Pima Song and the Archaeology of Space

by

J. Andrew Darling
Cultural Resource Management Program
Gila River Indian Community
5/14/2006 [Draft]

Abstract

An archaeological examination of spatial perception is presented through an analysis of an O'odham (Pima) song cycle in relation to data on prehistoric and historic trails. Repeated, negotiated performance of songs at social dances in their appropriate order perpetuates O'odham concepts of spatial geography in the context of spiritual journeys and growth. Archaeological trails provide evidence that such journeys were real and open the door for theoretical contemplation of spatial perception by past cultures. This approach shifts the analytical field of view from the familiar site-based approach (that focuses on place) to one that emphasizes cognitive views of space as a means for understanding other cultural systems of geographic information processing.

Introduction

This paper is about alternative systems of geographic information processing. In particular, I wish to consider two sociocultural entities, *landscape* and *space*, and a third, *infrastructure*, which I propose mediates between the two. Definitions of landscape and space are derived from the work of Tilley (1994) and Lefebvre (1991). The concept of infrastructure is developed through an examination of Pima song ritual and archaeological trail systems. Specifically, I examine the role of O'odham (Pima Indian) song cycles in the generation of social space. Through the repeated performance of songs with strong geographical referents, a sense of space is created and a form of Native infrastructure is invoked. One song cycle, known as the Oriole songs, serves as a primary example of the way in which social space is created through song itineraries, and how infrastructure, in turn, offers middle-range connections between the conceptual geographies of song (space and landscape) and archaeologically identifiable trail systems (infrastructure) in southern and central Arizona.

Recent theorizing on landscape has introduced new ways of thinking about cultural conceptions of space. This includes, discussions of the ways in which cultures organize undifferentiated space into conceptually meaningful arrays of geographical, environmental, and cultural landmarks. More than most, Christopher Tilley (1994) has presented a synthetic approach that stresses phenomenological aspects of landscape including active or experiential dimensions. This includes dynamic sociological processes such as *agency* and *praxis*, which link actor, event, and place with ideological and cognitive systems. Tilley defines landscape as "…a series of named locales, a set of relational places linked by paths, movements and narratives. It is a 'natural' topography perspectivally linked to the existential Being of the body in societal space (1994: 34)." According to this definition, landscape is the contextualizing backdrop or the "environmental milieu" through which places are experienced.

If landscapes are composed of relational places, how are social or societal spaces conceived by cultures and can these also be measured archaeologically? Furthermore, can these places be related to concepts of spatial geography? For Henri Lefebvre "space" is a social product that, like place, has a concrete reality exhibiting both abstract and physical properties (1991:26-27). Lefebvre argues that spaces are created through *spatial practice*, resulting from the collective experiences and ideology of individuals and their representation in a more encompassing landscape. Examples include the *built environment* which involves not just the physical properties of architecture, but also the ideology that serves to define social spaces contained within artificial (built) constructions.

I wish to examine the ways in which meaningful social spaces may be generated.[1] One way of examining this is through an analysis of infrastructure. Infrastructure is the

[1] Lefebvre argues (1974:38): "the spatial practice of a society is revealed through the deciphering of its [social] space[s]." Tilley (1994), however, treats space as abstract and context dependent, lacking an empirical basis for study.

interacting set of human ideas and materials – the basic facilities and equipment – that allow a society to function. Few studies have related infrastructure to the mediation of social space and landscape. However, knowledge of infrastructure, like a roadmap or diagram, links measurable facilities such as trail networks to preexisting sets of cognitive social spaces (associated with certain activities and purposes) and spatial geography. For example, travel to perform a religious function may require travel along certain paths that interconnect shrines or other specified stops along the way. Travel for trade, on the other hand, may imply movement along different pathways, which could include visits to trading partners or locations where items for trade are acquired.

Understanding infrastructure may provide insights into the ways in which such decisions are made while establishing the conceptual relationship between places in the past. In the following analysis, the Oriole Songs are one form of spatial practice which identifies a series of locations and geographic landmarks in the larger O'odham (Pima) landscape. An archaeology of space is possible since the places identified in the Oriole songs can be linked to a visible trail network and the concepts of travel and spiritual increase conveyed in their performance.

Infrastructure as Tradition

Systems of travel are a major part of infrastructure. The arid southwest provides us with a unique natural landscape where trail segments, some as old as 10,000 years, are still visible on the desert surface (Figure 1). Viewing trails as Native infrastructure is a theme that appeals to concepts of how communities function as collections of interconnecting ideological and material systems. Knowledge of trails – not just of where people were but how they got there – provides an important dimension for understanding

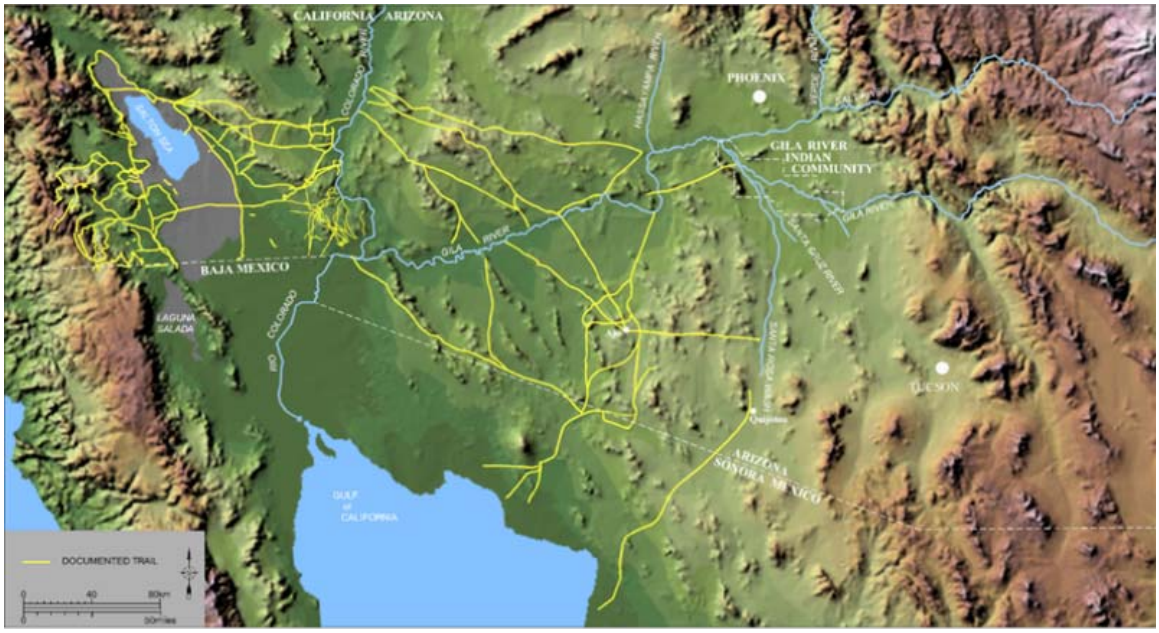


Figure 1: Major Trail Networks in the Arid Southwest and Northern Mexico.

