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*Cultural Astronomy in the American Southwest*

Ric Alling

The Society for Cultural Astronomy in the American Southwest (SCAAS) is a volunteer run membership non-profit for people interested in furthering knowledge about how past peoples in our region embed astronomical knowledge in their respective cultures. This is both represented in traditions and word of mouth transfer of generational knowledge and through orientations of built environment. The Society has recently assessed and renewed its organizational priorities. Two projects have moved up in importance. First, we are seeking funding to conduct a thorough review of the papers of Jesse Walter Fewkes in the National Anthropological Archives near Washington DC. We know that there is extensive work that has never been published and we have evidence that Fewkes recorded astronomical site attributes during his exploration of the southwest. This work will both bring to light hitherto unseen work but also, we suspect, further knowledge about pre-conquest astronomical understanding. Second, we are interested in developing and deploying guidance on the use of new technology to add standardized orientation and horizon data to archeological site reports. Our ambition is to create a database of simple observational features across the breath of southwest cultural sites to focus future research by illuminating like attributes.

*The 2021 field season at Coal Bed Village*

Jim Allison, Fumi Arakawa, Marion Forest, Katie K. Richards, and David T. Yoder

2021 was the third field season of excavation at Coal Bed Village, a large ancestral Pueblo ruin in Montezuma Canyon, southeastern Utah. The visible architecture at Coal Bed Village dates to the Pueblo III period, but overlays earlier deposits. The 2021 field season was a collaboration involving three universities: Brigham Young University, Weber State University, and New Mexico State University. Excavations focused primarily on understanding the Pueblo III architecture, including a tower kiva, the construction sequence of a great house at the western end of the site (which appears to start as a McElmo style great house, but was later expanded and probably used throughout the Pueblo III period), and architectural details of another Pueblo III great house at the eastern end of the site that is built on midden dating to the A.D. 900s and is fronted by a wall that incorporates upright megaliths.

*Wupatki Pueblo Geoarchaeological Landscape Assessment*

Kirk Anderson

Geoarchaeological mapping, and digital surface models using SfM, GIS, and Lidar datasets helped assess geomorphic hazards of the Wupatki Pueblo landscape, Wupatki National Monument. The geologic framework influences site location and geomorphic risk. Slope maps of small-scale features (floors), and landform features (cliff bands) provide resource managers with tools to creatively manage erosional processes. Tectonic fracture patterns correlate with site and feature location, wall orientation, and erosional gully drainage area and trends. Volcanic tephra covered the landscape after the eruption of Sunset Crater, leading to massive alluvial erosion of the post-eruptive, pre-occupation landscape. When Sinagua people moved into Wupatki Basin, they found a dynamic and challenging landscape, as evidenced by the numerous retention walls they built to control cinder erosion. Erosion of the features is largely influenced by geomorphic position, cinder thickness, and gradient. Small-scale features are subjected to on-going slope wash processes as the geomorphic system adjusts to the tephra layer. Features on bare bedrock points and low gradient washes are least at risk. Low frequency, high magnitude rainfall events

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like that which produced damaging debris flows in August 2018, filling the ballcourt/reservoir, increases the risks to features already experiencing severe erosion.

*Twined Sandals and Their Images Across the Four Corners Landscape: A Summary of Recent Research*  
Ben Bellorado

This presentation summarizes recent dissertation research aimed understanding variation in twined sandals and their depictions in a variety of media from the Chaco (A.D. 850–1150) and post-Chaco (A.D. 1150–1300) eras in the northern Southwest. The data for this research combines 10 years of fieldwork in southeastern Utah recording cliff dwellings, tree-ring dating, building mural documentation, and rock art recording with research on sandals from legacy collections at over a dozen museums and curation facilities. Based on these data, and incorporating aspects of Clothing Theory, this presentation will discuss some of the ways that Ancestral Pueblo peoples used twined sandals and depictions of these sandals in various media to express aspects of their social identities, group affiliations, and social positions during these periods of noted social dynamism across the region.

*Blackwater Draw Museum's Collections: Beyond the Clovis Point*  
Samantha Bomkamp

The Blackwater Draw Museum is known for its Clovis lithics in relation to the Blackwater Draw National Historic Landmark. However, the museum holds collections of a wide variety, including a large collection of pottery from all over the Southwest. Much of the ceramics from the Miles Collection are from the Casas Grandes region. Comprised of both plainware, bichromes, and polychromes, many have been on display since 2017 with little interpretation. Staff and students have begun to dig further into the research potential of this collection, including expanding on the Miles Collection exhibit to bring further context to these ceramics from Chihuahua, Mexico.

*A Solar Observatory at the Moon House?*  
Mark Boslough

Two solar eclipses were observed by 13th century four-corners inhabitants (see Simonis, 2015 Pecos Conference). At Moon House, a 1257 eclipse reached totality 7 minutes after local noon on the summer solstice, lasting 5 ½ minutes. An October 1259 eclipse was in late afternoon, reaching 99.99% of total. Circle and crescent pictographs seem to represent how these two eclipses would have appeared. In 2016 I led a group to the Moon House to look for alignments near the anniversary and time of the 1259 eclipse, but we witnessed nothing notable. We returned near summer solstice this year and observed shafts of light passing through a prominent fissure near local noon. The floor of a tunnel beneath the crack was illuminated by direct sunlight passing through its entire length, as was the floor of a partially-walled chamber. The crack aligns about 30° west of north, the aperture acts as a gnomon hole, and the tunnel and chamber resemble meridian lines in European cathedrals that trace the path of the noontime sun across the floors with equinox and solstice markers, acting as solar observatories. The floors of the tunnel and chamber are dirt and rubble, however, with no evidence of astronomical markers.

*Wallace Weird- recently encountered unusual architectural features*  
Bruce Bradley

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Recent excavations at the Wallace great house (5MT6970) have encountered a number of unusual architectural features. One is a small early 12th century stairwell which enabled access from a second story room to the roof level of an elevated kiva (Kiva 32). This was an addition into the southwest retaining area of the kiva. The bones of at least 5 bear paws were recovered from the fill of the room, which also dates to the early 12th century. The second was a Pueblo I-style sipapu complex in a rectangular kiva. This was one of four 13th century kivas that had been added adjacent to and intruding into the margins of the same elevated kiva. This sipapu complex consisted of 44 components, including multi-use 'sipapus' and 'paho' holes, several of which were double or bifurcated.

