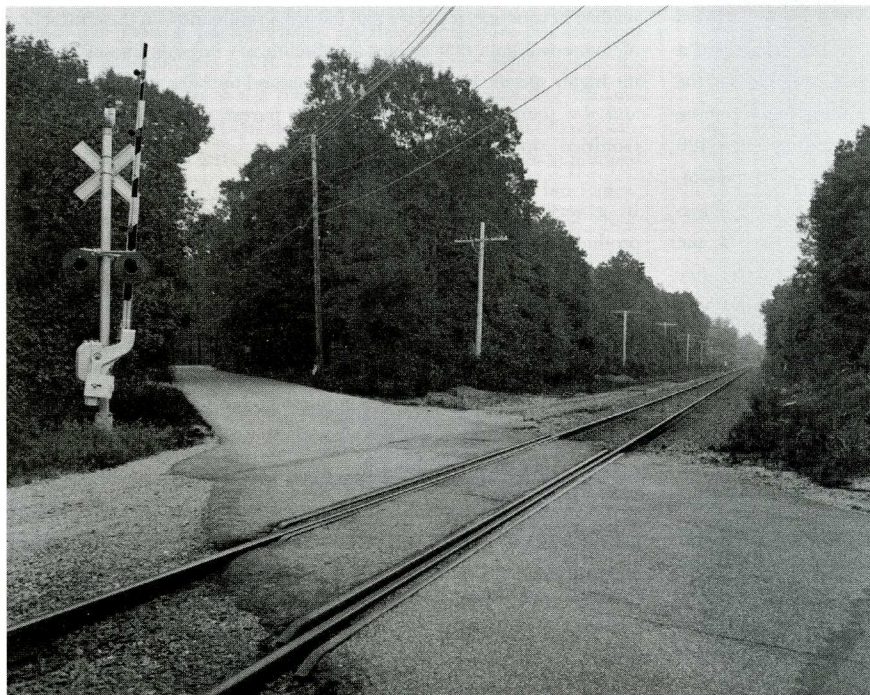
This is even more evident in another image in the series, #10.19.03—*Looking east to residences on Tuttle Creek Road, Lone Pine, California, 36°36.212’N, 118°04.324’W*. As the title indicates, this image, unlike most in the series, shows several homes at the base of the eastern Sierras in Lone Pine,

one of the closest towns to what is now Manzanar National Historic Site. There are several other photographs in the series of former barracks in Lone Pine, including the Lone Pine Budget Inn (formerly The Willow Motel, as Freeman’s title tells us), the Lone Pine Indian Reservation Tribal Office, the Southern Inyo Museum, the Boy Scout troop building and Mount Whitney Rifle Club, and several homes. But in this photograph, Freeman illustrates the pursuit of determining the location of the building as one characterized by uncertainty, not only in this case, but throughout the project.<sup>8</sup> Following leads and studying old maps that were not in agreement revealed a change in address, or a change in the name of the road, and made determining with certainty which building had come from Manzanar almost impossible. In such a scenario, the dislocation of the GPS coordinate becomes even more apparent: *why post and confirm uncertainty?*

But on the other hand, it was the human system of tracking that had failed—a lack of records, a change of name or address, and other elements that we think of as fairly stable. In the future, even if Tuttle Creek Road changes name or the buildings are replaced entirely, the GPS coordinate will remain stable. In describing his research, Freeman notes the tentativeness of some of his attributions, the difficulty of verifying a building’s point of origin, and the disagreement among interested parties by referring to the building’s status as “totally



indecipherable, undetermined, can't figure it out."<sup>9</sup> Painstaking and careful as the research was, it is at many points simply impossible to fix, which is perfectly acceptable to Freeman. This comfort with uncertainty, or rather this fundamental disinterest in making a final declaration, undergirds the quiet tension between precision and doubt running through the project. The excess in Freeman's titles, their surplus of information, and elements of stability and permanence, draw attention primarily to the uncertainty, shift, and change that otherwise informs the subject: the buildings themselves. At the same time Freeman makes a "posting," he points to its own unraveling, its own instability.



In the last photograph in the series, Freeman captures an oblique view of the paper National Geographic Road Atlas he used throughout the duration of his project. The detailed section of the map shows the area of California between Yosemite and Joshua Tree, including Merced, Bakersville, and Barstow. The image is a kind of revelation—decidedly different from the rest—and speaks to the fundamentally different experience of the rather abstract GPS coordinate compared with an “old-fashioned” paper map. The map is coming apart at its fold line, sites are circled in pencil and occasionally crossed out, and handwritten notes scrawl along the edges of the map. All are clear indications of Freeman's working process and draw our attention to Highway 395 in particular as the route along which many of the barracks were dispersed. As always, Freeman's titles direct us: this one is titled #8.23.06—*National Geographic Road Atlas with reference notes about dispersal (a map with improvements), cultural view*<sup>o</sup>. Its improvement is its modification, its notational record

of a project over time, and its translation of the sites' *absolute* locations via precise latitude and longitude data to their much more human-scale *relative* locations.