the location and distribution of sacred sites and settlements. It also provides insights into the regular flow of resources (energy and information) among traditional communities.

For the Pima and Papago (O'odham) of central and southern Arizona traveling is more than going from one place to another. It is a part of tradition and it is a metaphor for life.[2] *Himdag* is the O'odham word meaning "tradition"; but it also can mean "heritage" or for the purposes of this discussion, "infrastructure." Similarly, *Hekugam vo:g* is an O'odham phrase meaning ancient trail but it can also refer to the old ways, the traditional ways. In another sense, *himdag* can be translated as "to walk a (good) path." *O'odham himdag*, while acting as a covering term for Piman tradition and cosmology, appeals to qualities of travel or journeying. In a cosmo-geographical sense, the journey of the sun and moon from the east (*Si'alig weco*) to the sunset or west (*Huduñig*) through the staying earth (*Ka:cim jewed*) describes a horizontal plane sandwiched by the sky above (*Da:m ka:cim*), and the fire below (*Mehi weco*). Mountains, caves, and shrines are places within the staying earth where humans and spirits (who reside to the west) may communicate. In the east (the direction of the sunrise) the spirits of the deceased may return to the staying earth to visit and to teach their living descendants about curing and shamanic practices (Kozak and Lopez 1999:65-66).

Song and power acquisition through dream journeys to spiritual places recapitulate travel and cosmo- geography and underlie the relationships between the ideology of travel and the actual trails that certain songs or song series may represent (or the journeys they entail). Many song series, if "properly" performed, reenact the journey of the sun and moon and are temporally consistent with the all-night dances of which they are a part.[3] In this way, performance of songs or "sings" in sacred or secular (social) contexts provides the basic form by which journeys are preconceived metaphorically. In the physical world, journeys must be enacted with geographical accuracy and spiritual propriety; a vital component to desert travel and survival while on long journeys.

By examining the ideological underpinnings of O'odham infrastructure in relation to trails and travel I hope to bring certain cognitive processes to light. In particular, cross-domain mappings relate abstract domains such as those conveyed through songs to familiar or concrete domains experienced through acts of travel. As defined by Borgo (2004: 180), after Lakoff and Johnson (1980), "Cross-domain mappings do not simply 'represent' one domain in terms of another. They are grounded in our bodily experiences and perceptions and create precise, inference-preserving mappings between the structures of both domains…." Through song performances social spaces are created in the form of journey imagery, which can be enacted in whole or in part on the ground by following

[2] The way of life of the O'odham is illustrated by the symbol used to acknowledge their heritage, the Maze. Everyone's life on this land is a cycle, generations of cycles, meeting ovr and over again on the way to other life journeys. Trails and travel are an intrinsic part of those journeys.

[3] "Proper" performance and issues of traditional versus non-traditional modes of performance are themes of significant concern to O'odham elders, O'odham singers, and scholars of O'odham song, which will not be dealt with in this paper.

well-used trails. In effect certain song cycles act as a form of cognitive spatial geography.

I will relate the O'odham Oriole song series as described by Bahr, Paul and Joseph (1997) to segments of archaeological trails identified in the field through archaeological survey (Darling and Eiselt 2003). Infrastructure results from the overlap or cross-domain mapping of ideology, which is expressed through the metaphorical rendering of song, and the occurrence of facilities or trails on which journeys may be enacted. The ideological domain is mapped onto the domain of experience (and vice versa) via the facilities or trails systems that make journeys possible. It is this relationship that lies at the core of Piman infrastructure and its role in travel, trails, journeying, and ultimately to dream travel and power acquisition.

O'odham Social Singing

Donald Bahr has presented a wide range of studies related to Pima curing practices and the ethnopoetics of Pima song including Bahr, Giff and Havier (1979) and Bahr (1986) as well as Bahr and Haefer (1978), Bahr, Gregorio, Lopez, and Alvarez (1974) and Bahr, Paul, and Joseph (1997). Two abstract categories of O'odham song are identified. Subsistence songs are those "aimed at improving the future material condition of the tribe (Bahr et al 1979:176)", and can include, for example, curing songs or songs of divination. Social songs, such as the Oriole, Swallow, and Ant songs, accompanied traditional Pima "stomp" dancing held at all-night social events. Whether for sacred or for secular functions, songs are never authored by Pima singers and instead are composed by the animals, spirits, or ghosts who teach the songs verbatim through dreams or visions. As a result, the songs are identified by the divine or spiritual author but can be passed on from singer to singer through performance and imitation (1979:172).

Traditional all-night dances require lengthy sings. These consist of a long series of brief songs strung together to create a mood and a particular story.[4] In general, songs from different song series or divine authors are not mixed, and as a result there is a consistency of source and theme when they are performed. Sings have a narrative structure with a beginning, middle, and end resembling prose myths. Each song in the

[4] Bahr translates many of these as six to eight line songs such as the following two songs (16 and 17) from the Oriole series (Bahr et al 1997:123):

16. Iron Mountain.
Iron Mountain.
Uninvitingly sounds.
Wind runs there,
Then Stands,
Then hoots.

17. Many people gather there
While I here
Sorrily die.
This my feather tip,
Already dead.

song series conveys some quality of action or geographic place. Unlike myths, however, which do not vary in plot, the order or sequence of songs may change at each performance. Such improvisation is essential to creating a mood or narrative sense that is conveyed across the entirety of the performance, even though the fixed sequence of events and places described may change (1997:70-72).

