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Exploring conservation strategies for ancestral puebloan sites

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Exploring conservation strategies for ancestral puebloan sites

Abstract

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ARTICLE

Exploring conservation strategies for ancestral puebloan sites Tsankawi, Bandelier National Monument, New Mexico

FRANK MATERO

ABSTRACT

In the American Southwest, indigenous pueblo cultures are a vital part of the region's contemporary mosaic of ethnic diversity. This is especially evident through their long-standing relationship to the land and landscape as reflected in the continuity of place for all pueblo communities and the countless number of ancestral sites that figure prominently in contemporary beliefs and practices. Recently many such sites have gained federal recognition and legal protection as archaeological and traditional cultural sites, yet stabilization, protection, use and interpretation of these sites according to existing theories and models of conservation have proven to be difficult. Based on the recognition that such places remain critical to the continuing identity of Native peoples and that many of these sites are simultaneously visited and enjoyed by the public, their preservation and respectful management have become a relevant, timely and sometimes controversial issue.

Beginning in 1997 the University of Pennsylvania, the National Park Service and San Ildefonso Pueblo inaugurated an integrated research and training programme focused on the conservation and management of Tsankawi (New Mexico), an ancestral puebloan mesa site of great cultural and archaeological significance. The project afforded a critical examination of the theoretical and ethical issues surrounding the preservation and management of ancestral archaeological sites and the technical methods required for their stabilization and interpretation as cultural landscapes. Professionals, students and pueblo affiliates engaged in documentation, condition survey and preservation treatments of the ancient tuff rock trails and pueblo structures. From this effort, a strategic conservation plan was developed and its initial implementation explored through an annual training programme involving pueblo and university interns as well as professional archaeologists and cultural resource managers.

THE PARADOX OF HERITAGE CONSERVATION

Over the past decade, *heritage* has come centre stage in the discourse on place, identity and ownership of the past [1]. This has been due in large part to the development of historic preservation, beginning in the 1970s, into a field many now consider to be among the most significant and influential of socio-cultural movements to affect American public life and the built environment. While most preservation activ-

ity in the USA has traditionally focused on specific sites associated with specific histories and selected pasts, this approach has tended to isolate places from their contemporary physical and social context, often ignoring the continuing significance that such structures and landscapes hold for many communities in defining and preserving everyday life and values in all their diverse forms and expressions.

The stabilizing effect objects and places have by connecting us to a personal and collective past is

well known across both time and space. The issue has become particularly pronounced today where the long-term effects of rapid change and mobility have caused a certain anxiety and dislocation. According to Eco, Boyer and other post-modern critics, this discomfort has created a taste for the known, the familiar, the predictable, the expected and the repeatable, rather than the unexpected, the innovative and the original [2]. In a rapidly changing environment, the past affords a comfortable and controllable context as expressed in the widespread popularity of historicized design ('post-modernism'), historical theme parks and urban developments, reconstructions and a romanticizing about tradition and so-called traditional peoples and traditional living. This has led to a proliferation of historicized places as contrived stage sets for contemporary leisure activities that often fragment and disconnect the past from the present. Such forms of preservation are best described as nostalgic as they are driven by a longing to experience traces of an authentic, supposedly more fulfilling past and a desire to repossess and re-experience something untouched by the present. As McCannell has observed, for moderns, reality and authenticity are thought to be elsewhere: in other historical periods and other cultures, in purer simpler lifestyles and in a concern for nature [3]. While academic interests and professional activities often bring such environments into focus, they are justified and sustained by public taste, tourism and economic development opportunities.

Tourism, itself the product of the modern world and the creation of leisure time, is largely about entertainment and wish-fulfilment. Sightseeing and tourism are often validated as activities devoted to making connections through the visitation of historical places and contexts and especially through traditional experiences. However, critics of tourism have equated the desire to be a tourist with the essential condition of being modern as '... both seek to empower modern culture and its consequence by neutralizing everything that might destroy it from within – a celebration of distance, difference and differentiation' [4]. Accordingly, as MacCannell has warned, 'every effort to present [the past and nature] authentically contributes to the opposite tendency – the present is made more unified against its past, more in control of nature,

less a product of history ... staged otherness and differentiation' [5]. As a result, heritage tourism has often had the opposite effect of reinforcing difference rather than similarities or continuity. According to Boyer, 'to historicize is to estrange, to make different, so that a gap continually widens between then and now, between an authentic and a simulated experience' [6].

Certainly the collective inheritance of culturally valued places and material works from the past deserve preservation and protection in ways that allow each of us to relate to them now and in the future. However, as Riley has commented, what we see and know is changing, and the experiences, roles and interpretation of such visual works are also changing [7]. With the escalating development and commodification of heritage in all its forms – as objects, places, people, events and even symbols – for recreational, economic and political purposes, a critical assessment of conservation in shaping the fate of such valued places becomes all the more critical.

Conservation as a concept and process has as its fundamental objective the protection of cultural heritage from loss and depletion. At different times and in different places this has been expressed and practiced through three basic constructs or modalities of *form*, *fabric* and *content*, the latter being the intangible beliefs and uses associated (originally and over time) with the material correlates of form and fabric. Implicit in all three constructs is the notion of maintaining contact with the past through the identification, transmission and protection of that which is considered culturally valuable in the present.

The basic means by which such cultural inheritance is retained and transmitted can occur either as tradition, the mechanism by which valued tangible and intangible aspects of culture are internally handed down within a given society over time, or as conservation, a self-conscious, critical act often viewed apart from tradition and based on an outside appreciation or valorization of the place or thing, often by cultural or temporal 'outsiders'. Although these definitions make for convenient dichotomies, both concepts are complex and not exclusive. For example, as central as tradition is to the concept of cultural identity, it is also dynamic, being manufactured and reformulated by each generation through

personal and collective interpretations of the past. These values are not fixed, but rather like tradition itself, they are reinvented and transformed with each generation. This recycling and reassigning of value through memory over time often results in a transformation of cultural form and meaning [8]. Only by recognizing the changing nature of tradition within the context of cultural identity can a community effectively and responsibly manage its present and future through interpretations of the past. Conservation, on the other hand, is a modern concept that sees the past as divorced from the present and existing self-consciously outside tradition [9].

