The Greater Chaco Landscape

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Conclusion
The Chaco Culture and the Chaco Landscape are under siege. They are being squeezed by developmental pressures that have caused great harm to the Chaco Landscape and tens of thousands of Chacoan cultural features that populate New Mexico’s San Juan Basin and parts of Utah, Colorado, Arizona, and western New Mexico. During my tenure as the assistant regional director for cultural resources, I shaped and led cultural programs policy for more than eighty national parks located within the Intermountain Region. This included some of America’s most iconic archaeological properties including Chaco Culture National Historical Park, a World Heritage Site and International Dark Sky Park. I am drawn to Chaco by its natural grandeur as well as the spectacular prehistoric architecture and mystery of the Chaco Culture. Chaco resonates with my abiding curiosity and hunger for information about our world’s history, both natural and cultural. Being a manager of federal resources comes with great responsibility to ensure their protection and preservation. I believe this is a reciprocal relationship between an individual and the resource, which if treated respectfully, will enrich our future generations.

My goal in promoting and securing funding for the symposium and publication of this book was to demonstrate that Chaco has a much larger story to tell beyond the monumental architecture located in Chaco Culture National Historical Park. It is a story that has an expansive geography and history. It is a story that...
needs nurturing and research and a human embrace in order to come alive and stay alive. This continuing story needs these things, in abundance, to assist federal, tribal, and state land managers; private development interests; Native American cultural practitioners; academics; residents of the four-corner states; and all other wanderers and spiritualists—all in making wise decisions on how best to preserve and protect the Chaco Landscape. It is a story that requires respect from those responsible and reciprocity from all to the land, its history, and the people who live there and utilize its resources.

As demonstrated from the chapters in this book, Chaco Culture occupies space beyond the boundaries of the national park, beyond the boundaries of the Chaco Protection Sites (many located on Navajo Nation and Bureau of Land Management lands), and beyond the boundaries of the great houses in the four-corner states. The Chaco Landscape incorporates the rock art, enigmatic rock features, datasets, natural features, night sky, irrigated agricultural fields, viewscapes, and soundscapes so critical to Chaco Culture 1,200 years ago. It is a landscape of occupied space—some densely populated spaces, and some places used intermittently. The Chaco world is a shared space worthy of our best effort to respect and preserve its heritage and wild beauty. All of the contributors to this volume have presented their stories about the incredible intellectual and emotional power that has driven their investigations into the Chaco Landscape. Many of these investigations are science-based archaeological endeavors; others are stories that teach and provide moral and ethical models for proper living. Collectively they provide insights on what has yet to be discovered and learned from the Chaco Landscape.

In this summation I place the assembled contributions within six common themes that best represent the authors’ ideas.

THE CHACO LANDSCAPE IS REAL AND RELEVANT

The scholars gathered at the Crow Canyon symposium included Ernest M. Vallo Jr., Eagle Clan, elder and spiritual leader from Acoma Pueblo, and William B. Tsosie, Coyote Pass Clan, a spiritual leader and member of the Navajo Nation. Both men persuasively argue in their several videos that Chaco Landscape has existed for thousands of years and today continues to be an important place for ongoing ceremonial activities, educational lessons, cultural integration, and healing. The Chaco Landscape is integral to Pueblo and Navajo people, who still practice cultural rejuvenation with the Chaco Landscape and the spirits of ancestors and deities who continue to dwell there.
Steve Lekson, in chapter 2, provides a personal overview of his forty-plus years of Chaco archaeology. It is an important history that recalls the academic idea of Chaco as a Cultural Landscape, an idea emerging from the evolved thinking of archaeologists and anthropologists. That Chaco had such a broad sociopolitical reach throughout the southwest United States as well as ties to Mesoamerica has been repeatedly confirmed throughout the past century. We know that the expansive Chaco Landscape was as important to being Chacoan as are places on the landscape such as Fajada Butte and Pueblo Bonito. In 1992 Lekson and Stein labeled Chaco a ritual landscape—a “sacred landscape.” The Chaco Landscape is a geographic projection of being Chacoan, and all in the vicinity knew that in the tenth through thirteenth centuries. Chaco’s ties to Mesoamerica, northern Chihuahua, and southern Arizona confirm its cultural outreach. Chaco is more than a set of isolated communities. When they are collected together, Chaco great houses and villages represent a regional political system, a network connected by repetitive architecture, roads, iconography, and astronomical memes.