Bahr has focused much of his analysis on the ethnopoetics of sings and the sequencing of songs. The uniqueness of each performance lends the sing a character and expressiveness. It is, however, the geographic quality of sings and their relationship to archaeological features – trails in particular – that interests us most here. As Bahr observes:

> It is well to think of social dance song sequences as postcards sent from someone on an impassioned journey. On receiving the card one speculates about the mood of the sender, about all that was happening at the moment of the message…, and what the next step in the journey might be [Bahr et al 1997:77].

According to Bahr, geographical references are only mentioned once (unless it is repeated in songs that are sequential in the performance), and these references to place may follow linear, circular or meandering paths without repeated returns to the same location. The geographic itineraries of a sing are created through song sequencing and in effect establish the metaphorical domain of an imaginative journey to which physical travel (or its remembrance) is related. Song itineraries may be negotiated. As Amadeo Rea noted of a sing, witnessed on the Gila River Indian reservation, the singers stopped the performance to discuss the appropriate next geographic step in the song series (personal communication, 2005). In the following section, I rely on Bahr's published analysis of the Oriole Songs to review one such itinerary in detail.

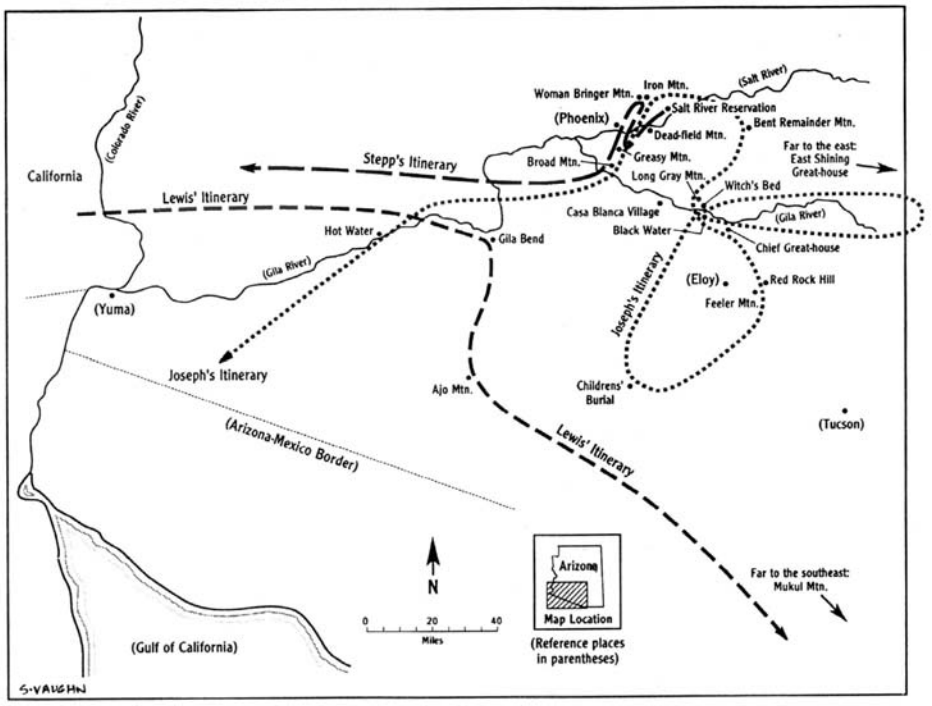


Figure 2: Song Itineraries. The dotted route represents the itinerary of the Oriole Songs as performed by Vincent Joseph (Bahr 1997:120).

Oriole Songs

Don Bahr's presentation of the Oriole song series as rendered by Vincent Joseph, a member of the Gila River Indian Community in central Arizona, consists of 47 individual songs (see footnote 3 for two examples) recorded on three occasions from 1983 to 1985 (Bahr et al 1997:107-113). Bahr structures his analysis on the second sing, which he then subdivides into eight parts or thematic segments according to the song order. These include:

Mythological Prelude (Songs 1-8)
The Westward Journey (Songs 9-22)
Birds (Songs 23-29)
Calamities (Songs 30-32)
Sunset (Song 33)
Medicine Men (Song 34-39)
Whores (Songs 40-45)
The Last Two Songs (Songs 46-47).

Each theme is an analytical unit for Bahr in his interpretation.

The itinerary or journey of the Vincent Joseph's performance was geographically consistent and as Bahr comments, this was an important organizing principle used by

Joseph to memorize and later recite the songs. Two directional principles seemed to apply in the performance. First, the overall structure of the Oriole series follows the path of the sun and moon through their journey (across the sky above [east to west] and fire below [west-east]), without which no song series would be complete.[5] Second, the journey itself is subdivided into two separate axes of travel or orientation. The first is the Mythological Prelude, which follows a circuitous route encompassing areas north to south and back again, describing a ceremonial counter-clockwise cycle along an ethereal path clearly referencing the O'odham story of creation (see for example Bahr, Smith, Smith Allison, and Hayden 1994; Lloyd 1911).

In this first thematic segment, the path proceeds as follows (Figure 2):

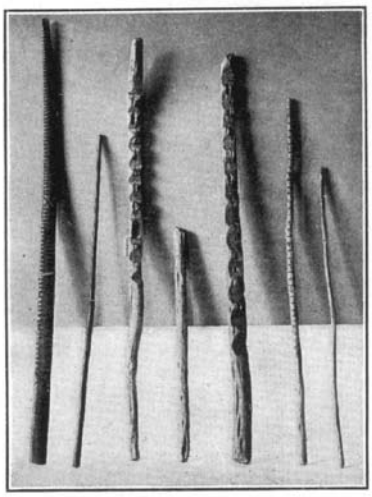
Song 2	Casa Grande Ruin – Where the sun is newly made.
Song 3	East Shining Great House – As seen from Casa Grande Ruin.
Song 4	Witch's Making Place or Witch's Bed
Song 5	Children's Burial (Santa Rosa)
Song 6	Red Rock Hill
Song 7	Chief's Great House
Song 8	Chief's Great House (referencing Feeler Mountain also known as Newman Peak)