With the development of international, though largely European-based principles and doctrinal charters, conservation practice has focused on the preservation of material remains and the effects of time on the physical fabric. In recent years, this approach has been challenged in its preference for the monumental and its neglect of the associated emic values and intangible qualities accompanying many traditional sites. Yet by viewing all history as continuous change, conservation can seek ways to make the past relevant through both critical distance and empathetic engagement.

CULTURALLY RELEVANT CONSERVATION

In response to these extreme positions, culturally relevant conservation has recently emerged as a broadly based method for the planning, treatment and care of valued living cultural sites and objects with an ideological objective of recognizing the unique cultural contexts that surround and shape such heritage [10]. Moreover, the concept serves a practical function through the preservation and promotion of culture history and ownership for identified stakeholders. In this form conservation, as both a means and an end, provides a dynamic vehicle by which individuals can explore, reinforce, interpret and share a historical and traditional past and present, through community membership or by invitation as outsiders, as well as through input as professional or non-professional affiliates. As such, conservation can and should facilitate a sustainable, long-term relationship with the natural and cultural resources of a place and its associated memories and life-ways. The wisdom of such an approach has been increasingly demonstrated

through special museum programmes for indigenous collections and their affiliated communities and international development centred on the conservation of cultural property in relation to the socio-economic realities and modern requirements of traditional communities.

With a growing awareness of cultural diversity and an increased appreciation of the importance of cultural heritage in reinforcing and celebrating that diversity, conservators and cultural resource managers have begun to consider new approaches toward the preservation and conservation of native or indigenous sites and traditional cultural properties. Such places constitute a living heritage, a cultural vehicle of enormous significance embodying the corporate values and beliefs of the traditional societies who made and continue to use them. For many indigenous societies, the concepts and concerns of conservation have sometimes been portrayed as antithetical to traditional beliefs and practices, especially concerning the importance of decay and renewal as necessary natural cyclic processes or the distinctions made between animate and inanimate, nature and culture. In countries such as Canada, the USA, New Zealand and Australia, museums with regional ethnographic collections as well as agencies responsible for ancestral and archaeological sites have had to face a re-evaluation of their mission, moving away from the presentation of material culture as dead or detached production to programmes that present living cultures through self-representation by those cultures [11].

Such cultural relativity asserts that since each culture has its own inherent integrity with unique values and practices, issues such as heritage and conservation must be contextualized. The role of value in the determination and preservation of cultural property has long been recognized universally; however who determines that value and how it plays out through 'appropriate' methods of use, presentation, intervention and ownership have become one of the major issues of our time [12].

This was no less relevant 100 years ago when the American ethnologist, Frank Hamilton Cushing recorded his experiences at Zuni pueblo in western New Mexico:

I urged them [the Zuni] to join me in cleaning out the old church, repairing the rents in its walls and

roof, and plastering once more its rain-streaked interior ... I asked them if they did not care for their *missa k'yakwi* or mission-house. 'Yea, verily,' they replied, with fervor. 'It was the sacred place of our fathers, even more sacred than were the things taken away there from.' I asked if they would not then in the memory of those fathers, restore its beauty. 'Nay,' they replied, 'we could not, alas! for it was the *missa*-house of our fathers who are dead, and dead is the *missa*-house! May the fathers be made to live again by the adding of meat to their bones? How, then, may the *missa*-house be made alive again by the adding of mud to its walls? Not long afterward there was a furious night storm of wind and rain. On the following morning, great seams appeared in the northern walls of the old building. I ... urged that since they would not repair the *missa*-house, it be torn down; for it might fall down some day and kill the women and children as they passed through the narrow alley it overshadowed ... Again I was told that ... it was the *missa*-house of their fathers! How, if they took it away, would the fathers know their own? It was well that the wind and rain wore it away, as time wasted away their fathers' bones ... [13].

Cushing's account demonstrates preservation's long-standing preoccupation with the physicality of things and places over their social and spiritual life. It also provides one of the earliest recorded examples of the complexities of Native American attitudes toward the treatment of sacred objects and ancestral places. In the development of contemporary preservation theory, certain tangible aspects of cultural property such as material, form and condition have long been used to gauge the *integrity* of the work [14]. Yet integrity can also be defined in other cultural traditions by non-tangible qualities such as process, spirit or attached history and stories in establishing the value and significance ascribed by any one group over time. Acknowledging contemporary indigenous peoples' views and beliefs about the fate of objects or places, and recognizing that there may not now, nor ever have been, consensus on these issues, introduces a new set of interests, concerns and beliefs outside the non-native and professional position [15]. In attempting to extend the physical life of culturally significant objects and sites, conservation,

through application of its own set of professional principles and practices, cannot avoid engaging in contemporary discourse in the definition, treatment, interpretation and uses of traditional cultural property, including input from cultural affiliates. Federal legislation and National Park Service policies require consultation with tribal authorities on issues of research, planning and management affecting such cultural property. Consultation can provide genuine culturally responsive intervention and management options that can sustain and encourage cultural continuity by investing in preservation actions that reinforce and promote the related social practices and beliefs associated with traditional places and people.

