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Webs of Significance Trails From Above

Man is an animal suspended in webs of significance he himself has spun.

—Clifford Geertz, *The Interpretation of Cultures*

The aborigines of Australia have a practice that has mystified Europeans for centuries.

Periodically and according to a schedule that makes no sense to the ranchers and businessmen of that country, they have gone on a “walkabout.” To many Europeans, it has seemed that they wandered aimlessly through the countryside for months, leaving work in the livestock pens and shops undone. But the aborigines have been about more important work: remaking the world. Their travels have been guided by the ancient creation stories they tell themselves as they go; during dreamtime the ancestors of the ant people made this hill, the lizard people that valley. By reenacting the creation of the world they both recreate and find their special place in it. Without this reenactment, they believe, the world would end. Bruce Chatwin (1987) calls the paths taken by the aborigines *songlines* in his book of that name, a word that conveys how the aborigine, by the rhythm and intentionality of his movement, weaves together story and topography to create a sacred geography.

All photos by the author.

The low velocity radio controlled model airplane from which photographs are taken, being launched by its designer, James Walker.



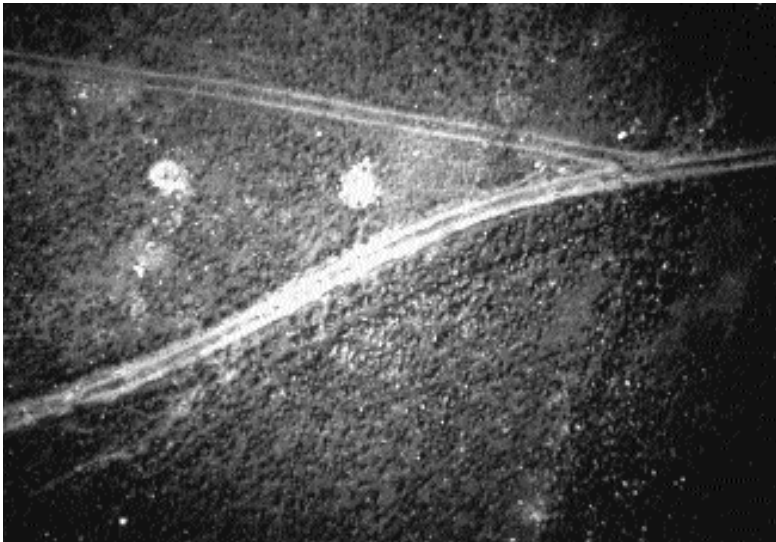
Humans everywhere act in ritualistic ways that make landscapes into agencies by which culture is both propagated and transformed (Comer, 1996). What I have found since completing work on *Ritual Ground* is that aerial remote-sensing provides a perspective that helps us to see and document the profound interplay between landscape and culture. Richard Friedman, a geographical information system (GIS) specialist for McKinley County, New Mexico, who is constructing a data base for Chaco Culture National Historic Park, made the following statement after analyzing aerial photography of the park (Friedman, 1996, page 1):

The ritual component of the prehistorically-built environment at Chaco Canyon may be described as essentially a composite of two forms of monumental architecture: the great houses and the so-called ‘roads.’ From a terrestrial perspective, the ruins of the great houses are the dominant reminders of the antiquity of the place. From the aerial perspective, however, the great structures appear caught in a great earthen web where they are dwarfed to a point of apparent insignificance.

Recently, we at the Applied Archeology Center of the NPS have been testing the utility of very low altitude aerial photographs of trails in the United States. We have been greatly assisted in this by James Walker of Brigham Young University, who has designed a slow-moving, radio-controlled model airplane from which photographs can be taken at altitudes as low as 150 feet, although the usual altitude for the photographs we have taken is 500 or 600 feet.

We have been using the low altitude photographs in conjunction with higher level photographs that are commonly available through government agencies and private firms. Every scale informs us about what to look for in all others, but the low altitude photos, because they provide great detail, alert us not only to archeological sites and features themselves but to the characteristic appearance of these, their *signatures*, in higher altitude and thus smaller scale imagery.

The aerial perspective suggests to me that the trails, like the songlines of Australia or the “roads” of Chaco, are best understood as networks



The Parting of the Ways, Wyoming, from the air. Visible are a medicine ring, immigrant campsites, and dark lines of vegetation demarcating Mormon Trail drainage features.

that link together significant sites in a way that is itself significant. Although Chatwin referred to such paths as songlines, an anthropologist would more likely call them *processionals*. They are with us today—notable examples being many of the trails in the United States’ National Trail System—as they have been throughout history in all lands occupied by humans.