*Intrusion Profusion: Improvised Wall Openings in Wallace Great House*

Cynthia Bradley

Large “punched-through holes” in the walls of masonry Ancestral Pueblo buildings exist in the archaeological record. Their haphazard, irregular boundaries are distinct from those of doorways created in an existing wall during remodeling. As in the case of Aztec Ruin and Pueblo Bonito, these informal wall openings are often associated with historic period pothunting. Five such improvised holes are present in three ground-story rooms of Wallace Great House. The affected walls of this multi-story monumental building are some half-meter thick, composed of double-tied masonry. This building functioned as a Chaco Outlier c. 1050-1150, followed by a use hiatus of several decades. Sometime after AD 1180, Wallace was used as a non-residential ritual and mortuary facility in a Pueblo III Mesa Verde Region reformulation of house society protocols established at Pueblo Bonito during Pueblo II times. Intriguingly, Wallace's improvised wall openings were created by Ancestral Puebloans. In two cases, stratigraphic and taphonomic evidence indicate that these holes represent sanctioned intrusions into the deteriorating great house to retrieve objects from decades-old mortuary contexts. This poster presents information on what may be a unique phenomenon in the MVR, and perhaps Ancestral Pueblo, archaeology.

*Recent Research at Wallace Ruin*

Cynthia Bradley and Bruce Bradley

Since 1969, Bruce and Cynthia Bradley have conducted archaeological and bioarchaeological research regarding Wallace Great House. Its identity as one of four Chacoan great houses of the Lakeview Group is firmly established. Less well known is that the small, multi-story Chacoan great house Old Wallace (c. AD 1050) would be encompassed by New Wallace during a massive building expansion c. AD 1120-1130. Even so, Wallace, the Lakeview Group and the eastern Montezuma Valley were depopulated by c. AD 1150. Yet, sometime after AD 1180 a kiva was inserted into two Old Wallace upper-story rooms and two Old Wallace upper-story rooms were modified as Pueblo III kivas. These Pueblo III ritual spaces cluster around the north and west sides of New Wallace's elevated west kiva. Also, six ground-story rooms in New Wallace's west arm were used as a Pueblo III mausoleum. Our research initiatives now focus upon evaluating the recent interpretation that Wallace's Pueblo III use involved an MVR reformulation of Pueblo Bonito house society protocols established during Pueblo II times. Today's update centers around our current excavations within the west kiva and the Old Wallace rooms that border that kiva's eastern side.

*Electrical Resistance Survey of Area C at the Haynie site, 5MT1905*

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Lanae Caldwell, Frank Martinez, Alannah Bell, and Arianna Martinez

Electrical resistivity survey of the Haynie site (5MT1905) identified cultural anomalies related to multi-component Pueblo I to Pueblo II structures. Test excavations revealed certain anomalies detected in the electrical resistivity surveys were Ancestral Pueblo features while others were historical disturbances from the twentieth century. Based on the electrical resistance results, it is possible additional room blocks and associated pit structures exist at the northwestern section of the site.

*Looking for Mutton in all the Wrong Places? Updates on the Early Navajo Pastoral Landscape Project*  
Wade Campbell

The Early Navajo Pastoral Landscape Project seeks to better understand incipient pastoralism in early Diné (Navajo) communities circa AD 1700. Work has included a 2018 ethnoarchaeological study of contemporary Diné herding practices on the Navajo Nation and a systematic 2019/2020 study of Gobernador Phase (AD 1626-1776) Navajo sites in Dinétah, the traditional Navajo homeland in northwestern New Mexico. This talk provides a review of the recent Dinétah work and discusses the findings with regard to Navajo pastoralism's dynamic, four-century-long history.

*What is Hohokam?: Thoughts from the Tonto Basin and Below the Mogollon Rim*  
Christopher Caseldine

The Tonto Basin was the center of both intense debate and research on Salado. Lesser known is the role of the basin in the formation of current concepts of Hohokam. Since Gila Pueblo's work in the early 1930s, the Tonto Basin and surrounding areas has been generally viewed as Hohokam outposts at a cultural boundary with Mogollon and other northern groups. Close examination of site structure, settlement patterns, and exchange relationship signal individuals living east of the Phoenix Basin were not simply Hohokam living in the frontier. Contrary to archaeological narratives portraying a Hohokam retraction into the core after A.D. 1070, eastern areas demonstrate that although Hohokam traits decline, population does not. In this paper I raise questions about what it was to be Hohokam.

*La Playa Purple-on-brown: A Newly Established Trincheras Ceramic Type from Northern Sonora, Mexico*  
Hunter Claypatch

For nearly a century, archaeologists have identified Trincheras decorated pottery at sites within southern Arizona and northern Sonora, Mexico. Despite decades of archaeological investigations, virtually no attempt has been made to understand how Trincheras pottery changed across space and time. This poster summarizes recent findings which led to the identification of a distinct ceramic type—La Playa Purple-on-brown. This type was first identified at the site of La Playa (SON F:10:03) and was associated with dated contexts which anteceded the eighth century. Subsequent research demonstrates that production of La Playa Purple-on-brown was not isolated to the site of La Playa. This type is now recognized by Centro INAH Sonora and the Arizona State Museum. Although questions persist regarding the overall geographic extent and temporal sensitivity of La Playa Purple-on-brown, its identification is a significant advancement for Trincheras seriation efforts and for understanding larger themes in Southwest/Northwest prehistory.

*An Analysis of Corrugated Pottery at Point Pueblo and the Tommy Site*  
Julia Coverdale

Numerous corrugated vessels have been discovered at both Point Pueblo and the Tommy site, which were occupied during Pueblo II and III. This investigation will be a review of nearly whole vessels, looking at the rim angle, presence of temper type, and a variety of surface treatments in order to provide chronological information. We will look at corrugated vessels from several rooms in the Great House, the arc of rooms associated with the Great House, and two Mesa Verde Small Houses from Point Pueblo. From the Tommy Site, the corrugated vessels we will be looking at came from the Roomblock, two of which were discovered in situ. Through this analysis, I will determine that the corrugated pottery from both sites includes non-local temper.