NATIVE PUEBLO CULTURE OF THE AMERICAN SOUTHWEST

In the American Southwest, indigenous pueblo cultures are a vital part of the region's contemporary mosaic of ethnic diversity. This is especially evident through their long-standing relationship with the land and landscape as reflected in the importance of place for most pueblo communities and the countless number of sacred ancestral sites that figure prominently in past and contemporary beliefs and practices. Recently, many such sites have gained federal recognition and legal protection as archaeological and traditional cultural landscapes through tribal participation in the federal government's Section 106 consultation process of the National Historic Preservation Act (NHPA) of 1966, the National Environmental Policy Act (NEPA) of 1969, the American Indian Religious Freedom Act (AIRFA) of 1978, the Archaeological Resources Protection Act (ARPA) of 1979, and site confidentiality guaranteed by Section 207 of the National Parks Omnibus Management Act of 1998 and Executive Order 13007 (1996). However, programmatic, culturally relevant conservation, use and interpretation of these sites have often proven more difficult. Based on the recognition that such places remain critical to the continuing identity of native peoples and that these sites are central to the cultural lives of many, their physical preservation and respectful management by governmental agencies have become a relevant, timely and sometimes controversial issue [16].

Native American pueblo communities and their ancestral sites define traditional cultural places. While past approaches by outsiders have viewed these places as separated in time and space, many pueblo communities instead have a characteristic sense of continuity between past and present, between veneration and use of the land, and a sense of identity and place in time as reflected by and through these sites, their natural features, artefacts and built remains, and associated stories [17]. Lack of available economic resources, forgotten traditional knowledge, tourism-based development and the infiltration of inappropriate government programmes from the outside have placed severe pressures on the historic resources, on traditional living and the continued transmission of traditional knowledge, especially to the community's younger generations.

THE TSANKAWI PROJECT

In 1997 following the completion of a renewed Resources Management Plan [18], Bandelier National Monument (New Mexico) invited the University of Pennsylvania to study cultural resource degradation at Tsankawi mesa [19]. Environmental (ecosystem) damage, deteriorating archaeological sites and uncoordinated and rapid development in and around the surrounding area all pose major threats to the cultural and natural resources of Tsankawi. Preliminary investigations of the deteriorating ancestral trails and cavates quickly evolved into a larger consideration of Tsankawi as a cultural and ethnographic landscape and the issues and potential conflicts in preservation and interpretation for the National Park Service, the unit's official steward since 1932, and San Ildefonso Pueblo, cultural heir to the site and region [20]. In this way the central issues of natural and cultural resource degradation, preservation, use and interpretation could be explored together and from different cultural perspectives in developing integrated approaches to the treatment and management of this important archaeological and ancestral site [21].

EDUCATION AND TRAINING

The issues encountered in archaeological sites that are traditional cultural properties and ethnographic

landscapes are multi-disciplinary in nature [22]. Accordingly, the emphasis of a collaborative programme is on developing mutually acceptable solutions with input from both professionals and stakeholders. The official policies of the National Park Service require the agency to consult with Native American and other traditional groups in park planning, management actions and research activities. The major focus of the Tsankawi preservation programme has addressed the theoretical and ethical issues and technical problems of ancient trail and ruins stabilization, graffiti mitigation, visitor access and site interpretation. Pueblo and non-Native participants explored the natural and cultural context of Tsankawi mesa including its environmental changes, archaeological and preservation histories, and past and current uses. They also surveyed cultural resource significance and condition to understand and develop intervention priorities that have addressed the problem through technical solutions and policy planning.

The objectives of the collaborative programme, now in its fifth year and focused on Frijoles Canyon, have been twofold. First, at a didactic level, it has sought to raise the awareness of the interdisciplinary and highly specialized nature of working in National Park Service-managed Native American ancestral and archaeological sites among professional conservators, planners, architects, environmental scientists, landscape architects, anthropologists and museum professionals. Each needs to understand the perspectives of the other as well as how best to integrate this knowledge with the contributions of all stakeholders. Second, the affiliated tribal communities have been directly involved during all phases of research, analysis and implementation. All have cooperated closely, both during the analytical, planning and implementation phases, to help develop solutions that respond fully to the inherent complexity of intervention, visitation, and tribal use and beliefs. Ultimately the aim has been to promote and reinforce an awareness about traditional values and uses while developing sound conservation solutions to the problems of resource degradation and disruptive visitor use among both professional managers and stakeholders.

At a practical level, the programme has addressed specific problems through site-specific field work. In so doing, it has offered assistance through