THE INDIGENOUS PERSPECTIVE

Indigenous colleagues in this volume make impassioned pleas for preservation of the Chaco Landscape, especially its natural resources that are so critical for cultural practices and human-environment continuity. They note the destructive force of oil and gas drilling, mining, and other insensitive extreme profit-driven practices that damage “Mother Earth” and “Father Sky” and denigrate our world. The information and insight they provide is in the form of stories, an effective way to convey information and a most effective way to convey sincerity, emotion, and wisdom. They remind us that stories of moral and ethical behavior are a continuum for a society as well the access point for an individual’s education into cultural norms, history, and knowledge, both practical and spiritual.

It is significant that Navajo individuals who grew up with stories about Chaco, but had never been to the canyon prior to 2017, joined Mr. Tsosie in several of his videos, chapter 8. Two were young men, Eurick Yazzie and Tristan Joe, tribal youth who were moved by the experience of connecting the traditional education they received from stories directly to Chaco Canyon. The third, Denise Yazzie, is a high school teacher of science and tribal tradition. As with Eurick and Tristan, her experience is personal and moving and opens within her spirit the vision of how Chaco can further educate and inspire tribal youth. All three give powerful statements about their impression of Chaco and what it means to them. Their presentations are direct examples
of cultural history in practice: seeing Chaco Canyon, experiencing it, and embracing it as a living means to further educate tribal members. These are refreshing and eye-opening testimonies.

Both Tsosie and Vallo note in chapter 7 that Indigenous people are corn: descendants of corn, products of corn. Also, they confirm that water is the life giver for corn, animals, humans. Mr. Vallo in particular expresses his concern that oil and gas drilling, and especially fracking technology, uses too much water and poisons it so that living beings cannot use it. Evidence from other areas inundated by fracking, especially water-scarce areas, has seen wasteful water consumption, contamination, and loss of productive habitat by tainted water. The Chaco Landscape could suffer mightily as its water resources are depleted and contaminated.

All Indigenous representatives note that improving communication among all parties is the most important step in preserving the Chaco Landscape. They remind us that the tribes, people, animals, birds, insects, plants, the First People, and the creators are all one in this world of earth and sky. As one they speak of the need for extractive industry to provide more protection for Chaco. Two critical points are that (1) Native people, like all Americans, depend on oil and gas and it is not going away, but drilling must be done safely so that the greatest protections for water and the Chaco Landscape are in place; and (2) Chaco Canyon and the Chaco Landscape are home to Acoma, Navajo, and other Native people and must be respected by those who are temporary visitors.

LANDSCAPE DIMENSIONS AND PRODUCTIVITY

The Chaco Landscape is a special place of great expanse containing a distinct human imprint as Windes and Van West demonstrate in chapter 3, on the potential and extent of horticulture and agriculture near Chaco Canyon. They explore four themes centered on early Chacoan community development: (1) Who were the founding settlers?, (2) what factors were used in siting a community?, (3) where and when were these communities settled?, and (4) why were they drawn to Chaco? Major occupations, with resident great houses, occur at the entry and exit points to Chaco Canyon. It is not difficult to extrapolate that these areas provided opportunity for surplus crop production and that the Chaco residents were knowledgeable about where ample rainfall, runoff, and groundwater occurred to produce surplus crops. The presence of groundwater resources sufficient to sustain agriculture and community residences is an insight brought out from their research. Because the San Juan Basin is an area of limited rainfall, it was necessary for the Chacoans to find local productive
areas that could provide surplus. This appears to have happened in locating great house communities east, south, and west of Chaco Canyon in order to take advantage of higher elevations with greater annual rainfall, runoff flows, and areas of accessible groundwater. The Willow Canyon and Padilla communities demonstrate this as do Pueblo Pintado and Casa del Rio.