Gohlke and Gottfried's "A Line on the Land: 42.30 N and the Massachusetts Landscape" embraces the nexus of the precise and the arbitrary, as mediated by GPS measurements, in a different way. As Gottfried has described the project,

One minute of latitude is a mile wide on the ground, thus 42.30N is 1 mile by 155 miles of landscape, from the Marblehead Neck on the east to Berry Mountain on the west. We drove, walked, and even paddled across Massachusetts using a hand-held GPS device to locate the latitude. Once in the line, we explored that mile, responding independently to what we found.<sup>10</sup>

Unlike Freeman, for whom the GPS data marked the conclusion of his search for subject, in this case the particular line of latitude marks the entry point, the sole initial criteria by which Gohlke and Gottfried *find* their landscape.

The subject of their work is at once tightly circumscribed and potentially infinite. When, after all, could one determine having *completed* photographing 155 square miles of land? In this regard there is an element of absurdity in their pursuit. That single line of latitude comes to seem preposterously expansive, perhaps the antithesis of Freeman's excessive precision. The project, for Gohlke, was a “demonstration of

the obvious, which is that it doesn't matter how finely you parse it—the world is inexhaustible. Through restricting yourself to this little strip—it could even be reduced to fifty feet—you'd still have a sense of leaving out more than you included.”<sup>11</sup> As many photographs as we make of the world, there are infinitely more possibilities. Depending on one's point of view, this obvious point could be grounds for boundless optimism or existential crisis.

In Gohlke's color photographs from the 155-square-mile “little strip,” we see trees, parking lots, wooded areas, roads, rivers, barns, power structures, fields, and cars; there is formal clarity, social commentary, and visual humor. In one image, a single small tree within a grove is spotlighted by the sun, seeming, as simplistic as it may sound, to shimmer with excitement. In another, an otherwise classical landscape slowly reveals a distant line of power structures in unsettling harmony with their surroundings. As with Freeman's project, Gohlke's titles are significant and direct the viewer toward a particular engagement with the landscape. There is, first of all, the title of the project: “A Line on the Land.” Latitude and longitude measurements *are* lines on the land, though not in the literal sense as rivers, roads, and train tracks are. It is an ancient, though not timeless, system: it was in the second century BC that the Greek mathematician, geographer, and astronomer Hipparchus first proposed a system of latitude and longitude to map specific locations. These lines

**Above**

*Village of Boxborough Station, Boxborough, Massachusetts [train crossing]* (2002) by Frank Gohlke

**Facing page**

*National Geographic Road Atlas with reference notes about dispersal (a map with improvements), cultural view*<sup>o</sup> (2006) by Andrew Freeman; courtesy the artist



comprise a uniform global system, though they are fully arbitrary in a local sense, in their overlay of both natural and man-made elements of our lived environment. To imagine oneself “in the line” as Gohlke and Gottfried do is to situate oneself within an imaginary absolute, to measure oneself in the angular distance in degrees and minutes from the equator. Why?

Historically, there has been use for this system of angular measurement. And indeed, there is an immediate resonance between the title of Gohlke and Gottfried’s project with one of the most famous nineteenth-century geological expeditions documented photographically, Clarence King’s 40<sup>th</sup> Parallel Survey, for which Timothy O’Sullivan was the photographer. Begun in 1867, the survey was sponsored by the U.S. Congress, and carried out by U.S. Engineers. It ran for six years, and the team’s charge was a geological and topographical exploration of the territory between the Rocky Mountains and the Sierra Nevada mountains, including the route of the Pacific Railroad. Their work extended from the 120<sup>th</sup> meridian (120 degrees east of the Greenwich meridian) eastward to the 105<sup>th</sup> meridian, along the 40<sup>th</sup> parallel (40 degrees north of the equator). Cutting across California, Nevada, Utah, and Colorado, in the western part of the country, one of the team’s primary purposes was to make maps; they were deeply involved in the acquisition and transfer of topographical and geologic information.

Though Gohlke and Gottfried also traveled along a parallel—though a slightly more specific one, in a different part of the country, and predominantly by car—they weren’t making maps. Furthermore, they were hardly going to the lengths King’s men needed to in order to determine their coordinates, which at that time entailed close observation and measurement of the angles of the stars or the sun to obtain an absolute location. But it’s not quite as if “A Line on the Land” is the non-survey to King’s careful measuring. As Gohlke has put it, the project as a whole was an “excuse to pursue this notion that any fragment of the landscape is revealing of the whole.”<sup>12</sup>

One image, *Village of Boxborough Station, Boxborough, Massachusetts*, visually underscores the notion of literal lines on the land. Here, Gohlke frames what one imagines is an otherwise fairly banal scene of a road crossing a train track in a semi-rural area of Massachusetts into a precisely contained visual moment in which road, rail lines, railroad crossing, power lines, and even the retreat of a row of trees coalesce into revelatory linear form. And 42.30 North is the meta-line framing it all. Gohlke does not title his images with discrete GPS coordinates and the titles otherwise vary in their specificity. But here, as with Freeman’s Bishop Municipal Airport sheds, one could likely go to Boxborough Station, look—or drive—around, and find this place.