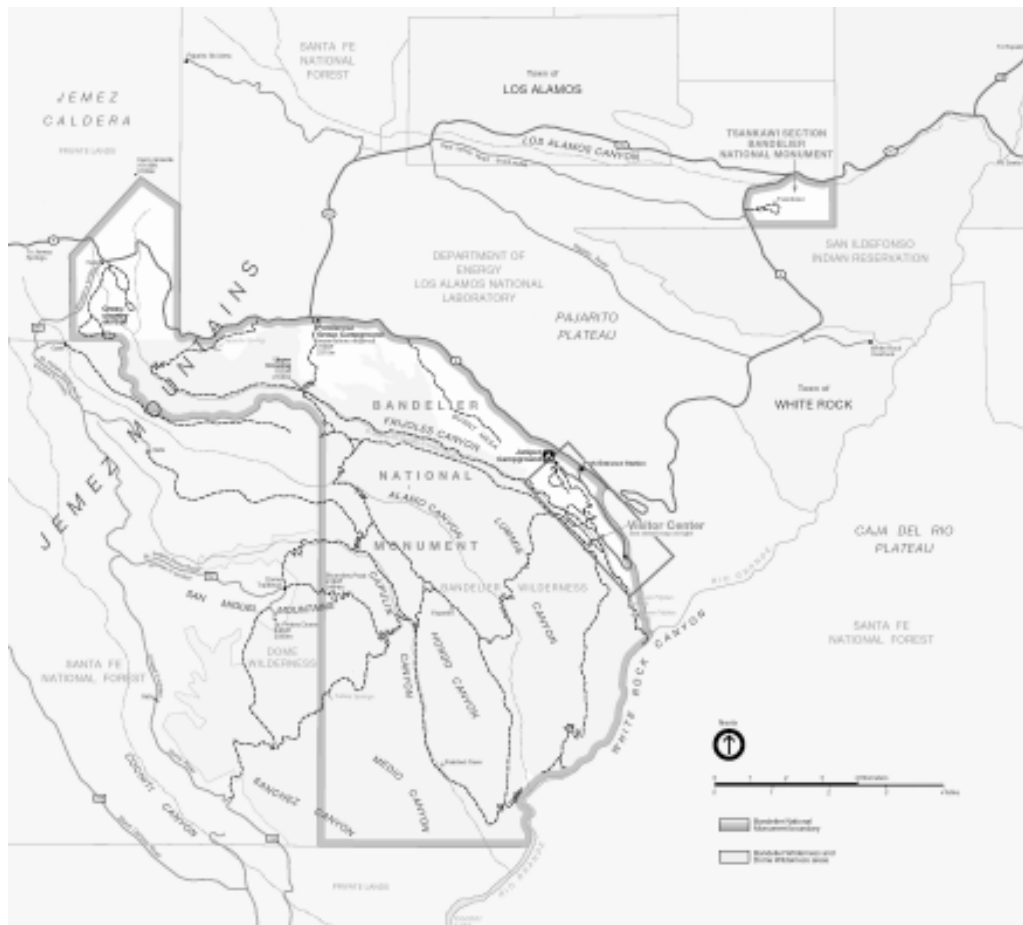


Figure 1. Bandelier National Monument. (<http://www.nps.gov/band/pphtml/maps/html>). Tsankawi mesa is located to the northeast of the main monument.

training to pueblo interns, conservation students and resource managers in their effort to identify, discuss and develop the strategies, practical actions and technical and culturally sensitive standards needed.

TSANKAWI AS ETHNOGRAPHIC LANDSCAPE

The Tsankawi unit of Bandelier National Monument is a detached parcel of land rising 6,600 feet above sea level and located twelve miles to the north of the Monument's main area in Frijoles Canyon (Fig. 1). The 790 acre unit is bordered on the north and west by Department of Energy (Los Alamos National Laboratory) property and on the south and east by San Ildefonso Pueblo tribal lands. The unit is filled with scattered cultural sites predominantly

of ancestral puebloan origin from 1150 to 1550 AD, but it is focused on Tsankawi mesa proper. The mesa, defined by Sandia Canyon on the south and Los Alamos Canyon on the north, is a complex landscape including approximately 300 cavates, an unexcavated mesa top pueblo and rock trails, the latter not literally constructed but created through centuries of wear (Fig. 2). The place name "Tsankawi" (*saekewikwaje onwikege*) is Tewa in origin and translates as 'pueblo ruin of (or above) the gap of the sharp round cactus' [23]. Even today, small clusters of prickly pear cactus continue to grow almost exclusively at the neck of the mesa giving entrance to the pueblo site.

Tsankawi mesa, whose prehistoric, historic and contemporary uses have profoundly imprinted the



Figure 2. Southern slope of Tsankawi mesa showing cavates and interconnecting trails.



Figure 4. Collapsed and trampled exposed tuff walls of the unexcavated mesa top pueblo.

land, displays the essence of an ethnographic landscape [24]. Within its boundaries are found the remains of an ancestral village, prehistoric trails, shrines and petroglyphs, as well as the plant, animal and mineral materials that constitute an important cultural resource for the people of the Pueblo of San Ildefonso. They consider Tsankawi as one of their former homes and the one most recently occupied before tribal members migrated to their current location along the Rio Grande. The place is also popular with organized tour groups and local residents because of its undeveloped nature, tranquility and extent of archaeological resources.

Despite 95 years of federal administration, Tsankawi has lacked a long-term preservation phi-

losophy or vision. Yet, because of very limited excavation and stabilization, its physical integrity and archaeological value are very high and quite vulnerable to unregulated visitation [25]. The primary physical threats to Tsankawi mesa include erosion of the rock trails by visitors and natural weathering (Fig. 3); exposure and collapse of the mesa top pueblo walls from official and unregulated trails, invasive vegetation and animal activity (Fig. 4); cavate damage from visitor abrasion, water and salt infiltration (Fig. 5); and vandalism and looting. In addition to cultural resource degradation, unrestricted visitation causes damage to fragile ecosystems and disturbs native religious practices at shrines and other unmarked sacred areas within the unit's boundaries.



Figure 3. Typical trail degradation characterized by increased depth, collapsed walls from root-induced cracking and parallel secondary trail formation with surface abrasion.

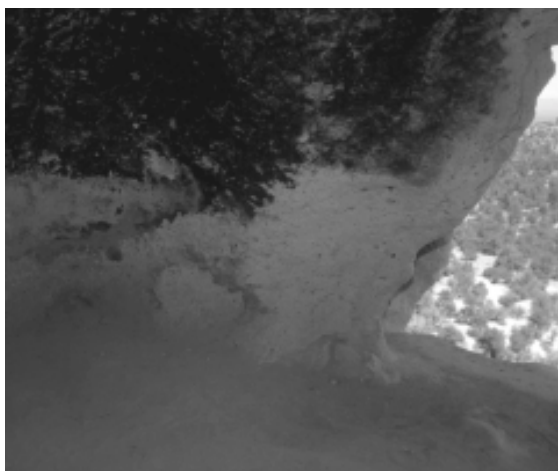


Figure 5. Cavate rock erosion and plaster loss.



(a)

EARLY HISTORY

Anthropologists Adolf Bandelier and Edgar Lee Hewett were the first to write about Tsankawi in the late 19th century [26]. However, widespread publicity of the site, and especially its prehistoric trails, followed from a popular article by photographer George Beam for *National Geographic Magazine* in 1909. With photographs and text, Beam described the ‘well defined path ... worn in places fully one foot deep in the solid rock ...’ and the crevice entrance to the mesa top [27]. Comparison of early photographs with the situation today clearly indicates significant erosion of the trails, most likely the result of increased visitation beginning after the opening of the site under the National Forest Service in 1916 (Fig. 6).