The second segment begins with Song 9 and shifts the axis of movement from north-south to east-west outlining the first half of a similar counter-clockwise course connecting various iconic mountains and springs (Figure 2):

Song 9	Black Water Lake (in the Gila River Indian Community)
Song 10	White Pinched Mountain (Gray Hill as seen from there)
Song 11	Zig-zag Mountain
Song 12	Crooked Red Mountain (identified by Bahr as Red Bent Mountain)
Song 13	Long Gray Mountain (Santan Mountains)
Song 14-15	Remainder Bent Mountain (Superstition Mountains)
Song 16	Iron Mountain (Piestewa Peak)
Song 17	Thin Mountain
Song 18	Greasy Mountain (South Mountain)
Song 19-20	Broad Mountain (Estrella Mountains)
Song 21	Aguacaliente Hot Springs
Song 22	Spongy Water (Gulf of California, Salt Flats)

[5] Vincent Joseph's performance of the Oriole Songs appears to lack the portion of the journey from west to east completing the cycle of the sun and moon, specifically the path of the sun through the underworld.

b TCO'KŬT NAK, HOLDING A CALENDAR STICK



a *b* *c* *d* *e* *f* *g*

FIG. 81. Scraping sticks.

Figure 3: Owl Ear (Tco'kut Nak) holding a calendar stick and scraping sticks used in song performsance (Russell 1975[1908]: Plate IIb [left], 167-Fig. 81 [right]).

The relationship between the first two thematic segments is interesting. The mythical prelude establishes the landscape or context of the subsequent journey and situates the traveler (and the singers) in the world of named places, which were the homes of significant medicine men or spiritual leaders. This orients the listeners to the objective of the journey and the song performance. The second thematic segment begins at a logical starting point, Black Water Lake, a spiritual place of emergence located in the east end of the Gila River reservation not far from the home of the singer, Vincent Joseph. Once the journey is complete, the remaining segments of the series provide other thematic elements not related to the journey. Song 33 describes the death of the Sun at sunset, and establishes a moment of finality in the Oriole song-journey. The series concludes with Song 46:

> And now we stop singing and scatter.
> Here on our seats our poor scraping sticks lie,
> With song-marks marked where they lie.
> [Bahr et al 1997:143]

Bahr and colleagues interpret "song-marks" (*o'ohon*) as drawings, inscriptions, writings, or even petroglyphs. This observation appeals to an argument that cross-domain mappings occur at the point where infrastructural elements depicted in songs may be identified along trails, and further explains, in part, the co-occurrence of trails and rock art on the ground. However, the concluding song also denotes a self-conscious recognition that the landmarks and actions depicted have a physical and sequential reality. Bahr's remarks concerning *o'ohon* also are compelling since "scraping sticks"

resemble the well-known Piman calendar sticks (Figure 3).[6] Whether rasps, calendar sticks, or petroglyphs, the final Oriole song in this particular series clearly memorializes the spiritual journey that has just taken place.[7]

Additional segments of the Oriole song series, as many as 30 or more songs, were either left out or unknown in Vincent Joseph's rendition (Bahr et al 1997). This may include, as my own discussions with one O'odham elder suggest, thematic segments that chart the path of the sun from west to east through the underworld (fire below). Oriole song performance also varies among singers based on where they live and how they learned the songs. This may present an obstacle among singing groups composed of performers from different reservations or backgrounds.

Processual Aspects of Trails

While the song performance of Vincent Joseph offers one version of the Oriole songs and therefore a single consistent song itinerary, archaeological reconstruction of the journey in the field is challenging since there are numerous possible trails or routes available, which could link the landmarks identified in the series. In the remainder of this paper, trail segments recorded during recent archaeological survey are related to elements of the Oriole songs enumerated above. During the recording process, the following general principles were maintained concerning trails in the arid deserts of the American Southwest.

First, trails are the product of human beings repeatedly traveling across preexisting game trails, natural corridors between resource areas (such as water sources), or along purposefully constructed or established routes of travel. Many trails are created through repeated usage. Other trails are designed and constructed. In some instances trails exhibit characteristics of casual clearing of stones and debris by travelers and intentional engineering. Geographic and environmental considerations also determine the location, appearance, and duration of trails.

Second, trails serve as a guide or facility for structuring the movement of people, baggage, and livestock from one location to another. As such they record the movement of individuals across geographic space. Gorenflo and Bell (1991) observe that the analysis of trail systems is tied to studies of *space* (rather than place) and how sociocultural systems use it. Continuous space allows for straight line connections between fixed locations or settlements. However, in the real world, space is discrete. Movement is constrained by physical features, social factors, or other elements in the landscape. It also implies choices regarding the route to be traveled and the purpose of the trip. As a result, networks of roads or trails determine (or exhibit) the ways in which energy and information flow between settlements.

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[6] O'odham musical rasps can be decorated with flowers or other decorations, emblematic of the spiritual qualities of the songs that become part of the rasp as they are played. "Song marks" or *o'ohon* in this case may be translated alternately as "song flowers" (consultant communication, 2005).

[7] Many highway songs now considered "Americana" memorialize railway stops and stations or the cities and towns strong along Route 66 in a similar if not more nostalgic manner.