Windes and Van West argue that great house villages were not isolated farming communities but operated within a socioeconomic system seemingly centered on downtown Chaco. They demonstrate that two of the earliest Chaco great houses, Guadalupe Community to the east and Skunk Spring to the west, contain Basketmaker sites that developed their agricultural potential at the beginning of the Chaco phenomenon. These sites then grew to become major food production centers that sustained Chaco.

That the Chaco phenomenon had a broad dimension beyond downtown Chaco is also substantively argued by Tuwaletstiwa and Marshall in their documentation of what is a visual, yet ephemeral, road system extending forty-one miles from Kin Klizhin northwest to Skunk Spring on the eastern slope of the Chuska Mountains. This road connects the wood source in the Chuska Mountains to Chaco as well as surplus agricultural products produced at eight great house communities located along this road. These communities also provide a potential expression of alignment with the lunar standstill and likely other celestial events. The communities also represent likely communication nodes demonstrating connections, communication, and networks to Chaco and possibly the western portion of the greater Chaco Landscape.

Dennis Gilpin in chapter 5, detailing known rock art centers in Chaco Culture National Historical Park and west at the Waterflow Site, also demonstrates the dimensions of the Chaco Landscape. He presents an overview of rock art styles from the San Juan Basin and how they have changed over time from Archaic, Basketmaker, prehistoric Pueblo, and later Navajo presentations. Rock art as ubiquitous communication mnemonics are comments on historical events, the Gods, anthropomorphic spirits, animals, and the place of humans in the Universe. Rock art tell stories of migration and connection. It depicts an all-encompassing world perspective integrating land, people, cosmology, worldview, and the relationships among people, animals, plants, and the unknown. Gilpin underscores that despite many years of rock art study in Chaco Canyon, the very great majority of the Chaco Landscape has not been systematically surveyed for rock art, and much work in basic inventory of this important resource is yet to be done. A more detailed rock art record will expand the knowledge of archaeologists and anthropologists as they continue to connect and decipher what these renderings mean to the Chaco world.
Ruth Van Dyke in her chapter, 6, on other-than-habitation structures, discusses the many forms of structures that are spread across the Chaco Landscape. Shrines, circles, crescents, ovals, L- and C-shaped expressions, *berraduras, avanzadas, zambullidas, atalayas*, rock piles, cairns, eagle traps, gateway shrines, and slab boxes are all things she proposes archaeologists now label enigmatic rock features (ERF). The term ERF collects a history of labels into a common bucket from which more precisely defined terms can be pulled. At this point, ERF may be the best way to pause and consider the evidence and then begin to refine the definition of these types of structures by employing a strong integration of scientific inquiry with in-depth discussions with Indigenous folks who likely can shed some light on these features. And what might their function be? Van Dyke lists four discussion points for future ERF research: (1) markers of special locations, (2) creation of cosmological alignments, (3) viewpoints to and from other locations on the Chaco Landscape, and (4) specialized activities, for example, capturing eagles. More baseline data is necessary, including a complete inventory of ERFs on the Chaco Landscape. I think it will be very interesting to ask the local tribes if ERFs are linked to their societies as items of cultural patrimony and how they are used today.

**GEOSPATIAL INVESTIGATIONS AND BIG DATA**

In chapter 14, Carrie Heitman and Sean Field make a deep dive into the many Chaco databases and the world of high-tech machines and software now employed in understanding the Chaco Landscape. Heitman and Field demonstrate the powerful geospatial tools available and employ them expansively. Geographic information system (GIS) data collection and assessments are not new, and Heitman and Field use them to great effect with extant Chaco data. We now have detailed and accurate maps, the backbone of regional interpretations of prehistoric cultures, available to bring insight and meaning to the Chaco Landscape. Maps detail the connections, and connections lead to assessments of integration and interaction among ancient people. A landscape interpretation cannot be possible without massive amounts of data that are manipulated in pursuing the metrics about commonality, associations, and rare events.