During the 1930s, archaeological sites throughout the Southwest saw increased attention in their documentation, excavation and preservation for public visitation. H.P. Mera surveyed Tsankawi’s pueblo in 1935 for the Laboratory of Anthropology



(b)

Figure 6. Crevice entrance to mesa top. Compare change in trail depth from c. 1890 (a), to 2000 before stabilization (b). Image (a) by Museum of New Mexico.

and later, in 1939, archaeologist Robert H. Lister mapped and stabilized 120 out of 181 cavates on the east facing group on the mesa’s southern slope for the National Park Service [28]. More recent surveys of the archaeological resources of the main unit of Bandelier and Tsankawi, in particular, include those by H. Wolcott Toll (1995) and R. Powers (1999) [29].

As early as 1899 Edgar Lee Hewett began his lifelong effort to protect the Pajarito Plateau as a national archaeological preserve. In 1916, his efforts were finally realized in the creation of Bandelier National Monument, which included Tsankawi mesa along with Frijoles canyon and Otowi mesa. Early on, the Tsankawi unit was recognized for its archaeological integrity and scenic potential and a number of development proposals were promoted from 1956 onwards with the intent of making the mesa more accessible to visitors and better protected and interpreted through excavation and reconstruction. Because the National Park Service did not execute any of these plans to develop Tsankawi, the mesa has remained a relatively pristine area free from site interpretation and ‘improvement’, unlike the more popular Frijoles Canyon.

In the 1990s the National Park Service recognized the importance of Tsankawi’s undeveloped status as an asset stating,

In this quiet unexcavated site it is easy to have a personal encounter with the cultural resources, maybe even sense the presence of the former

inhabitants. It is an aesthetic and emotional experience rather than an intellectual one [30].

However, since this recognition, the area has experienced a great increase in visitation owing to its scenic and perceived authentic character, creating conservation and management problems as a result of the rapid erosion of the prehistoric trails from foot traffic, disturbance from unrestricted access to culturally sensitive areas as well as to fragile ecosystems, and vandalism and artefact hunting.

THE CULTURAL CONTEXT

Archaeological and ethnographic evidence as well as oral history traditions tie Tsankawi to the Tewa-speaking pueblos (Tesuque, Santa Clara, San Juan, Pojoaque, Hano at Hopi and Nambe), and especially to that of nearby San Ildefonso. Today the pueblos of Cochiti, San Felipe, Santo Domingo, San Ildefonso and Zuni maintain contemporary associations with Bandelier National Monument; all acknowledge primary ancestral connections of Tsankawi to San Ildefonso Pueblo.

Tsankawi is perceived quite differently by the two groups most involved in its interpretation and use, the National Park Service and San Ildefonso Pueblo. As a National Park Service site, Tsankawi is subject to the management policies and strategies required by federal law, but it is also an ancestral site to San Ildefonso Pueblo. The resulting associations and perceptions of the place are indicative of these different worldviews. This became quite clear from the beginning of the project during a mapping exercise [31].

For the National Park Service, Tsankawi is a place of discrete spatial and temporal boundaries. Under this framework, Tsankawi exists as a defined unit containing archaeological and scenic features. Natural and cultural resources are viewed and managed as separate entities for their informational and recreational value. Tsankawi is viewed as a *site* and *resource*. In management parlance a site is bounded and finite, while a resource – whether cultural or natural – has tangible value through ownership and use.

For San Ildefonso Pueblo, Tsankawi is living heritage and a sacred place. The mesa top pueblo village, cavates, potsherds, petroglyphs and surrounding area retain, in whole, the spirit of those

who created them and continue as living entities forever after their creation. It is the land, the flora, fauna, the whole biosphere that forms the all-inclusive basis of traditional pueblo belief and worldview. Tsankawi is not and never was contained. Its inhabitants had an interactive relationship with the landscape during occupation, as do San Ildefonso Pueblo members today. The incredible views once witnessed by the ancestral pueblos still exist atop the mesa, the trails used to move across the land are still extant, vegetation traditionally used still grows there and the setting that is linked to Tewa cosmology still persists. Today, the spatial and management definitions imposed upon the site by the National Park Service add another layer to the traditional cultural landscape. New boundaries have been drawn representing new definitions of space, place and use based on ownership, protection and modern stewardship.

DETERMINING SIGNIFICANCE, ISSUES AND PRIORITIES

In 1999, a Tribal Consultation Committee comprised of members from the pueblos of Cochiti, San Felipe, San Ildefonso, Santa Clara, Santo Domingo and Zuni was formed to facilitate ongoing consultations on preservation and management of the Monument (excluding NAGPRA[AUQUERY9] issues) as required by federal law and NPS policies. Following on from informal discussions in 1998 during the initial site training conservation programme, the Tribal Consultation Committee met with Bandelier staff on three separate occasions in 1999 to share perspectives on the significance of the site and on critical preservation issues and alternative solutions [32]. This has initiated an active and confidential dialogue between the National Park Service and pueblo affiliates about use, visitation and interpretation policies as well as the application of culturally sensitive conservation treatments. As such, this dialogue has begun to change the way both partners perceive the issues, problems and possibilities of site conservation and management. Many recommendations of the Committee have been implemented (see below); some, such as transfer of Tsankawi to San Ildefonso Pueblo have not been, nor are discussed here, as they are outside the authority of the NPS and the scope of this study.



Figure 7. Trail and surface erosion from unrestricted access.

The trails and structures of Tsankawi are arguably the most extensive and visible archaeological features of the mesa. It is the trails, connecting the mesa top pueblo and cavates, which establish the overall circulation pattern across the landscape, experience the greatest visitor impact, and are therefore consequently most at risk. All three are inextricably tied together along the official route established on the mesa, and consequently the majority of the damage done by visitors is concentrated along this route.

Current management of the mesa as a 'discovery site' has also led directly to the degradation of the site as described above largely through uncontrolled access and unchecked erosional problems (Fig. 7). This pattern can be reversed or at least mitigated by first making policy decisions based on culturally and ecologically sensitive preservation strategies that refer to the combined cultural and natural landscape for guidance.