Trails West

A year ago I stood at a place along the Continental Divide in western Wyoming called locally “The Parting of the Ways.” From my position on the ground, the Mormon Pioneer Trail ran straight to the southwest horizon and Salt Lake City, while the Oregon Trail on my right departed at about 45 degrees northwest. I could imagine a traveler pausing here 150 years ago before taking a decisive step toward one of two uncertain, yet clearly very different, destinies.

A look the next day at the aerial photos taken from 500’ above the ground of this spot told me much that I had not expected about the groups that had once passed there. The first of these groups was one of which I had not anticipated finding a trace, a group that had regarded this high and windswept place not as an impediment in a path to a destination but as a destination itself. Native Americans had been frequenting the area of the Continental Divide long before the appearance of wagon trails, and were returning now to engage once more in traditional ceremonies. I had been standing perhaps 30 feet from a “medicine ring” that I had not noticed. These rings were (and are) places of meditation delimited by a circle of stones, typically constructed by Plains Indians at high and therefore holy places where visions are likely to be obtained.

Other circular areas, but unlined by rocks, could be seen in the photographs, too, spread along both trails on either side. Bureau of Land

Management archeologist Russ Tanner later suggested these to be immigrant camping sites, and earmarked them for later study. These locations would be noteworthy because camping spots were generally located near water. Their presence here, away from water, hinted at long ago misfortunes; travelers that had been taken sick and could not go on until they recuperated.

In the photos, dark green lines were visible along the south edge of the Mormon Pioneer Trail, although not along the Oregon Trail. Similar lines departed somewhat perpendicularly to the south of the Mormon Trail. The dark lines were produced by thick vegetation growing in linear swales where water had collected. These swales appeared on later inspection to be part of a drainage system.

Jim Walker came up with a hypothesis to be investigated: We know that the Mormons intended to use their trail over and over again, moving people and supplies to and from Salt Lake City. We know also that wagons moving over wet trails produced ruts that eventually made the trails unusable. The Mormons, therefore, engineered the trails to remain dry.

His idea is supported by what can be seen in aerial photos we took of other sections of both the Mormon and Oregon Trails. The Oregon Trail in many of these photos resembles a braided stream, suggesting that wagons often fanned out to avoid the ruts of wagons that had gone before. The Oregon Trail was used in only one direction by those who expected never to return over it, and so there was no constituency with interest enough to sponsor the design and construction of the trail for reuse. The Mormon Trail, on the other hand, generally ran along a single track, and was intended from the outset as a two-way emigration and supply route.

This hypothesis is also bolstered by the fact that other trails that ran through the area shared the path of the Mormon Pioneer Trail whenever possible, and especially that the Pony Express favored the Mormon Trail over others that it might have followed, although these alternate trails sometimes offered a more direct route. An engineered Mormon Trail would have been much more free of the potholes and other surface irregularities that tripped horses, and therefore killed or injured many Pony Express riders. It was therefore a fast trail, capable of accommodating frequent traffic east and west, that enabled the backers of the Express to accomplish their stated goal of a weekly coast-to-coast run in 10 days.

The Pony Express Trail, in winning “the great race against time,” as a newspaper headline of the day put it, was seized upon by many in the United States in those days just before the Civil War as a symbol that the country was joined

securely from East to West. After the war, it became an even more widely-accepted symbol of national unity. Anthony Godfrey (Godfrey, 1994, page 60) thinks the romanticization of the Pony Express was given a great boost by Mark Twain's portrayal of it in *Roughing It*, published in 1872. Though the Pony Express lost great sums of money for investors and the government by the end of its brief, 18-month life, it was a success as a "processional," one in which many people throughout the nation at the time participated thanks to lavish press coverage—and one in which we today participate vicariously through historic and popular accounts.

Significantly, the financial collapse of the Pony Express is most attributable to the Pyramid Lake War, "an event that no one foresaw or could have predicted" according to Godfrey (page 69). Players who were being driven off the stage of the national drama in the mid-19th Century, the Native Americans, suddenly reappeared when miners and the Pony Express company itself trespassed Indian land. Pony Express stations made easy targets for Indian raids, which produced fatal disruptions to service. The medicine rings that made a similarly unexpected appearance in our aerial photos remind us of the persistence of Native American cultural influence on national events.

The Ala Kahakai

Early in 1996 we looked for trails in an environment vastly different from that of the arid High Plains. Through a grant from the NPS National Center for Preservation Technology and Training, we tested the practicality of using low altitude aerial photography to locate archeological sites and features, including trails, in heavily vegetated, tropical environments. If the technique, perhaps with some modification, was found to be appropriate to such places, it would be used in projects upcoming in Southeast Asia, particularly in

The remains of Pu'u o Mahuka Heiau from the air.