*The CCC in PEFO: Sandstone Quarrying*  
Hunter Crosby

Like many parks and public spaces, Petrified Forest was built by men who needed jobs. From 1936-1942 the Civilian Conservation Corp constructed roads, trails, bridges, overlooks and buildings at the then-Monument. Young men in their early twenties, most from eastern Pennsylvania, quarried local sandstone from the mesa tops and slopes in different locations within the Park to be used to build buildings, structures and culverts. The Puerco Ridge area, south of the Puerco River and one of the CCC camps, was quarried extensively in several localities and historic inscriptions, including names and hometowns of likely CCC workers, cover the faces of boulders on the scree slopes. This poster will summarize the results of the documentation of one of these large quarry sites and its associated historic inscriptions, as well as discuss the value of dedicated and proper site recording and maintenance condition assessments to the archaeological and historical records.

*Spanish Wheat Technology and Puebloan Resistance – the Phytolith and Botanical Evidence*  
Linda Scott Cummings and Peter Kovacik

Did you know wheat was grown and threshing sledges were used at Pecos? Adobe examined from the Pecos church and from the Santa Inez mission in California both yielded cut phytoliths indicating that wheat had been threshed using a threshing sledge. Wheat straw is an important component of adobe in the Old World. When comparing the sizes of phytolith sheet elements from straw and the sizes of bits of straw from Pecos with other records, we found the 3rd Pecos church adobe contained very large pieces of straw, suggesting a failure to adopt or embrace the new technology. This phytolith and botanic record fits well with evidence for rejection of the priests and Spanish conquest by Puebloans during the Pueblo Revolt. Although a final effort was made in 1692 by the Spanish to reconquer the Puebloans, that effort also failed. It is adobe from the newer church, built in 1717, that we sample. The botanic record from Pecos did not match the fine work elsewhere (in the Old World and California), making it is obvious that the local population was forced labor and that they did not accept this process.

*Implications of Solar Alignment Distributions on Cedar Mesa, Southeast Utah*  
Natalie Cunningham

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After surveying 222 sites on Cedar Mesa for astronomical alignments—both mesa top and canyon sites—the Archaeoastronomy Survey of Southeast Utah has recognized that Pueblo II-III sites tend to emphasize either winter or summer observations but rarely both. Not only that, but there is an apparent split between summer sites on mesa tops and winter sites in canyons. This trend is too widespread to be a consequence of circumstantial site and location characteristics. Is this a sign of seasonal site occupation, or perhaps a result of a dual moiety organization? Or is something else going on? In this presentation, central Grand Gulch and the surrounding mesa top serve as a particularly clear example of this bifurcation.

*The Cedar Mesa Old-Growth Dendrochronology Pilot Project*

Shanna Diederichs and Jim Parks

Native populations have utilized the Pinyon-Juniper woodlands of Cedar Mesa in southeast Utah for centuries and old-growth Utah Junipers on the mesa are potential living witnesses to hundreds of generations of that human history. Woods Canyon Archeological Consultants and Jim Parks, formally of the University of Arizona Tree-Ring Lab, have sampled and are currently dating sixty dendrochronological cores from stands of old-growth Utah Juniper in the vicinity of late Ancestral Pueblo, Navajo, and Ute sites. This work will help determine the age of the Cedar Mesa Pinion/Juniper forests and characterize the relationship of prehistoric and protohistoric groups with this living component of the Cedar Mesa cultural landscape. This cross disciplinary pilot study is filled with difficulties such as locating old-growth Juniper stands, identifying historic and prehistoric wood harvesting, and minimal and sporadic cross-dating of dendrochronological core samples. Despite these hurdles, a few six-hundred-year-old trees, alive since the early fifteenth century A.D., have been identified. Based on preliminary results, the Cedar Mesa Old-Growth Dendrochronology Pilot Project has potential to contribute to regional paleoecology and archaeological models of past and land use in southeast Utah.

*Prehistoric Exchange Networks and San Juan Redware Pottery - 10 Years of Study and What Has Been Learned?*

Stephen Di Naso, David Dove, Winston Hurst, and William Lucius

Prehistoric trade networks are difficult to study. Often, other than knowing the general direction from which a non-local item originated, little else can be said with confidence. This poster presentation reviews some of the most instructive finds that have been made by the San Juan Redware Sourcing and Exchange Project that are revealing hard to reach details about the study of a prehistoric exchange network that was tied to redware pottery and probably food. The exchanges had a strong influence on the cultural interactions of a large number of people who lived in very different agricultural zones in the Mesa Verde region. We detail how specific production villages in Montezuma Canyon in Southeast Utah were identified and how their red pottery has been traced to specific consumer villages in Southwest Colorado.

*Ancient Grains: New Evidence for Ancestral Puebloan Use of Domesticated Amaranth*

Abigail Dockter and Michelle Turner

We report here the first domesticated amaranth (*Amaranthus* spp.) seeds to be identified at a Chacoan great house, from the northern New Mexico site known as Aztec North, where they were found in a context that dates to the mid- to late 12th century AD. Amaranth has long been recognized as an important prehispanic resource in this region, evidenced by the archaeological

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record of both wild and domesticated forms and by the traditional knowledge and practices of Indigenous communities. Wild amaranth and similar-appearing chenopod/goosefoot (*Chenopodium* spp.) seeds are routinely found in Ancestral Puebloan contexts. Recent archaeological testing at the Aztec North great house, a Chaco Canyon outlier associated with a post-Chacoan political center, has revealed the presence of uncharred domesticated amaranth seeds in a thin layer of ashy trash in a room at the rear of the great house. These seeds expand our understanding of domesticated amaranth in the American Southwest and suggest centuries of continuity of traditional amaranth cultivation within Puebloan communities.

*Ornaments and Social Identity at the Haynie Site: Color Correspondence and Meaning*

Lilly Domenici, Hector Campos, Alyssa Henss, and Julisa Rojas

This research focuses on the ornaments and raw materials used in ornament manufacture recovered during Crow Canyon Archaeological Center's excavation at the Haynie (5MT1905) site located just outside of Cortez, Colorado. We identified similarities and differences between the Haynie site and other great houses in the Chaco region. We conducted an analysis of the distribution of materials at the site to help us identify the social networks and identities within this community. Using ethnographic analogies, we examine the ornaments and what they may have meant to the Ancestral Puebloan people by looking at the material used, the crafting techniques, and location in which they were found to develop a better understanding of this community. In our analysis, we compare them to similar objects found at other great house sites, allowing us to investigate the possible meanings of their color correspondence and usage within the community. This analysis allowed us to craft an interpretation about the relationship between the symbolism associated with each artifact and the possible connections they expressed to community members both within the Haynie community and beyond in the Chaco World.