In order to better preserve and manage Tsankawi, a re-evaluation of visitor access and mitigation of the existing damage to natural and cultural resources on the mesa was first considered (Fig. 8). The primary intervention issues were divided into two categories: trail preservation issues and trail management issues. While it is understood that management is the best form of 'preventive conservation', trail condition has deteriorated in many areas so as to require significant physical interventions at this point to remedy the damage already done.

Existing trail conditions at Tsankawi compromised the physical and functional integrity of the mesa. Trail depths had eroded more than six feet

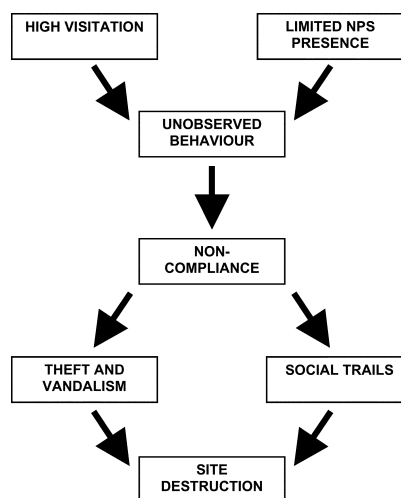
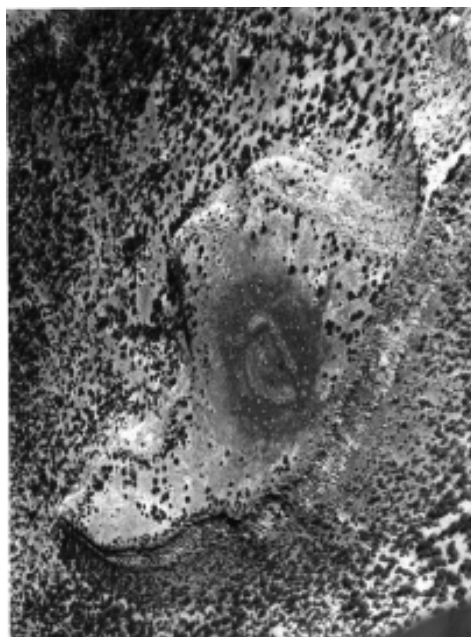


Figure 8. Visitor deterioration mechanisms.

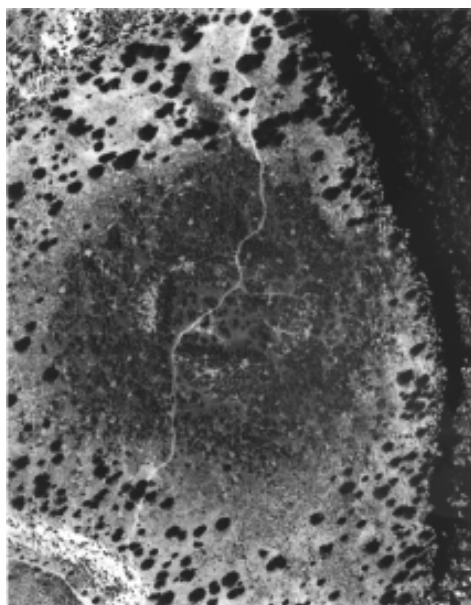
deep in some places and new routes and parallel trails had been created because of access difficulties. These changes altered the use patterns, hydrology and vegetation, changing the visual appearance of the mesa and, in some areas, exacerbating surface erosion. Furthermore, the new social trails covering the mesa, and especially the mesa top, promoted artefact hunting and disrupted current tribal uses of the area (Fig. 9).

The following measures were identified for immediate and long-term implementation. These have been divided into five general categories: management, official presence, signage, vegetation and trails. Management of the mesa should be converted from the historically based techniques of passive and minimal attention to a more active but not necessarily more intrusive method. While historical inattention has helped lead to the enormously effective visitor experience that currently exists on the mesa, it has also led to many of the problems that are destroying the site. Increased management must proceed in unison with participation of San Ildefonso Pueblo. Culturally the site belongs to them and their interpretation, advice, concerns and restrictions concerning Tsankawi should continue to be sought out.

Signage, as it is today, should be kept to a minimum in order to preserve the natural quality of the site through minimally intrusive interpretation. While signage is most effective near the subject of interpretation and the area of non-compliance (i.e.



(a)



(b)

Figure 9. Aerial view of the unexcavated mesa top pueblo in (a) 1929 (image by Charles Lindberg[AUQUERY10]) and (b) 1950s. Images (a) and (b) courtesy of Bandelier National Monument Archives. Note the later prominence of the disruptive primary and secondary (volunteer) trails through the centre of the site.

directing and restricting access), placing more information at the visitor centre or in site guides has been effective in interpretation and non-compliance deterrence. The pueblo sign on the mesa top, once visually intrusive, has been removed and relocated to the mesa top trail head. The original entrance sign designation as 'Tsankawi Ruins' has been replaced with 'Tsankawi Site' for the ancestral village 'that is neither forgotten nor abandoned' based on recommendations from pueblo participants at the 1998 workshop and the subsequent Tribal Consultation Committee meetings.

THE TRAIL SYSTEM

The ancient rock worn trails were the most complicated and difficult feature to assess as they are linked to all other issues on the mesa. In 1998–99 various preservation methods were studied and then implemented by NPS and pueblo interns in consultation with representatives from San Ildefonso Pueblo. Activities included trail coercion, trail relocation and trail erosion mitigation.

Trail coercion

Small steps to deter off-trail hiking and social trail formation have the potential of being extremely effective in reducing visitor non-compliance. Plantings and placement of slash pinyon and juniper were utilized to close off social trails, particularly on the mesa top (Fig. 10). This method is essentially invisible to visitors and introduced no new flora when local species such as saltbush and



Figure 10. Pinyon and juniper slash used as a visually and ecologically non-invasive barrier to control visitor access to protected areas.