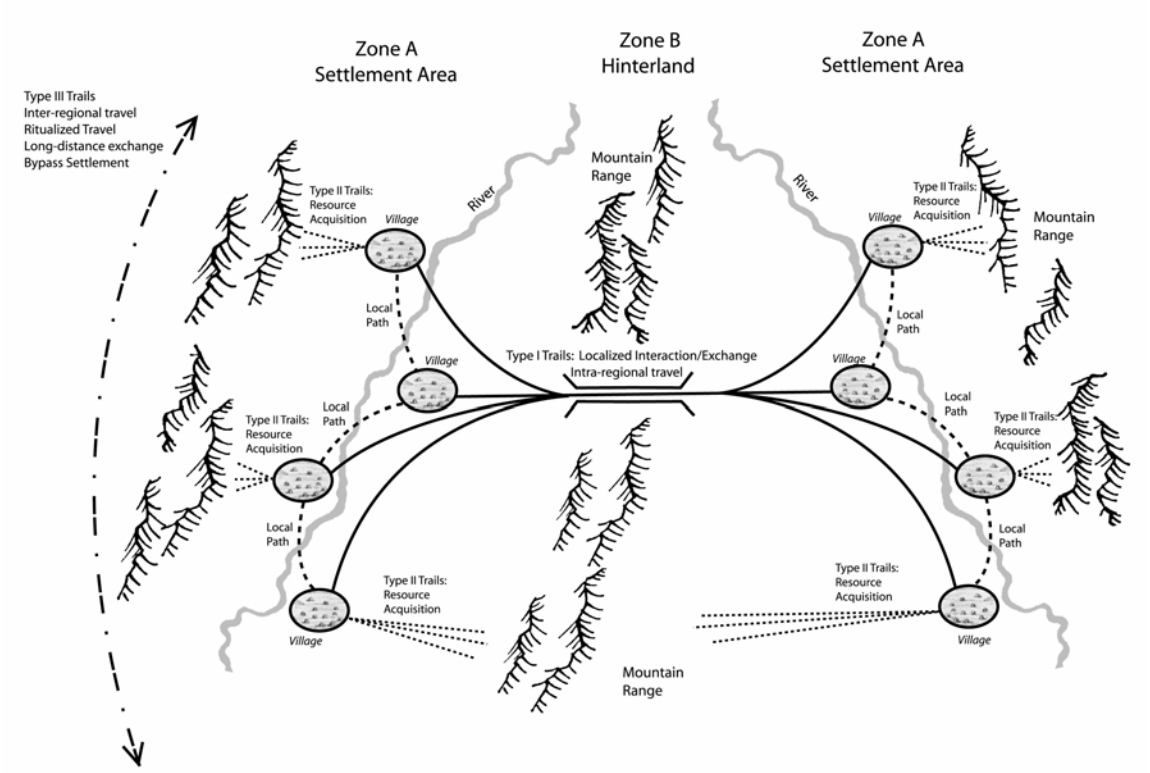

Figure 4: Trail networks often cross-cut drainage systems dividing the landscape into settled zones (Zone A) and hinterlands (Zone B). Type I may serve in intra-regional travel between major drainages, whereas Type II trails are of limited duration and for local resource acquisition.

Third, physical or geographic space has both etic and emic properties; in the same way that Lefebvre (1991) describes social space as having a reality, which is both abstract and sensory (measurable). Travel for Southwestern Native American societies, prior to the latter stages of contact, was travel without maps, or at least not the written or printed kind. Cognitive mapping was situated within the same mental process that determined the appropriate ordering of song series and the retelling of myths replete with geographic references. Experience of travel and the qualities of place were cognized and reinforced in the repeated performance of songs and the telling of stories. As a result, one who knows the songs, may be viewed as someone who knows where they are going and more importantly, of the dangers along the way.

Finally, preliminary analysis of trails in the Arid Southwest reveals that many routes of travel cross-cut major drainage systems rather than paralleling river courses or streams (Figure 4; Darling and Eiselt 2003). Movement along trails between zones of settlement and relative security (Zone A) to dangerous mountains/spiritual domains (Zone B), where loss of life and possessions is coupled with spiritual empowerment, is typical of cross-country travel in the desert Southwest. Higher amounts of artifacts on the trail, especially broken pottery jars, as well as shrines, rock art, and other features attest to the dangers of travel in Zone B where treacherous, steep terrain offer numerous threats to life and property.

Becker and Altschul (2003:33-38) review a number of themes which outline certain processural aspects of trails research. These include settlement pattern and trail use, trade, territorial boundaries, and trail systems. Each of these themes considers the ways in which economic, sociopolitical, and religious behavior may relate to the structure and use of trail systems over time. The most basic fact underlying all of these behaviors is that mobility or travel is not random. Repeated actions in the social and natural landscape produce trails, which remain visible on stable desert ground surfaces. Trail networks evolve in tandem with other aspects of a society's infrastructure or the ways that information, material culture, and people circulate and interact.

Oriole Song Archaeology

As previously discussed, the Oriole Song series is divided into two sections, each represented by an axis of travel. In the Mythological Prelude, the geographic location expressed in each song revolves around events in ancient time, which appear in the O'odham creation story. Each of the locations can be tied to a specific archaeological site, intaglio, or shrine and appeals to the general belief in O'odham origins south of the modern day Gila River Indian Reservation.[8] As for the westward journey, the Oriole Song series can be traced along archaeological trails as it proceeds from the Gila River Indian Community to the Gulf of California, an approximate distance of 460 km (286 miles).

Trails in the Santan Mountains

The westward journey actually begins by heading north starting at Blackwater Lake (Song 9) and in subsequent songs (Song 10-13), the series describes several mountains in the Santan Range located on the northern border of the reservation. The mountains including White Pinched (*To-hai-we-ñi-w-li-ke*), Zigzag Connected (*Ju-ñula-ñi-ñi-ka*), Red Bent [Crooked Red] (*We-gyu-na-ko-na-ke*), and Long Gray (*Ce-wesi-ko-mani*) are each mentioned in terms of their qualities or as places where songs may be learned (Bahr et al 1997: 121-122, 150-151).[9]

While this range remains to be surveyed systematically, several trails have been successfully identified. Interestingly, with respect to the Oriole songs, these trails follow a course leading to the next destination described in Song 14, or Remainder Bent (*Wi ka me na ko na ke*), also known as the Superstition Mountains. The Superstition

[8] For the sake of space each of these sites is not enumerated here and instead I turn to the trails of the journey westward.

[9] Bahr is unsure as to the location of these mountains although Lloyd Paul was able to point all of these out to him from his house located in Sacaton Flats on the Gila River Indian Reservation (Bahr et al. 1997:120-121). The toponyms provided in the songs are very familiar to native O'odham speakers from Gila River today.