*Sub-Regional Trade in the Northern Southwest - Fleshing Out the Details*

Dave Dove, Stephen Di Naso, Winston Hurst, and William Lucius

The production and circulation of San Juan Redware pottery have been principal research themes of the San Redware Sourcing and Exchange Project for more than 10 years. This presentation reviews some of the most noteworthy recent discoveries that are beginning to reveal fascinating details about this exchange network.

*American Indian Lifeways in Fossil Creek*

Ann Dowd

During the summer of 2021, the Backbone Fire consumed over 40,000 acres, including the Fossil Creek management planning area, which is part of the Coconino and Tonto national forests. High densities of Archaic, Sinagua, Salado, Yavapai, and Apache sites exist in the area. Hundreds of these sites were identified and recorded by avocational archaeologists for the forest service. In part due to volunteer site-recording efforts, fire suppression activities such as bulldozer lines avoided all but a few sites in the fire planning area. An archaeological team studied this fire event for deleterious effects to cultural sites. Later material remains show certain diagnostic artifacts that are distinctive uses of metal and glass, including tulapai strainers for corn beverage processing and a heliograph lens or amethyst colored bottle glass as media for chipped tool production. Traditional brush house styles were used at least into the early 20th century. Apache and Yavapai people occupied many of these places through the mid-20th century. Forest Service

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cultural heritage staff will collaborate with American Indian Tribal representatives to respectfully care for archaeological remains and cultural landscapes post-fire.

*Reconstructing the Diet of Ancestral Puebloans: Macrobotanical Remains from LA 8619*

Brenna Fennessey

During the Summer 2021 excavations at Point Pueblo, site LA 8619, many macrobotanical remains were discovered. Based largely on morphological analysis and experimental archaeobotany, the identities of specific macrobotanical remains from Room 33 in the great house and Room 35, a late P I / early P II pit structure, will be determined. Based on the types of macrobotanical remains recovered during excavations and distribution within the site, the vegetation consumed by ancestral Puebloans at Point Pueblo was largely local vegetation with some imported foods. New developments and technologies that are needed in the field of macrobotanical analysis specific to Southwestern archaeology will also be proposed.

*Spirals, Shields, and Tiny Ponies: A Report on the Rock Art from Chacra Mesa, Chaco Canyon*

Maxwell Forton

Rock art at Chaco Canyon is an abundant, but often overlooked cultural resource. This summer archaeologists from Binghamton University redocumented over a dozen major sites on Chacra Mesa in the southeast section of Chaco Canyon. This project was an opportunity to reevaluate sites documented by the Chaco Project, including assessing the extent and nature of rock art on Chacra Mesa. Our project identified abundant rock art panels, many of which were previously unrecorded. Three major observations were made on the rock art assemblage. First is the sheer abundance of rock art on Chacra Mesa, pushing back against narratives of rock art being an insignificant aspect of the Chaco cultural landscape. Secondly is both Chacoans and Navajos followed specific practices of content and location. Finally, this project documented Navajo sites dating back to the 18th century, with rock art being one of the most frequently encountered Navajo archaeological features. We have determined previous survey projects have missed or ignored much of the Navajo rock art assemblage at Chaco Canyon, which contributes to false narratives of Chaco being an empty landscape for most of the past millennia. Instead, Navajo rock art testifies to the deeply rooted Navajo history at Chaco.

*Wrapped Up Tight: How to Protect a Cliff Dwelling from Wildfire*

Stephanie Franklin

One of the biggest issues for the conservation and preservation of archaeological resources is fire. Due to many years of fire suppression throughout the 1900's, the intensity and frequency of wildfires has exponentially increased. This increase in fire and its behavior has caused unique issues for cultural resource managers resulting in adaptive management plans. One aspect of fire archaeology is the practice of wrapping wooden structures to protect them from fire without negatively impacting the structures. Tonto National Monument is known for its two 700-year-old Salado cliff dwellings. Both dwellings have large amounts of original wooden elements and thus make the structures susceptible to fire. In June of 2019 the Woodbury Fire threatened the cultural resources in Tonto National Monument and a decision was made to back-burn the park in advance of the fire. This presented a puzzling question, how to wrap two cliff dwellings in fire resistant material without securing the material directly into 700 year-old wood? This conundrum



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was solved with an ingenuity, experience, and p-cord. Both cliff dwellings survived the Woodbury fire and this poster describes how this was accomplished.

*Remorseful Returns: What to Do with Stolen Surface-Collected Archaeological Artifacts Returned to National Parks*

Gwenn Gallenstein

For decades, visitors to national parks and other federal land have not only been stealing surface archaeological artifacts, but also returning them when their consciences gets the better of them. A recent study looks at the trends related to the "return phenomenon" through the examination of returned material and the remorseful letters which sometimes accompany these items at the six national parks in the southwestern United States that receive the most returns.

*Excavation of a Pueblo II Pit Structure*

Joel Gamache and Kay Barnett

Mesa Verde National Park and the Federal Highway Administration are currently engaged in a resurfacing, restoration, and rehabilitation (3R) project for the loop roads system on Chapin Mesa in MVNP. The Mesa Top Loop, Sun Temple Loop, and Cliff Palace Loop roads achieved their current alignments in the 1930s without regard to avoiding cultural resources. Cultural remains known to exist along the road shoulders and beneath the roadbeds are susceptible to damage by the 3R project and by the proposed new construction of bike lanes along the Mesa Top Loop and Sun Temple Loop roads. In October of 2019, the Park implemented testing at 12 prehistoric archeological sites along these loops in order to determine the extent and nature of cultural remains within proposed areas of direct impact. As a result of the testing, the Park discovered buried cultural remains within the Limits of Disturbance (LOD) at three of the twelve sites. Test excavations at Site 5MV90 provided an opportunity to excavate an early PII pit structure located directly in the LOD of the proposed bike lane providing information previously unknown about Site 5MV90.