(a)

apache plume were used. Other low-impact forms of reducing visitor access to dangerous and culturally sensitive areas on and off trails included closure of cavates using modified existing prehistoric masonry methods of opening reduction and sealing (Fig. 11). In these cases, walls could include infor-



(b)

Figure 11. Original cavate opening masonry (a) served as a closure prototype to restrict access to hazardous or culturally sensitive cavates at Tsankawi (b)

mation on the closure to sensitize non-native visitors to proper site etiquette.

Trail movement

Several areas of trail were moved because of their impact on the cultural and natural resources at Tsankawi (Fig. 12). Particularly so within the pueblo mound, the location of the official trail over walls severely damages their masonry and disturbs archaeological artefacts in the area. Trails were moved away from walls and out of the kivas, the latter out of respect for the special sacred character of those spaces. As a result of the particularly sensitive nature of the entire pueblo area, all trail movements here were discussed with San Ildefonso Pueblo as well as with the New Mexico State Historic Preser-

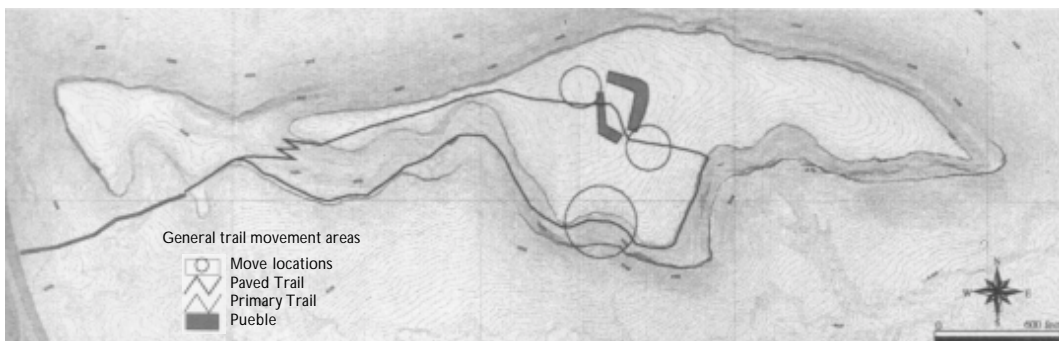


Figure 12. Map of proposed trail relocation and removal.

vation Office. Despite improved trail relocations outside the kivas, discussions between state, federal and pueblo representatives on the complete relocation of the trails outside the pueblo mound and the erection of a viewing platform continues.

The top of the mesa also contains a number of unidentified directional shrines that are spiritually significant to San Ildefonso Pueblo. Any re-routing of trails both inside and outside the pueblo must be sensitive to these areas to protect their confidentiality and exclusive use by tribal members.

TRAIL EROSION

Owing to the increased visitor foot traffic on the mesa, the tuff trails had become severely eroded and will continue to deteriorate. The resulting situation is dangerous to anyone who cannot negotiate the deep narrow trenches (Fig. 13). This promotes a general pattern of trail degradation, leaving a much transformed profile bearing little resemblance to original trail shapes.

Various options were entertained in an attempt to control the physical damage to the tuff trails. No intervention was not considered to be a serious option unless the site is closed to the public. Preservation of the existing trails through the creation of new trails alongside the present system would allow the same passage through the landscape but eventually create the same abrasion problems in new locations, causing major visual and physical disfigurement. Placing walkways above either all of the trails or the particularly deteriorated

sections would offer reversibility while effectively protecting the site. However, intrusion on the landscape would be severe and would seriously compromise the visual integrity of the site. Furthermore walkways would require high maintenance and would be difficult to design on uneven lengths of trail.

Chemical consolidation of the existing rock trails for continued use was also considered and an extensive laboratory treatment evaluation programme confirmed that ethyl silicate consolidants (Conservare OH Stone Strengthener®) significantly strengthened the tuff by improving its abrasion resistance by 470% [33]. Water absorption was also decreased by half, potentially improving the stone's salt and frost resistance. However, consolidant penetration was only approximately 1 inch deep, thus offering limited resistance of the consolidated surface to continued mechanical abrasion from visitor traffic and exposure of the softer core, which could lead to differential erosion in high abrasion areas. Moreover, the consolidant is toxic, difficult to apply, expensive and would require high maintenance. The use of synthetic chemical treatments was also felt by some pueblo members to be too invasive to the natural environment, including the rock and its natural aging processes, and therefore culturally inappropriate for consideration [34].

Filling the trails and reducing their depth with compacted local crushed rock was also identified and pursued as an easy and reversible solution that would allow continued use of the trail system and restore them to their earlier levels before modern



Figure 13. Trail damage from visitor use where excessive trail depth requires straddling over the top and sides.



Figure 14. Deeply eroded trail, after stabilization with compacted gravel and added rock retaining steps.

visitor impact (Fig. 14). This goal was consistent with official NPS site objectives and the Tribal Consultation Committee's recommendations. As an option, compatible trail fill allows continuing trail usage while protecting and preventing future trail abrasion. Following this logic, a series of aggregate and geofabric columns were constructed in the laboratory to measure water flow and fill displacement [35]. Next a facsimile cast of a typical eroded trail was constructed of perlite and gypsum and tested with the recommended fill. As a result of the testing programme, a fill method was applied to those trails in an advanced state of erosion as judged by trail profile and a depth of generally 12 inches or more. Fill material was a mixture of coarse graded crushed tuff, installed with and without a permeable geotextile liner (depending on depth) and in segments with tuff retaining blocks to reduce displace-