To paraphrase Stewart Brand (1999), the technologies Heitman and Field employ provide a Chaco version of a Long-View Library. Meaningful assessment and interpretation of Chaco are not static; they are broad in space and time. Preservation and telling the Chaco story require space and time as paramount considerations that are coequal to the monumental artifacts—great
houses, kivas, roads, and residential room blocks—and the pictographs, petroglyphs, source material locations, and viewpoints scattered throughout the Chaco Landscape. A “site” only conveys a small part of the patterned and complex occupation across time and space that we know as Chaco. There is much more to come from the common use of these tools to refine big data.

High-tech remote sensing instrumentation also allows for relative predictive certainty for certain types of features, as demonstrated by our colleagues at NASA. The NASA team used satellite imagery to identify sensitive sites (outlier great houses and their communities) that would be adversely affected by oil and gas development—well pads, storage areas, access roads, and pipelines. This publicly available satellite imagery is an incredible tool from which to make accurate management decisions centered on preservation. Another NASA-inspired tool is Hyperspectral Thermal Emission Spectrometer (HYTES) imagery. This technology was used to address the presence of road signatures across the Chaco in the San Juan Basin. HYTES seems very effective at finding road signatures that are otherwise not observable, and it is a relatively inexpensive tool. I look forward to NASA’s further refinement of HYTES and its continued use over the Chaco Landscape and NASAs continued collaboration with Dr. Heitman and the National Park Service.

In chapter 13, Friedman, Sofaer, and Weiner continue the reporting of emerging technologies used to record the prehistoric material constructs of events witnessed in the night sky. Some of these constructs are the purposeful layouts of buildings and structures and special places and alignments within structures that are used to orient occupants with the powerful natural phenomena associated with the movements of the sun, moon, and other celestial bodies. Why are the sun and moon so important? Why does Chaco seem to be the place of convergence of powerful natural phenomena with cultural expression, that is, Chacoan architecture? These researchers show that Chaco Canyon is a natural predictor of celestial events and that Chaco architecture is a constructed mirror to this natural order. The canyon and the cultural expression within the canyon are one gigantic clock! A clock used to predict events important to the maintenance of Chacoan society on a scale of 100,000 sq. mi. This is a new conceptual framework for Chaco’s sacred geography.

Friedman, Sofaer, and Weiner are conducting interesting and intriguing research of the Chaco world. The technological tools they use create results that bring their ideas forward in affirming that prehistoric Chacoans thought about their extraterrestrial world and created a sophisticated temporal monitoring device: a clock. This clock measures how the world moves and when certain events that are of critical importance to these people
should be acted upon—such as planting, harvesting, and conducting world and cultural renewal ceremonies at the appropriate times. I look forward to more insights from the exciting research from this team, especially when their results are coupled with Indigenous knowledge. These insights could be fruitful indeed.

EXPERIENCING THE LANDSCAPE

Continuing along the lines of “Big Data” and emerging technologies, Van Dyke, De Smet, and Bocinsky, in chapter 11, provide a test of geospatial software for new data collection and assessments of the Chaco viewscape and soundscape. They unequivocally demonstrate the visual connections between and among many Chaco great houses and other structures, for instance, shrines (or ERFs). Clearly, Chaco citizens were communicating with each other over great distances. But, who was communicating with whom? And why? Was the communication constant or only at special times—times of ceremony or times of other need? These are questions the team asks from a realization that understanding Chaco proceeds from understanding sense of place. One important way to achieve this understanding is to ask the Indigenous population about place and their connection with it. Combining this information with the archaeological data will be very enlightening.