Cambodia where land mines, poisonous snakes, and other hazards made site survey and mapping by the usual methods dangerous or impossibly slow.

We found that many archeological features that generally could not be seen in the standard 1:26,000-scale aerial photos that can be obtained, for example, from the United States Geological Survey or the Department of Agriculture, were visible in the low altitude photographs. We later successfully produced maps from some of these photos by calibrating CAD digitizing programs to targets we had laid out on the ground or to known distances between objects that appeared in the photos. The accompanying photo is the aerial photo of a *heiau*, or temple site, on Oahu. The drawing is a CAD map produced from the photo in just a few hours of digitizing work.

The Ala Kahakai on the Big Island of Hawai'i, as it runs through the City of Refuge National Historic Park, goes through extremely rugged and heavily vegetated topography. In low altitude photos of about 1:500 scale, we could nonetheless often pick up the Trail, along with numerous features associated with the Trail: *heiaus*, platforms for houses or other structures, walls, and shrines, as well as later trails and roads that had been built over sections of the prehistoric trail. Although sometimes the greatest part of features were obscured by vegetation, visible segments and clues to the presence of features below vegetative cover (like differences in vegetative type and rigor) enabled us often to discern shapes.

We discovered, too, that where the nature of what can be seen in photos is questionable, digitizing the photos in CAD format provides a tool for future fieldwork. The resulting CAD files can be loaded into laptop computers, where they form a database that can be queried via standard CAD software functions. Doing so can provide distance and bearing from easily accessible or known points on the ground to features of an unknown nature visible from the air but that would otherwise be difficult to locate on the ground. The ability to quickly and accurately find locations of interest will be especially valuable in difficult or dangerous environments, like those found in Cambodia.

It is, of course, in the relationship of trails to archeological sites and features that we can see the operation of a trail as processional. Holly Dunbar (see her article) speaks of the association between the Ala Kahakai and features that represent prehistoric Hawaiian life in a wide variety of its aspects. Ross Cordy, the Hawaii State Archeologist, notes that from 1400-1700 A.D. the Ala Kahakai connected 600 or more communities (*ahupua'a*), over 100,000 people, many densely

populated housing areas, and almost all of the royal centers and major temples. It was used, says Cordy, by royalty to move armies and during an annual circuit of the island during which taxes were collected (Cordy, 1994, page 27).

The use of the Trail for taxation was embedded in elaborate ritual. An image of the god Lono was carried counterclockwise around the island in 23 days of the first month of the wet season in a ritual called the *Makahiki*, which has also been called the great Hawaiian New Year Festival (Sahlins, 1985, page 105), during which the world is renewed. The accompanying procession included not only priests and attendants but athletes who took part in ceremonial athletic events. The processional stopped at the alter of each *ahupua'a*, where local officials would present offerings (which from our perspective constitute "taxes"). By this ritual the world was remade and the power of the island's ruler legitimized.

The Applied Archeology Center, in cooperation with the National Park Service Pacific/Great Basin Area Office and the Bishop Museum of Hawaii, and with the donated services of Kristen Stout of Environmental Research, Inc., is currently examining aerial imagery pertinent to the association of the Ala Kahakai with archeological sites and features of great interest in the vicinity of Kealahou Bay. Such sites include Hiiou Heiau and the spot where Captain Cook was killed by Hawaiians in 1779 (Cook, identified by the Hawaiians with the god Lono, was killed at about the time of the Makahiki), as well as the prehistoric agricultural complex known as the Kona Field System. From this examination we hope to determine more precisely the photographic scales best suited for identifying features of varying sizes in vegetated tropical environments and to devise better procedures for reconciling imagery of varying scales, both through producing overlays and by identifying signatures. We also will be looking

A CAD drawing produced from the aerial photograph on p.22.



for evidence that would indicate associations, and the nature of any associations, among the Ala Kahakai, branch trails, and the features of interest mentioned above as well as others we might observe.

Re-creation

From the air we can see that the trails mentioned in this article—those that led West, to the medicine rings, or around the island of Hawaii, as well as the songlines of the aborigines—trace paths that led not only from one point on the landscape to the next but to a sense of renewal among those who traveled them. I think that it is the need for renewal that brings visitors to these trails again today. Even now there are socially acceptable times for "walkabout." What we call recreation is often a rite of re-creation. "Rerides" of the Pony Express Trail, held many times since 1923 and increasingly popular; detailed reenactments along the Oregon, Santa Fe, and many other immigration trails West; and the re-use of *heiaus* in Hawaii and medicine rings in Wyoming are examples. The aerial perspective suggests that our own movements and the motives that impel them do not differ fundamentally from those of people from many other times and places. This being so, the understanding we gain from the study of human movement through other times and places will be an understanding of ourselves as well.

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