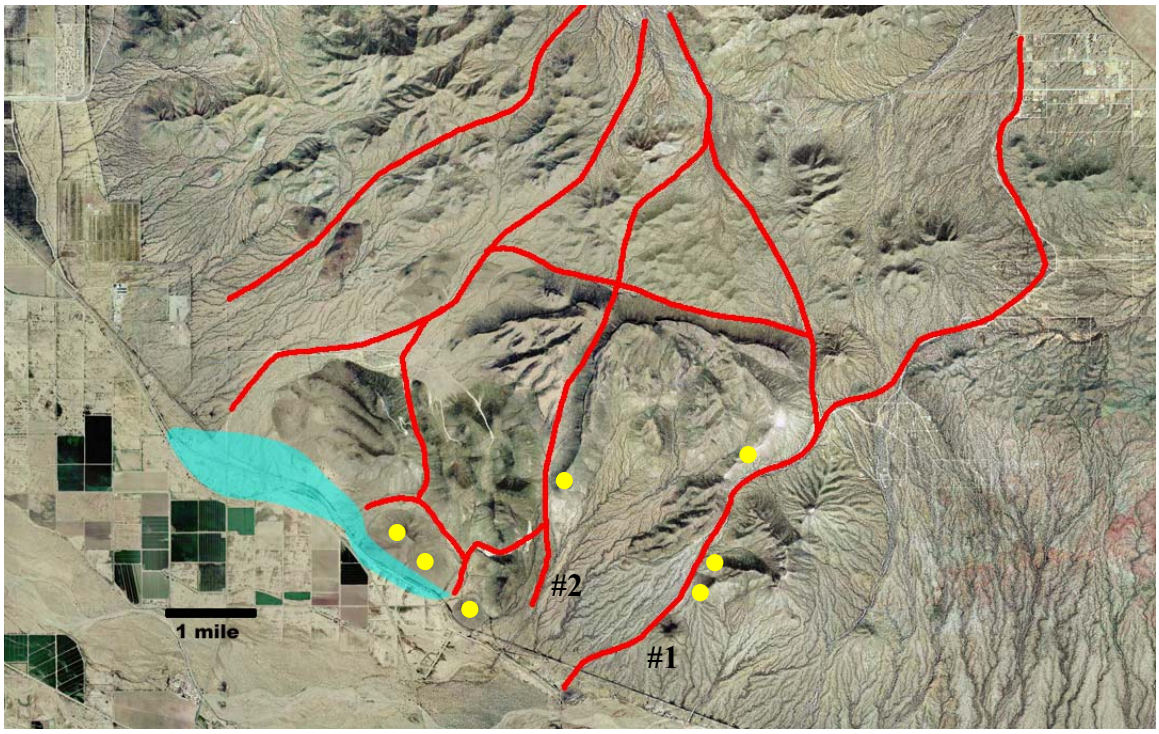

Figure 5: Trails in the Santan Mountains. Trail #1 and #2 pass frequent rock art panels and are flanked by numerous lookouts shown as yellow circles. The area marked in blue represents the Santan historic and prehistoric habitation zone situated north of the Gila River floodplain. Blackwater Lake is located on the south bank of the river.

Mountains can be easily seen from the Santan trails and offer a clear point of orientation while traveling.

The Santan trails also exhibit associated rock art and lookouts as they pass through the range along deep canyons and passes (Figure 5). One trail (Santan Trail #1) evolved into a wagon road and ultimately was used by motorized traffic. Santan Trail #2 traverses a much narrower canyon and saw foot traffic and perhaps horses and livestock. Each of these trails exhibit clear ceramic evidence of continuity with earlier prehistoric, Hohokam usage (AD 950-1450). Intact trails are normally 30- 50cm in width and vary in expression depending on their location. Where they cross desert pavement, a clear track or multiple parallel tracks are often visible. As the trail rises into the Santan Mountains or that portion known as the Malpais Hills, the trail can become deeply incised with evidence of purposeful stacking and removal of rock in order to clear a foot path (Figure 6). Artifacts, mostly ceramic jar fragments, often in the form of potdrops, offer further confirmation of the validity of the trail and also the increased risk of loss as the traveler climbs higher into the mountain passes.

The Santans are unusual in the quantity of lookouts. Although these have not been systematically studied or documented, the Santan Mountains served both to defend the Pima villages from 19th century Apache raids, while simultaneously providing cover

Figure 6: Lookouts overlooking Santan in the Gila River Valley as depicted by Mallery 1881 and seen in the field (upper right). A view of Santan Trail #2 looking south is presented in the lower right.

for potential attackers (Figure 6). Numerous lookouts some consisting of dry-laid circular or defensive walls overlook the main trails leading through passes in the Santans from flanking ridgetops. These same trails also provided a route for punitive counter-raids by O'odham warriors seeking revenge against the Apache. In either case, the lookouts served to keep the settled villages on the Gila River informed of the coming and going of war parties. As depicted in Mallery (1881:Figure 339, 538) lookouts above the Santan Mountain Trails were also used as signal posts using columns of smoke to communicate the relative success of O'odham expeditions into Apache country to the northwest.

The Komatke-Oyadoibuic Trail

The Oriole Song itinerary proceeds through a series of mountainous destinations as it leaves the Santans and continues on to the Superstitions, then heading west to Iron Mountain (*Vainom Doag*), Thin Mountain, and finally to South Mountain (Greasy Mountain or *Moahdug*). Archaeological evidence of a major westward trail(s) picks up again at Song 18 (Bahr et al: 1992:123-124). Here, several trails intersect at the southern terminal ridges of *Moahdug*. Some trails lead into the mountain to access upland resources, while others lead to shrines, including those dedicated to elder brother (*Se'ehe*) who keeps his home at South Mountain. As the Oriole Song dictates, from South Mountain the trail proceeds across the Gila River Valley to a location opposite, where

rock art and ground figures (geoglyphs) are present, Visible trails head west through a pass in the Estrella Mountains (Broad Mountain, Song 19-20).