Chaco soundscapes are underresearched. These authors modeled for sound at a couple of test great houses: Bis sa’ani and Pierre’s. They found that blasts from a conch shell trumpet are heard throughout a community to distances of up to 3,000 m. Soundscape research has important implications for a landscape because it is a legitimate culturally derived component and thus eligible for preservation management decisions. Such consideration could limit the adverse noise reaching the pristine wilderness often associated with Chaco great houses. Van Dyke used her smartphone to document visual and sound intrusion caused by an oil pump jack. Noise within a protected landscape is annoying to the residents and visitors and can be mitigated, but only if sound is valued as a resource and researched and then the results applied to land leasing and management decisions.

And, what better way to experience the Chaco Landscape than through the observations and insights of one so learned and wise as G. B. Cornucopia, senior interpretive ranger at Chaco Culture National Historical Park (chapter 12 in this volume). G. B. has worked at Chaco for thirty-five years. He knows the park and its resources; he knows the visitors and their need to experience and understand Chaco; and he has listened and learned from the local
Indigenous residents much of what makes the Chaco Landscape so critically important to their social fabric and their maintenance of cultural history and ceremonies. It is so powerful when G. B. reminds us that it is only in the past 200 years that the night sky has disappeared from the daily experience for most of humanity. Prior to that, for many millennia the dark night sky was a daily reminder that the celestial bodies were an active part of the human experience. The night sky was, and still is, a critical story that changes on a daily basis. This story continues to be told and recalled by all cultures. Sadly, in a short 200 years most people have forgotten the dark sky exists, except for the dominant moon. Gone are the Milky Way and many star constellations, a disappearance caused by light pollution and the fouling of our atmosphere by industrialization. The Chaco Landscape is a direct link between the night sky, the ancient world, and people today. Beyond the pollution the night sky has changed little and still provides this link. Chaco Canyon has an incredible night sky; it has night sky programs for visitors, it has telescopes that contribute to astronomical research, and it has tribal stories about the relationship between humans and the millions of visible celestial bodies. The sky is a resource of critical importance to the Chaco Landscape and must be recognized, respected, and honored for what it continues to mean and evoke within human ceremony and emotion. Cornucopia eloquently states, “I think Chaco can save our lives.” I suspect he may be right.

MANAGEMENT OF THE CHACO LANDSCAPE

Because Chaco Culture National Historical Park along with nearby Aztec Ruins National Historic Monument and Mesa Verde National Park are designated World Heritage Sites by UNESCO, it was appropriate and insightful to invite Julian Thomas to the symposium. Thomas provides a history on Great Britain’s struggles to develop a national preservation program that incorporated the needs of preserving structures, monuments, and landscapes while being cognizant of private property rights and development needs and requirements. This is a historical reality all too relevant for the United States, and it mirrors struggles for the preservation of America’s important places. Thomas reminds us that preservation is a common theme, an important theme, yet one that competes against very powerful economic and political interests that arrogantly believe they should dominate and rule all discussions and decisions. Federal statutes in the United States do allow for the protection of “historic properties.” They are powerful laws that, coupled with the National Environmental Policy Act, provide ample legal authority to preserve and
protect significant archaeological sites and landscapes—two resource types that densely populate the San Juan Basin. Collectively, the chapters herein argue that the Chaco Landscape located within portions of the four-corner states is an important place that warrants better management practices.

Chaco’s World Heritage designation identifies an important relationship between Native American cultures and the land that is palpable and significant. That connection is important as a means to substantiate preservation of the landscape and its natural and constructed features as sacred, as well as for their educational importance. Deep history and human relationships with it are important to note, develop, and maintain. Deep history studies the beginnings of cultures and creates a common narrative about their relationships with each other and with the natural and spiritual worlds. Deep history verifies who we are, our moral and ethical values, our responsibility to our world, and our reciprocal relationship with the natural environment.