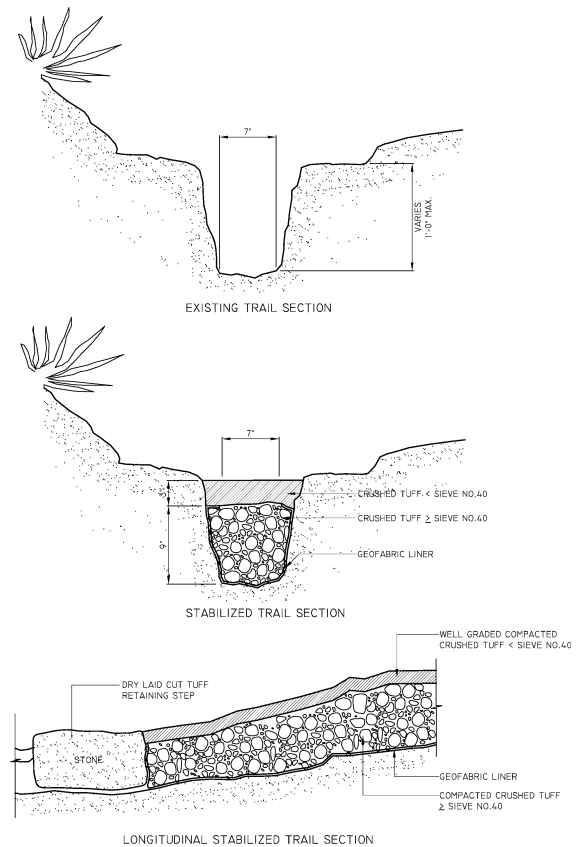


Figure 15. Typical existing and stabilized trail sections.

ment on steep inclines. Tuff steps were also added to assist visitors where the trail slope was too steep (Fig. 15).

Now after four years, field re-evaluation has proven the method to be effective, reducing abrasion to the existing trails while allowing visitors the experience of walking the ancient paths. The method is reversible and can be easily maintained. It is inexpensive, visually compatible with the landscape, allows and controls drainage, and is acceptable to tribal affiliates as well as visitors because of its low impact and use of natural local materials and labour. In addition to trail stabilization, the trailhead has been relocated to avoid the severe erosion resulting from visitor abrasion on the friable tuff and the NPS entrance paths of asphalt that were environmentally polluting, erosion-causing and unsightly, were replaced with stabilized site soil.

CONCLUSION

In summary, a programme focused on the conservation of archaeological and ancestral sites as living cultural heritage has afforded an innovative approach by encouraging multi-disciplinary involvement, fostering increased cultural sensitivity between Native and non-Native participants, and facilitating stakeholder participation with outside professional partners and the public. It has also provided an integrated vehicle for NPS and other heritage professionals and cultural affiliates to collaborate in an applied field context and, most importantly, to learn and experience other cultural viewpoints in the preservation and management of these cultural landscapes through the concepts and practices of conservation. As a direct result of the programme, several pueblo student participants subsequently chose to study architecture, anthropology, forestry and conservation and some have returned each summer to participate in the ongoing programme. Additionally, the existing consultation process between NPS and the affiliated pueblo communities has been greatly strengthened during the collaborative efforts through public meetings, social events, field work and group exercises such as map-making, language discussions and the identification of shared values and technical recommendations for the maintenance of the sites. Currently, this is being pursued at Frijoles Canyon where survey and treatment of visitor graffiti at the over 1000 cavates is underway with full support of the Monument's Tribal Consultation Committee. By pushing existing consultation protocols to engage in culturally sensitive physical interventions and management policies, pueblo communities, government agencies and professionals can begin to explore, reinforce, interpret and share concrete solutions to the different approaches to the preservation of ancestral archaeological sites.

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- 20 During the Tsankawi project, an ethnographic overview study was in preparation and subsequently produced. See Levine, F. and Merlan, T. Bandelier National Monument ethnographic literature search and consultation (1997) and Study of traditionally associated Native American communities ethnographic overview and assessment (2000). Reports prepared for Bandelier National Monument.
- 21 In this context, *to preserve* natural and cultural resources means to ensure to the extent practical that they continue to persist in distribution, amount and condition free of industrial-age human influence (as defined in National Park Service. *Environmental Assessment and Draft Plan Regarding the Management of the Tsankawi Unit, Bandelier National Monument* (2000) 8 [AUQUERY7](note 2)). This definition addresses concerns raised by the Tribal Consultation Committee on the meaning of *preservation* as applied to NPS policies of intervention at Tsankawi and other sites. According to the *Secretary of the Interior's Standards and Guidelines for Rehabilitation* preservation refers specifically to the means by which the existing form, integrity and materials of a work or place are maintained and deterioration is retarded. In this regard both definitions are consistent in supporting puebloan concerns regarding stopping or disrupting natural decay processes that characterize all matter. Conservation, in contrast, is used herein to mean the whole spectrum of technology applied to the safeguarding of cultural heritage.

- 22 Ethnographic landscapes are a form of cultural landscape that retain value and significance to a community that has been traditionally associated with that place. The most basic definition of cultural landscape denotes '... the interaction of people and place: a social group and its spaces, particularly the spaces to which the group belongs and from which its members derive some part of their shared identity and meaning'. Groth, P. and Bressi, T. (eds) *Understanding Ordinary Landscapes*. Yale University Press, New Haven CT/London (1997) 1. The National Park Service defines a cultural landscape as '... a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built'. National Park Service *Cultural Resource Management Guidelines, NPS-28*. Washington DC (1994).
- 23 A traditional cultural property 'refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historical property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices'. Parker, P.L. and King, T.F. Guidelines for evaluating and documenting traditional cultural properties. *National Register Bulletin* **38** (1994) 1.
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- 34 A series of meetings with tribal elders from San Ildefonso Pueblo on the use of various conservation measures to stabilize the trails revealed a general desire to avoid the use of synthetic materials or extreme methods deemed 'unnatural' in the overall preservation of the archaeological features. While initial discussions revolved around the general sentiments of 'no intervention', this eventually unfolded to reveal the subtleties of preference for interventions that respected the natural properties or 'essence' of the rock, the features and the place. Through active consultation that went beyond prescribed 'questions of permission', creative, mutually agreeable solutions were found that in the end focused the conservation interventions into more easily sustained, preventive options that slowed down rather than halted deterioration.
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- [AUQUERIES]
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