*2027: Cosmic Relationships: Comets, Human Behavior and New Discoveries on Easter Island*

Candace Gossen

Humans have recorded celestial events for as long as we have been able to draw and write. Pictographs, petroglyphs and even standing stones mark moments in time on the landscape to remember changing seasons and repeating cycles. Some merge together to form cosmic relationships where great civilizations collapse is ushered in by a supernova and stamped onto a rock with a handprint. This historical project begins with comets and human events that seem to have occurred simultaneously and marked as harbingers of cause and effect of the other. Leading to my own scientific data uncovered in the depths of the crater lake Rano Kao on Easter Island. It is there, in a living quagmire of slowly decomposing plants and fossil pollen where a 15,000 year climate history was uncovered. Repeating cycles of extreme cold and hot events occurring every 637 and 719 years respectively, also unfold supporting global events, celestial events and human behavior along this timeline. One event, the last cold event peaking in 1456AD, is foretelling of another event coming in 2027. (Ref: <https://eartharxiv.org/repository/view/2000/>)

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*Soda Bottles, Razor Blades, and Toys—Documentation of the Mesa Verde Company's Cabin Concession Area (5MV4450) at Mesa Verde National Park, Colorado*

Carole Graham and Sheldon Baker

In 2019, archeologists at Mesa Verde National Park had the opportunity to document the site of Mesa Verde Co.'s cabin and tent cabin concession (5MV4450), located in the Headquarters Loop on Chapin Mesa. The concession was in operation from just before World War II through the early Cold War years (ca. 1939–1960s), with multiple building episodes. Although the structures have long since been dismantled and removed, building footprints, utilities, and hundreds of artifacts—including soda bottles, toiletry items, and toys—still remain. Archeologists mapped the site using Esri's Collector app (paired with an Eos receiver getting real-time data correction) and compiled geospatial and analytical data in a comprehensive geodatabase developed for recording both prehistoric and historical sites at Mesa Verde. Investigations at 5MV4450 provide a glimpse into the vacation lives of Mesa Verde visitors during the mid-20th century, creating a detailed snapshot of a particular time and place in the history of tourism and the development of visitor services by the National Park Service.

*Northern Chaco Outliers Project: Watershed Analysis of the Lake View Community Group*

Jeremy Grundvig and Kellam Throgmorton

The geomorphology and hydrology of a region can provide crucial insight to help understand ancient communities use of the landscape. Coupled with continually emerging technologies used by Geographical Information Systems (GIS), data availability, and advances in hardware; these technologies are enabling an expanded community to conduct complex spatial archaeological research. Can these technologies help us better understand how the ancient inhabitants used their local terrain and resources? Was a community's placement intentional due to the local hydrology, soil richness, convenience or other factors? The following watershed analysis of the Lakeview community group, a northern Chaco outlier, highlights the ancient site's location at the confluence of several streams. The analysis also shows the watersheds potential velocity based on flow accumulation models.

*Aztec Ruins National Monument: In Search of Identity*

Kathy Hensler

Social Identity has been a hot topic at Aztec Ruins since the inception of Earl Morris' pioneering excavations, albeit one that has gone by many different names-culture, ethnicity, sphere of influence, etc. But social identity is tricky, being self-defined and multi-faceted. The premise that immigrants from Chaco Canyon created the great house known as Aztec West alongside a local Middle San Juan population is now well accepted. But their relationship to populations from Mesa Verde is murkier, due in part to poor chronological control. This is now changing with the ongoing Fill Levels Adjustment Project investigations at Aztec Ruins National Monument. With better chronological control comes the realization that aspects of social identity other than origin may better describe the changing material culture of Aztec West.

*Partnerships and Pandemic Preparation at the NMSU 2021 Field School*

Kelly Jenks, Fumi Arakawa, and Aimee Oliver-Bozeman

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The 2021 NMSU Archaeological Field School faced two major challenges: how to accomplish two totally different collaborative field projects each led by a different faculty member, and how to proceed with the field school program during a global pandemic. The solution to both problems, and to various others that popped up along the way, was to work together. This season, for the first time, the NMSU archaeological field school was split into two consecutive field sessions: one involving survey and documentation at a multicomponent (but mostly historic) site east of Albuquerque, and one involving salvage excavation at a Mimbres site on the Gila National Forest. Fumi Arakawa directed the excavation project, which was managed in collaboration with that forest. Kelly Jenks directed the survey project, which was developed and managed in collaboration with the Cañón de Carnué Land Grant and the City of Albuquerque's Open Space Division. In both cases, the field projects served the needs of these research partners while simultaneously preparing students for work in this industry. In order to secure NMSU's permission and support for this field class, field staff worked together to implement a safety plan that emphasized camping, outdoor work, and communal responsibility.

*Mud Bricks and Masks: Adobe Brick Architecture and Kachina Ceremonialism at Fourmile Pueblo*  
Douglas Johnson and Christopher Johnson

Fourmile was the largest pueblo in the Silver Creek Settlement Cluster, ancestral to both the Hopi and the Zuni, and often associated with the development of Kachina ceremonialism. The property was purchased by private investors in 1987 for the purpose of looting pottery and other artifacts. An architectural analysis of the Southeast Roomblock was performed as a salvage archaeology project, initiated as my thesis project at NAU, and completed with the assistance of NPC students and volunteers from the Arizona Archaeological Society. Surprised by the extensive use of adobe brick construction associated with Salado pottery, a preliminary report (Johnson 1992) suggested the roomblock may have been built quickly as an organized effort by a group of immigrants. More complete analysis now indicates this linear roomblock actually grew incrementally through a strategic combination of stone and brick construction, with outward facing as well as plaza-oriented room sets added in a highly standardized fashion as family units joined the community in creating two large ceremonial plazas. Rather than reflecting influence from the south, adobe brick architecture was already well established at Fourmile and on the Colorado Plateau in general. Construction practices with frame-molded bricks became increasingly standardized at large plaza-oriented pueblos across the Little Colorado region during the mid-to-late 14th century, corresponding to the known expansion of Kachina ceremonialism in the Western Pueblos.

*Flat Top Mountain, Desert Varnish, and Early Man in Southeast Utah: A Progress Report*  
Tim Kearns

This poster presents an update on continuing research at two sites on Flat Top Mountain, an isolated mesa in southeast Utah. The sites are predominately surface lithic scatters associated with toolstone-quality mudstone and superficially resemble other lithic procurement locales in the region. Artifacts at both sites are, however, distinguished by desert varnish coatings and activities other than lithic procurement are represented. The poster briefly describes the sites and summarizes two elements of the research: assemblage variability relative to site type and age, and dating the desert varnish. Lithic procurement and woodworking tool use are indicated by the assemblages as well as more esoteric activities. Also, diagnostic artifacts document occupation during the Archaic and Pueblo IV periods. Additionally, elements of the lithic technology are reminiscent of early lithic industries in the Sonoran and California deserts and are potentially

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indicative of Paleoindian-age or earlier use of the sites. The two analytical techniques used to date desert varnish-coated artifacts, cation ratio dating and varnish microlamination dating, are described and the results, demonstrating intermittent site use from pre-Clovis times to the 14th Century A.D., are summarized.