The Chaco Landscape is about American heritage and our identity with American history. It’s about America’s identity with the continent’s deep history; it is much more than America’s Euro-American history. Chaco history can best be classified as environmental history, an academic subfield recognized in the twentieth century. Modern America, especially its younger citizens, identifies with this kind of intensive dive into an area’s ecology, natural history, and cultural history, which extends in time for millennia. Environmental history resonates in the American West because it helps identify clues as to where Chaco fits into American identity as (1) direct association with extant tribes, (2) access to the spiritual realm, (3) its deep history, (4) ecology, (5) the conscience of a collective cosmology, (6) an economic engine, and (7) a homeland for tribes and non-Indians alike.

Paul Reed gets the last word in his chapter, 16, “Protecting the Greater Chaco Landscape.” No one may be better positioned than Paul to offer the status of issues involving the Chaco Landscape and practical recommendations to promote and ensure preservation of this valuable landscape. Paul has worked tirelessly for the past decade on these efforts, and both Paul and Steve Lekson in his introduction (chapter 2) remind us that the Chaco Landscape has been the center of energy development proposals and ongoing extractive practices since before the 1970s. Reckless development, developments not thoughtfully considered, must be stopped. Reed lists five recommendations, with rationales that, if implemented, will improve preservation of the Chaco Landscape and its extensive archaeological resources. These are approaches that can work to the benefit of all—preservation of resources, the continuance of traditional cultures, and the extractive industries.
1. The Bureau of Land Management and Bureau of Indian Affairs must include a robust role for the National Park Service in oil and gas development decisions—I would add the Advisory Council on Historic Preservation as another equal partner.

2. Tribal consultation and coordination must improve, as well as public outreach.

3. A 10 mi. protection zone around Chaco Culture NHP should be designated and managed as a true protection zone.

4. Enhanced protection should be given to the Great North Road corridor.

5. Viewshed and soundscape inventory and analysis must be completed for all Chacoan great houses and their communities.

Reed’s recommendations are intended to improve the ongoing preservation actions by federal agencies by reminding them that federal law and regulation already require some of these actions. For me, at issue is the fortitude of federal land managers to make well-considered decisions in a manner that does not pit constituencies against each other but rather welcomes, as a neutral government, the input from all parties. Paul’s recommendations are an appeal for better government—one that supports “we the people . . .” rather than a very limited subset of the American experience.

CONCLUDING REMARKS

One hundred fifty years of archaeological investigation in the Chaco Landscape is defined by an internationally recognized and significant American cultural system, and more defining insights are yet to come. The fact that Chaco is a prehistoric culture that captures human sensitivity and awe is testimony to the many decades of government, academic, and private initiatives to save, preserve, and protect the Chaco Cultural Landscape. These measures have protected much of Chaco’s significant architecture. The protective measures also have heightened the educational experience of Chaco to hundreds of thousands of American citizens, international travelers, and scientists. The symposium and this book’s publication expand what we know about Chaco. Chaco was, and is, a human participatory system that interacts with the natural world, the physical world, the spiritual world, and historical events—events described and told in stories. Some stories are produced as visual snippets on the sandstone walls throughout the Chaco Landscape, and some are told through enigmatic rock structures and their surrounding places.

That the Chaco Landscape is real is without question. Chaco, as we have read in these pages, is much more than great house points on a map. It is a
place where human spirit created stories. Stories where the Chaco Culture interacted with a much larger world occupied by many other people. The natural world in its form and function is the author of the Chaco Landscape, and humans are its editors. A human presence gave the Chaco Landscape definition and then meaning to its sacred places. The Chaco Landscape is a dynamic spatial/temporal component of the Chaco cultural systems. The landscape’s present context, and its relationships that we experience today, are rooted in the past.

This project began with the question, “What new can we learn from Chaco?” The chapters in the volume demonstrate that much more is yet to be researched, described, and known. These discussions of science, history, and archaeology identify some of the goals that continuing research can achieve into topics of intervisibility among Chacoan structures and natural features located on the landscape. They include the transportation of sound among and within communities, movement of people, materials, and ideas across the Chaco Landscape, the interpretation of iconic symbology, consistency of great house community organization, the external relations among those who occupied the great houses and downtown Chaco, and identity and sense of place for those who inhabit this dynamic landscape.