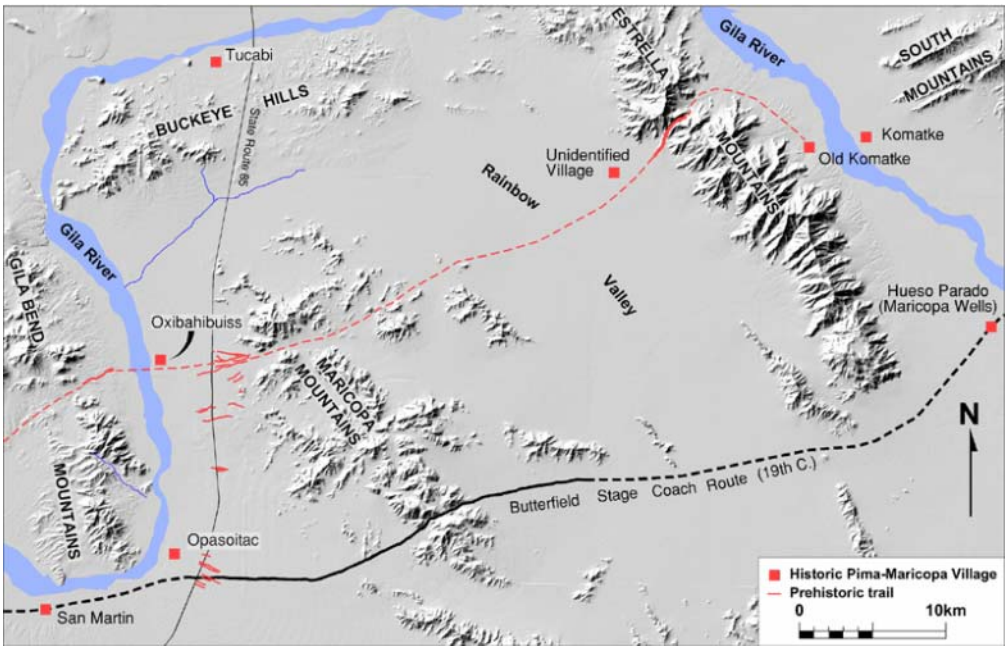

Figure 7: The Komatke-Oyadoibuic Trail showing trail segments identified in passes in the Estrella Moutains, the Maricopa Mountains, and the Gila Bend Mountains.

From the eastern side of the Estrella Mountains, across a high pass and for a distance of 36 km. archaeological evidence of a major trail to the west can be seen in segments as it passes across the Rainbow Valley and through a pass in the North Maricopa Mountains, effectively crosscutting the large S-curve in the Gila River, which ends at Gila Bend (Figure 7). This portion of the trail identified here as the *Komatke-Oyadoibuic Trail*, was described by Fr. Eusebio Francisco Kino, who traveled it once from west to east in the winter of 1699. Undoubtedly it was a more significant route of travel for prehistoric and historic Native Americans.[10]

Field identification of portions of the trail in passes in the Estrella Mountains, the Maricopa Mountains, and the Gila Bend Mountains provides sufficient evidence that this route extended from the central Hohokam region dominated by such archaeological sites as Snaketown to its western periphery. During the Historic Period, the trail communicated between Yuman (Patayan) areas along the river inhabited by the Cocamaricopa, the Opa (including Pima and Opa living in mixed villages in the Gila

[10] Ironically, the actual location of the route followed by Kino and his companions on March 1st and 2nd, 1699, was later misidentified by historians and archaeologists; first by Bolton in Kino (1948 [1919]), and subsequently by Karns (1954), Schroeder (1961) and Burrus (1971).

Bend), the Maricopa, and the Pima (Ezell 1963). Unusual preservation of the trails west of the Maricopa Mountains reveals extensive branching as the main Komatke Trail split into numerous smaller trails accessing villages scattered along the length of the valley north of Gila Bend. Rock art and several shrines include one distinctive travel shrine

Figure 8: Bifurcating trails lead out of a pass in the Maricopa Mountains, an intact shell artifact dropped along a trail in the same areas, and a large trail shrine near the crest of a pass in the Estrella Mountains.

consisting of a tall natural rock column and numerous ceramic offerings at its base (Figure 8). Visible trails are approximately 30-50 cm in width where they cross desert pavement accompanied by linear artifact scatters consisting mostly of isolated sherds and ceramic potdrops (Figure 8). Where the *Komatke-Oyadoibuic* trail enters into the valley of the Gila Bend, shell artifacts including one unmodified *Glycimeris sp.* shell indicate prehistoric movement of shell trade goods and people from the Gulf of California to the middle Gila drainage along this major trail. It also anticipates the final portion of the journey to the west as depicted in the Oriole Songs.

From Gila Bend to the Gulf of California

In the first part of the song journey, 153 km. or twenty songs were necessary for the song series to travel from Blackwater (on the Gila River reservation) to the Estrella Mountains. However, in the space of two songs (Song 21-22), the traveler is carried by the Oriole series first to the Aguacaliente hotsprings and finally to the salt gathering flats on the coast of the Gulf of California. While a logical continuation of the *Komatke-*

Oyadoibuic trail passes through the Gila Bend mountains to Agua Caliente, a variety of other possible routes may have followed the Gila River Valley (Figure 9; Hayden 1967).

Unlike the earlier portions of the journey westward, this portion of the trip resembles the spiritual travel of the Mythical Prelude, proportionally the distances traveled in the final songs are equally expansive as those at the beginning of the Oriole series. Several scholars have described in detail the O'odham ritual journey to gather salt