*The Cultural Rematriation of Three Mesoamerican Stone Designs: A Reinterpretation of Patriarchal Analysis in American Archaeology*

Aleana Kingsley

In response to the challenge by Dr. Stephen Lekson to explain the symbolic meaning of T-shaped doors in Southwest archaeological sites, this paper will offer three matriarchal explanations of major stone works in Mesoamerican & Amerindian archaeology. The paper will provide photographic analysis of: 1) a potential meaning for T-shaped designs in Southwest architecture and ceramics; 2) the cultural significance for the Hands & Heart/Serpent Skirt on the sculpture of Aztec goddess, Coatlicue, and 3) a synergistic reinterpretation for the phallic sculptures at the Templo de los Falos, Uxmal, in relation to a major Mexican and Indigenous cultural her-story of design. Dr. Kingsley is a cultural historian focusing on ethnographic interpretations of the Tree of Life, Flower Worlds, and other Indigenous plant uses. She is preparing the second edition of a work reviewed by Dr. Richard E. Schultes, with a Foreword by Dr. Andrew Weil, to be retitled: The Green Earth: Plant Medicine and Natural Rights.

*Misunderstood: The Wetherills and Southwestern Archaeology*

Harvey Leake

Members of the Wetherill family of Mancos were pioneers in southwestern archaeology, beginning their endeavors in the 1880s. Narratives on archaeological history often misinterpret their motives and accomplishments, drawing from hearsay and overlooking critical primary source materials that document the family's enduring passion for preservation of the antiquities of the region. The speaker will summarize these important neglected sources and the testimonies of esteemed archaeologists who knew them and attested to the integrity of their work. The speaker is a descendant of John Wetherill, and his research over many decades has taken him to libraries, archives, and the homes of family elders whose recollections, photographs, and memorabilia have brought the Wetherill story to life. He is a regular contributor to the online Canyon Country Zephyr journal.

*Poems from the Field*

Janet Lever-Wood

Not your typical paper. Writing over the last 20 years, poems that reflect place and purpose, archeological sites and field work; understanding marks of men and women throughout time.

*Signs of Syncretism at Mesa Prieta: diachronic trends in cross-cultural visual culture along the Northern Rio Grande in New Mexico*

Chester Liwosz

Traditionally known as Tsikwaye, Mesa Prieta (Black Mesa) overlooks not only the "Tewa World," but also has a long history of bounding cultural liminal spaces. Several millennia's worth

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of petroglyphs emblazoned on varnish-blackened basalt reveal both enduring traditions and ephemeral horizons in cultural practices and religious symbolism. This poster explores iconographic parallels throughout the duration of human occupation of the area, connecting the visual culture of the Northern Rio Grande to broader inter-regional trends and historic (*sensu lato*) events for the continent during the Archaic, Pueblo, and Postcontact Periods. Thanks to contributions from our supporters, especially Jim Duffield, we present a host of visually similar correlates to Mesa Prieta's iconography from neighboring and distant regions. In this manner, the emergence of this mesa as it is today is the result of placemaking processes dependent on far-reaching networks. Rather than synthesizing a thesis from a singular cultural moment, this presentation emphasizes an extensive and ongoing sequence of dynamic intercultural connections. Mesa Prieta's petroglyphs express not only local and individual identities and ideologies, but also the sharing of (and at times riffing on) borrowed elements from extra-local sources throughout extensive interconnected webs of peoples and places who cohabitated multiethnic and ever-evolving worlds.

*Archaeological Investigations at the California Gulch Middle Archaic Site, Santa Cruz County, Arizona.*  
Shannon Lopez, Nicholas Billstrand, and Daniel Sorrell

The California Gulch Middle Archaic Site (AZ DD:12:54[ASM]/AR-03-05-02-00497) is a large, 13-acre, multicomponent site located within the Coronado National Forest, Santa Cruz County, Arizona. The site was first recorded by Coronado National Forest personnel (Mehalic 2008); it was subsequently re-recorded by Northland Research Inc. (Northland) (Carpenter and Hart 2009). AZ DD:12:54(ASM) was revisited by Cogstone Resource Management (Cogstone) during survey efforts in October of 2020. During the current investigations Cogstone archaeologists documented 13 new features and 41 temporally or functionally diagnostic artifacts located south of the previous surveys conducted by the Coronado National Forest and Northland. In November of 2020, a phased data recovery of was conducted in the southern-most portion of the site, including excavations focused on seven of the 13 newly documented features. Over 2,200 artifacts representing household and mining-related items were recovered along with many faunal remains from a large mammal. Preliminary findings based on diagnostic artifacts suggest an occupation period between 1890 and 1940 with the majority of material predating 1920. This poster presents the preliminary results of the 2020 data recovery and discusses the future research directions and questions associated the historic occupation at the California Gulch Middle Archaic Site.

*Point Pueblo Pit Structure*  
Carol Lorenz and David Preston

In 2019, a trench was dug thru a depression believed to have a structure beneath it. A segment of burned wall was revealed at the west end of the trench. Work resumed in 2021 with a 2 X 2m unit. Floor 1 of a midden-filled pit structure was revealed at ~245 cmbd. On the floor was a mealing bin with three associated vessels, a small wing wall, three types of textiles, and multiple dendros, possibly from a cribbed roof. Sherds, debitage, burned corn cobs, stone tools, and animal bones (some modified into awls) were recovered from the general fill. A 50 cm by 50cm test trench was dug in the southeast corner of the unit to see whether sherds from below Floor 1 were different from those recovered in the fill. Several sherds, a piece of a mano, and several burned corn cobs were recovered, but more remarkable was the presence of two additional floor segments, one at 259 cmbd and the other at 273 cmbd, as well as black burned adobe containing small, smooth,

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straight, burned plant segments (twigs/reeds). Ceramic analysis dates the structure to the late PI/early PII period.

*Rethinking Visitor Land Use and Vandalism in the Wake of the Pandemic*

Lara Loyd

The closure of indoor spaces in the wake of the new coronavirus pandemic resulted in an increase in public land use, including the visitation of archaeological sites. Although this increase in enthusiasm for outdoor recreation should have been a positive outcome, negative impacts on public lands resulted from higher visitation, including an increase in vandalism. To address the problem of vandalism at archaeological sites, we need to collaborate with educators and land managers. Reaching out to school boards is essential for archaeological stewardship to become part of the curricula, which will require working with educators to develop teaching kits. Collaborating with land managing agencies to ensure that quantified data are available is also essential to test the effectiveness of preventative measures against vandalism.