There is much to discover about Chaco, and the development of knowledge continues only with more data. The physical data of great houses, other structures, roads, kivas, pottery, turquoise, shell, petroglyphs, pictographs, and many other types of material items must continue to be inventoried and described. As equally important are the stories, lessons, history, and wisdom of extant Native American communities who have a clear path connecting them to Chaco’s history. The people of Acoma Pueblo, Hopi Tribe, Navajo Nation, and Pueblo of Zuni have direct ties to the Chaco Landscape. Some of this land association is by deed and some by congressional decree, but equally important to government pronouncements of ownership are the narratives of Chaco history shared with this landscape. Equally important are the contexts of these narratives with neighboring landscapes and Indigenous Puebloan, Apache, and Ute residents who also share stories and history with the Chaco Landscape.

Chaco is a place for all ideas—Indigenous use, preservation, visitation, wildlife, plants, geography, education, the sky and atmosphere, the planets and stars, and development of resources. The Chaco Landscape is a university of knowledge and ideas that is living—past, present, and future. Because Chaco gives so much, it requires humans to implement reciprocal tasks that complement the gifts given by Chaco: infinite gratitude for the past, infinite service to the present, and infinite responsibility to the future (Brand 1999).
All inhabitants of the Chaco Landscape have a necessary role in being responsible for and to the Chaco Landscape. These are active roles based on the natural laws of respect and reciprocity. We are given gifts from this landscape—water, nutrients, minerals, and oil; it is best to respond with gifts of gratitude, care, and wisdom for the land, especially by those who take the most (Kimmerer 2013).

I would like to see a reimaging of the landscape by industry, from the idea that it is a place only to be exploited for maximum profit. The Chaco Landscape is an idea where we engage with—that is, experience—and listen to the voices of the past and to the wildness of the place. By interacting with the sacred Chaco Landscape we can learn, and with learning we can teach and become wise in our relationship with the world. The Chaco Landscape is the physical representation of the continuity between hundreds, if not thousands, of generations of human beings and their responsibility to the maintenance of relations with plants, animals, geology, soil, water, and the sun and night sky. These nonhuman elements are essential to the making of humanity, so critical to moral and ethical behavior that we humans strive for.

Paul Reed has given a road map to improve human interaction with this land. I would add a few items to his list as my closing thoughts.

1. Existing federal statutes require all critical resources to be considered when making land management decisions. By law, oil, gas, and other development are not given greater status than people, land, animals, plans, or historic places. It is time for federal agencies to act in the interest of all, and all should be considered and treated equally when making land management decisions.

2. Federal statutes require public participation and transparency. It is past time for federal agencies to meet this responsibility and obligation and take the time to engage and listen to all voices. All affected parties must be treated with respect and be afforded every opportunity to participate in the decision-making process.

3. Development should only occur after all critical issues are explored in great detail, including information “owned” by the extractive industries. All effects to water must be studied and published, the same for air and soil. Too much is at stake for the safety of the inhabitants and users of the Chaco Landscape to have it otherwise.

4. All federal decisions must be based on an analysis of impacts to the Chaco Landscape as defined herein, per the National Environmental Policy Act. No Federal action for oil and gas leasing or development should be made to isolated or fractured areas of the Chaco Landscape.
5. A 100 percent inventory of all cultural resources eligible for inclusion on the National Register of Historic Places must be completed for the Chaco Landscape as defined herein, before any future resource extraction leases are approved. This is the law that federal agencies must comply with.

The practices of extractive development industry alter the landscape and are destructive to historic properties. Even so, the implementation of mitigative actions can avoid or reduce impacts to the point where development can occur and the interests of tribes, the American public, and resources can meet. Respect, responsibility, and reciprocity are actions a competent person, government, or corporation must take in order to ensure a lasting relationship with the world. How could it be otherwise?

REFERENCES