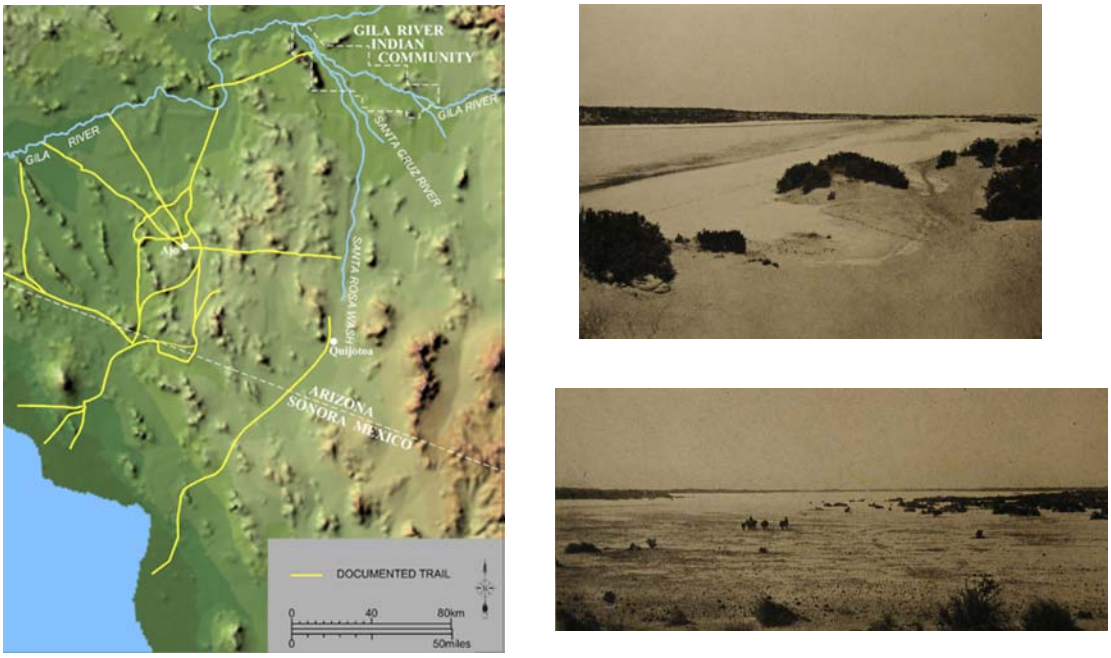

Figure 9: Trails to the salt gathering areas (after Hayden 1967) and images of the salt flats from Lumholtz (1912). Trails originating from the Gila River west of the Gila Bend are feasible routes from the Aguacaliente Hot Springs area.

(Lumholtz 1912; Rea 1997; Underhill 1946) and in relative scale it certainly ranks with the spiritual qualities of creation described in the Mythical Prelude. Along the northern beaches of the Gulf of California the high tides leave salt deposits in a largely uninhabited and waterless landscape. The Tohono O'odham, and formerly the Akimel O'odham, make pilgrimages to the salt beds usually in summer following trails across the desert that connect the few hidden natural tanks holding rain water.

Salt pilgrimages were significant religious events. They were made by young men and experienced male leaders. Salt journeys presented some of the same hardships and dangers as going to war, with many opportunities for dreaming and acquiring spiritual power. Once a man volunteered for his first salt journey, he was committed to three additional trips in successive years. At the end of each trip he was purified as if returning from war.

O'odham communities utilized different salt flats. From the Tohono O'odham Nation (Papago Indian), one trail took a total of four days, leading west through Ajo and then southwest to the Sierra Pinacate (Black Mountain) and on to the coast. The shorter route, only took two and a half days, and ran to the south from Quijotoa to El Nariz, Quitovac, the Chujubabi Mountains, and finally the salt flats (Underhill 1946). Interestingly, the journey described by the Oriole song cycle describes a route that is uniquely tied to the Gila River Indian Community or the Akimel O'odham (Pima). This suggests that the northernmost O'odham living along the Gila River may have undertaken their own version of the Salt Journey, which included travel to the hotsprings in Aguacaliente prior to the journey to the salt flats. It also suggests that the social space generated through the performance of the songs is different from that of the Tohono O'odham version of the Oriole series. However, the spiritual accomplishment of those who undertake the journey, whether Pima or Papago, is similar.

Discussion

In the preceding analysis, it was proposed that cognitive maps of geographical space are generated by cross-domain mappings of experience and representation through traditional and repeated O'odham song practice. I further suggest that much of Native American infrastructure is based on the corpus of traditional knowledge that relates ideas and facilities in order to allow societies to function. The regular performance or retelling of songs and myths served more than just to educate a larger populace about the geographical configuration of places and things. They also generated a shared sense of infrastructure and social space. Networks of trails are the product of a functioning infrastructure which relates social space to landscape. These trails, in turn, can be related to *places* including rock art and shrine sites along trails in the larger environmental backdrop or landscape.

As one begins to recognize the thousands of kilometers of trails that once existed in the prehistoric and historic arid southwest, it becomes apparent that numerous possible routes of travel once existed that would link as many or more places. Social or cognitive maps define particular routes of travel depending on the desired outcome of the journey. In the case of the Oriole songs, spiritual enrichment requires that the journey proceed through several ideologically significant locations culminating in the journey to the salt flats.

Other social spaces may be suggested by journeys to collect resources or to prosecute a war. Such journeys may not be memorialized in song series like the Oriole songs. However, it is interesting that the journey and the social space defined by the places enumerated in the Oriole songs date back to earlier Hohokam occupations. Trails, rock art, shrines and linear artifact scatters offer tangible evidence that physical journeys between the locations enumerated in song were routinely undertaken and for more than a thousand years prior to Vincent Joseph's recording of the Oriole songs. This allows us to consider that the Hohokam, who also occupied the Middle Gila Valley, undertook similar spiritual journeys. By reconstructing this particular route of travel, one suspects that

similar spiritual and social spaces existed prehistorically as well and perhaps were reconfigured as preexisting infrastructures were adopted and modified by succeeding populations.

Conclusion

I have attempted to relate theoretical concepts of space, landscape, and infrastructure as a means for analyzing geographical referents and itinerary contained in O'odham Oriole songs. In particular, I wished to identify the ways in which repeated song performances generate shared cognitive mappings or a sense of spatial geography among the listeners. It is extremely helpful for O'odham singers today to a have a well developed sense of space and Pima geography. Listeners also benefit through the repeated association of certain songs with places arranged along trails. As a result, the organization and relevance of certain archaeological trail networks is made possible through the reconstruction of the social spaces or arrangement of places and their connections as defined by song performance and infrastructure.

Numerous examples exist cross-culturally in which songs and song performances outline complex geographical itineraries. Further analysis of O'odham song cycles or song practices from other cultures may reveal the ways in which geographic information was communicated through performance. This information, in turn, served to generate certain kinds of social spaces associated with particular activities or functions while orienting travelers in a complex cultural landscape. Such studies may prove useful in the future reconstruction of cognitive geographies or social spaces and their relationship to places and trails observed in the archaeological record.

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