*Stabilizing the Future at Mesa Verde National Park*

Stephen Matt

Ever since the designation of Mesa Verde as a National Park in 1906, stabilization archeology has accompanied the excavation of Ancestral Pueblo sites, which range from pit houses, pueblos, to cliff dwellings. The park continues to use the preserved architecture of these sites as exhibits for visitors to learn, explore, and wonder about the ancient culture. The stabilization program not only conducts basic masonry repairs but also mitigates hazards within archeological sites. The stabilization crew is tasked to access high angles via repelling and mitigate rock hazards above cliff dwellings, brainstorm ways to slow erosional processes expediated by heavy foot traffic, and conduct Burn Area Emergency Response treatments for new and previously recorded sites after wildfires. There is no stopping the stabilization at Mesa Verde and other NPS units—not even a pandemic could put a halt to the work we complete! Only the future can tell what threats are looming, and the Stab crew is ready to put down our tools and dangle off ropes to ensure visitors, scientists, and researchers will continue to learn about the complex Ancestral Pueblo culture. This poster will present the duties of the Mesa Verde Stabilization crew from 2018 to the present.

*Mesa Verde National Park's Cultural Resources Program: A Summary of Project Work During the 2020 and 2021 Seasons (or, How We Spent Your Tax Dollars)*

Christine McAllister

Mesa Verde's Cultural Resources Program has completed a number of Preservation and Compliance-related projects over the past two years. Stabilization work included projects at alcove sites including Cliff Palace, Long House, and Spring House and mesa top sites including Sun Temple, Site 16 and Far View House. The crew also performed stabilization work out-of-park at Lowry Ruins for the BLM in Canyons of the Ancients National Monument. The primary Section 106 Compliance projects included pedestrian survey for a new Wildland Fire Facility with proposed locations on Chapin Mesa and near the Park entrance, and archeological testing along the Mesa Top Loop for an upcoming road rehabilitation project and addition of a bike lane. During the fire center survey we recorded 19 sites, including two historic sites, a water tank and CCC rock quarry. The landscape was used extensively during the Basketmaker III and Pueblo I

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time periods and there is a possible prehistoric road bisecting the project area. The testing highlight was the discovery of an early Pueblo II pithouse that was not evident on the surface during survey. The Park also collaborated with the University of Notre Dame on the Far View Archaeological Project (FVAP) survey in 2021.

*Who's Watching (the Sites)?*

Diane McBride

The Cultural Site Stewardship Program for the BLM/Tres Rios Field Office of Southwest Colorado is managed through a partnership with Southwest Colorado Canyons Alliance (SCCA). SCCA is the “friend’s organization” for Canyons of the Ancients National Monument (CANM). The program currently includes approximately 65 dedicated volunteers who monitor 125 cultural sites in CANM and on other BLM-managed lands in Montezuma, Dolores, La Plata, San Miguel, and Montrose Counties. Trained volunteers abide by a code of ethics to collect annual baseline photos and periodic monitoring data of their sites that include impacts from natural, livestock, and human sources. Stewards often provide information about sites that were not a part of the original recording and enhance our understanding of the past. Most volunteers in the program are retirees that relocate to the area and fall in love with the expansive cultural landscape of the region. While they have the time and dedication to monitor on a consistent basis, we have long been lacking other key components of the community. These missing voices include descendent communities, youth, and families. Southwest Colorado Canyons Alliance will move forward in identifying solutions to these issues through engaging Native American voices, families, and youth through Classroom Stewardship possibilities.

*The Value of Volunteers*

Diane McBride and Bob McBride

Since 2008, approximately 30 members of the Hisatsinom Chapter of the Colorado Archaeology Society have participated in cultural resource surveys for private landowners. The surveys have involved thousands of acres and identification of hundreds of sites. All sites are recorded with the Colorado Office Archaeology and Historic Preservation (OAHP) for entry into the statewide COMPASS database, making the information available to archaeological professionals. All volunteers adhere to the Hisatsinom Code of Ethics. Information about the property location, landowner, sites recorded, and survey results is kept confidential. Many of the volunteers have completed courses from the Program for Avocational Archaeological Certification through History Colorado, and the group often collaborates with professional archaeologists at Crow Canyon Archaeological Center, Canyons of the Ancients National Monument, and contract archaeology firms. Maintaining close ties with professional archaeologists assures the highest possible quality of cultural inventories. The Survey Team works closely with the private landowners to educate them about the importance of preserving cultural sites. Satisfied landowners often tell their neighbors about the survey, resulting in new surveys and larger blocks of land surveyed. Several landowners throughout the years have even joined the survey team.

*Portable X-Ray Fluorescence Compositional Analysis and Recording Techniques of Pictographs at Canyon de Chelly National Monument*

Heather Morrison

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This thesis research focused on an actively deteriorating rock art site that lacked complete site documentation located in Canyon de Chelly National Monument of Navajo Nation and northeastern Arizona. The presented research involves a range of advanced site recording procedures and the elemental analysis of pictographs with a non-destructive portable X-Ray Fluorescence (pXRF) device. The study aimed to evaluate rock art documentation techniques and the accuracy of pXRF for identifying mineralogical differences between shades of color. The pXRF examination generates qualitative data regarding the chemical composition of coloring agents for red, yellow, black, green, white, and orange pictographs. The research highlights the effectiveness of pairing pXRF analysis with recording procedures, such as DStretch, site forms, Gigapan photography, and photogrammetry for effective southwestern rock art investigations.

*Bureau of Land Management Canyons of the Ancients Visitor Center & Museum*  
Blythe Morrison and Sheree Mann

In July 2021, curation staff at Canyons of the Ancients Visitor Center & Museum finished a massive rehousing project involving a collection stored there since the museum opened in 1988. The Chappell Collection consists of 4,921 artifacts removed from numerous archaeological sites on private land in the Four Corners region by Cliff and Ruth Chappell between the years of 1929 and 1982. Local residents formed the Anasazi Historical Society (AHS) in 1982 to care for the items until 2019, when members elected to transfer ownership of the collection to the Bureau of Land Management. Over the years, the Chappell Collection has posed challenges for curation staff and volunteers, including a significant NAGPRA summary currently in progress. Conversely, the scale and variety of the ceramic collection has provided an opportunity for innovation with mount making techniques. Despite challenges, the Chappell Collection and its complex past remain iconic features of the regional archaeological history of Montezuma County.