Yet, many images in the series aren’t nearly so precise. For instance, a photograph of a tree in a field under an enormous and bright summer sky is titled *Near Leominster, Massachusetts, looking northwest*. Knowing the location’s distance from the equator in degrees and minutes won’t help much in finding the location and so, again, the GPS information that frames the project is superfluous in a practical sense. But it is not superfluous in a conceptual sense: in a critically different way from how Freeman’s coordinates point to the potential absurdity of such geolocational certitude, Gohlke’s pursuit of a specific line on the land allowed for a quality of conceptual arbitrariness to enter the work.

This arbitrariness operates around the edges of the photographs and frames the series as a whole. Any individual image can easily and comfortably exist outside the series, though, and they often have in both exhibition and publication. Beyond the abstract measurement of latitudinal angle, Gohlke and Gottfried researched “the line,” seeing their purview as encompassing the cultural, geologic, and topographical features within its boundaries. Looking at facts about Massachusetts’ history in specific towns, the physical details and topographical profiles of the areas within 42.30N, and engaging with the particularity of place was clearly a goal of the project. The images need not be linked to the larger framework of their making, but engaging with the work as a series necessarily evokes a reading beyond specific place and toward a rumination on the abstraction of numerical data that creates an absolute yet invisible line of latitude, the highly specific local, cultural, and natural histories within that “line,” and the somewhat arbitrary aesthetic pursuit that led Gohlke—and Gottfried—to literally find their subject.

In a very fundamental way, the pursuit of geographic specificity produces a sense of freedom. As Gohlke recalls,

It was very freeing for me because the line itself was the rational for choosing anything I wanted to photograph in any manner I wanted. I chose a particular camera, film to use—it wasn’t a total toss up—I knew where I was going to go but I didn’t know what I was going to find. . . . I had a reason to be in a certain place and license to look at anything.<sup>13</sup>

The rule *was* the freedom.

Freeman and Gohlke’s work, through different strategies, invites us to consider how we want to utilize the geolocational technologies at our fingertips and how we want to conceptualize the fact of our absolute location. In considering what a GPS coordinate tells us and what it does not, ultimately in both bodies of work the precision for location is more interesting for the latter, as a venue for considering its limits. The notation, or posting, of a tightly circumscribed location can perhaps offer more uncertainty than certainty, or, spun a different way: freedom in precision.

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*NOTES 1. I included both series in the exhibition “Locating Landscape: New Strategies, New Technologies,” which featured artists working at an intersection of photography, landscape, technology, and mapping. It ran at the Sam Lee Gallery in Los Angeles from October 30–December 5, 2009, and included work by Lewis Baltz, Christiana Caro, Andrew Freeman, Frank Gohlke, Margot Anne Kelley, Mark Klett, Pabo Mann, Adam Thorman, and Byron Wolfe. In addition to Gohlke and Freeman, Caro and Kelley also explicitly use GPS technology, both in their working process and titling systems. “Locating Landscape” travels to the Center for Creative Photography in Tucson, Arizona, in the summer of 2010. 2. White House Press Release, “Statement by the President Regarding the United States’ Decision to Stop Degrading Global Positioning System Accuracy” issued by President Bill Clinton on May 20, 2000, and accessible online at [www.ngs.noaa.gov/FGCS/info/sans\\_SA/docs/Statement.html](http://www.ngs.noaa.gov/FGCS/info/sans_SA/docs/Statement.html); accessed July 8, 2009. 3. Geocaching is a “location-based game” in which a player, equipped with a hand-held GPS device, travels to a specific coordinate to search for a cache left by another player. For more information see [www.geocaching.org](http://www.geocaching.org) or Margot Anne Kelley, *Local Treasures: Geocaching Across America* (Santa Fe: Center for American Places, 2006). 4. Information compiled from the Smithsonian National Air and Space Museum online exhibit on GPS satellites, [www.nasm.si.edu/exhibitions/gps/](http://www.nasm.si.edu/exhibitions/gps/). 5. For a full description of the project as well as contextual essays on the Manzanar camp, see Andrew Freeman, (Manzanar) Architecture Double (Santa Monica, CA: RAM Publications + Distribution Inc. in association with the Center for Land Use Interpretation, 2006) with essays by Matthew Coolidge, Karin Higa, and Elizabeth Wiatt. 6. Denis Wood and John Fels, *The Natures of Maps: Cartographic Constructions of the Natural World* (Chicago: University of Chicago Press, 2008), xvi. 7. *Ibid.*, xxi. 8. Interview with the author, July 2009, Los Angeles, California. 9. *Ibid.* 10. Herbert Gottfried, “Introduction” in Adam Katz and Brian Rosa, eds., *Tattered Fragments of the Map* (Los Angeles: the limits of fun, 2009). 11. Interview with the author, September 2009, Tucson, Arizona. 12. *Ibid.* 13. *Ibid.**