*Fewkes Digital Archive Project – Update*  
Greg Munson and Ray Williamson

Dr. Jesse Walter Fewkes made a substantial contribution to our knowledge of Indigenous ethnology and Southwestern archaeology. His collection of original notebooks and photographs is housed at the National Anthropological Archives of the Smithsonian Institution. These records are vital to the correct interpretation of certain Ancestral Pueblo architecture and to the traditional knowledge of the Indigenous societies he studied. Nevertheless, his work in the Southwest is not without controversy, for his techniques and the publication of sacred knowledge could be viewed harshly through today's cultural lenses. The project seeks to recover the raw data, often unpublished or misinterpreted, and make it available to the people he studied. The records shed light on the dynamic communications between Fewkes and the new era of Southwestern archaeologists represented by Alfred Kidder, founder of the Pecos Conference. Notes and letters reveal that this was a competitive era illuminating friendships and rivalries. Evidence shows that Fewkes began to draw distinctions in architectural types as early as 1917 which may have influenced the development of the proposed Pecos Classification System in 1927. The project will require consultation with Indigenous peoples, institutional level partnerships and significant funding to be completed.

*Sandals at Point Pueblo*  
Kayla Orndorf, Julia Coverdale, and Brenna Fennessey



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During the San Juan College 2021 archaeological field season at Point Pueblo, many small burned textiles were found throughout the burned roof layer in Room 33 of the Pueblo II/III Greathouse. In Room 36, which is located directly east of Room 33, thin foot-shaped stone slabs, often referred to as sandal lasts, were found. Room 36 also contained many shaped rectangular stone slabs, slabs which have been referred to as lap stones. An area that has yet to be excavated between Rooms 33 and 36 may yield results of a doorway connecting the two rooms. Looking at the evidence of textiles and stone slabs, I conclude sandal production may have been occurring in this area.

*Athapaskan Rock Art, A.D. 50-900, eastern Utah and Western Colorado*

Carol Patterson

Karl Schlesier, (1997) clearly argued for Fremont development from Avonlea II antecedents, and that the variants became the bulk of the Apacheans in the Southwest following Aikens 1966, 1967. He states: "It might also be interesting to matchup the anthropomorphs of the rock art with the ag'n, gahe, or hacti (mountain spirit) concept of the Apaches." So taking his lead, I took a deep dive into the cultural ethnographies of the Jicarilla and Lipan Apache he proposed took the inner-mountain migration route from Idaho/Wyoming border through eastern Utah.

*Chronometry and Virgin Branch Social Dynamics in the Moapa Valley, Southern Nevada*

Daniel Perez

The chronometric record of the lowland Virgin Branch region of Southern Nevada has long been assumed to loosely correlate with neighboring archaeological regions; however, this premise remains almost entirely untested. Recent Optically-Stimulated Luminescence (OSL) dates from two Virgin Branch sites in Southern Nevada provide greater clarity of the chronometric record and associated inferential conventions regarding Virgin Branch chronology and social dynamics in the Moapa Valley. In light of these OSL dates, this paper also presents a reassessment of broader considerations regarding inter-regional trade, exchange, and associations between Virgin Branch populations in Southern Nevada and neighboring Kayenta populations in northeastern Arizona.

*Dating in 2021: Ringing in a Dendroarchaeology Program at Crow Canyon Archaeological Center*

Katherine Portman and Ben Bellorado

In 2021, Crow Canyon Archaeological Center in Cortez, CO developed a new dendroarchaeology internship program designed to analyze in-house tree-ring samples and train the next generation of dendroarchaeologists. Working in conjunction with the Laboratory of Tree-Ring Research at the University of Arizona, Dr. Bellorado (the Laboratory Manager at Crow Canyon and a trained dendroarchaeologist), supervised the implementation of a hybrid system of analysis that combines low-tech and cutting-edge methodologies. Preliminary dates from the Haynie site (5MT1905), a Chacoan outlier community, reveal that the roots of the community reach as far back as the late 700s CE, as evidenced by the burned roof of a pitstructure under the western great house. Further tree-ring related research will include paleoclimatological and paleohydrological modeling as well as analysis and development of tree-ring date chronologies from elsewhere around the site.

*Occurrence of Turquoise in the Southern San Juan*

Michael Proper

While on a survey on the Carson National Forest, Jicarilla Ranger District I found a piece of turquoise. After hearing of Ted Frisbie's death I found myself thinking of his lectures and love of the little bluestones. His articles and presentations, left me with a number of questions one could ponder about this turquoise plank. How common or uncommon was my find? Did its location provide some inside were one might find turquoise? Most of the bluestone references I have found thus far, are from Formative or Pueblo I period sites. My isolated find appears to be the exception, with most finds associated with other usual items. Turquoise artifacts were often associated with other materials and part of a caches. What is a cache? One or more items?, if an Olivella shell bracelet has turquoise inlay in it one artifact or two ? Lost in this intellectual "do-loop" it was time to head to Pecos!

*All the small places: An Intensive Inventory Around Wupatki Pueblo*  
David Purcell

Museum of Northern Arizona and the National Park Service collaborated to define and assess potential long-term threats confronting Wupatki Pueblo (WS 2676), the centerpiece of Wupatki National Monument in northern Arizona. The pueblo walls exhibit cracks suggesting that the outcrop on which it was built is settling unevenly, and the site is vulnerable to landslides. The archaeological component of the project entailed intensive archaeological inventory within 31.8 acres surrounding Wupatki Pueblo. The survey identified and documented seven isolated features or artifacts, and 95 features associated with 18 archaeological sites (including WS2676), 13 of which were previously recorded and five of which are newly identified sites. Wupatki Pueblo had not previously been formally recorded in the Wupatki Survey database, but as a result of this survey, known features associated with the site increased from four to 22. These include prehistoric structures, rock art, and midden deposits, and historic modifications, excavated deposits, and additions. Some of the prehistoric features suggest the existence of a zoned "villagescape" similar to that described for some Tewa villages. The number and complexity of features near Wupatki Pueblo suggests the need for a reassessment of the immediate surroundings of other large Puebloan villages.

*Eul Overlook: A Late Pueblo I/Early Pueblo II Hamlet on Carracas Mesa, Northwestern New Mexico*  
Jim Railey

Eul Overlook is one of many late Pueblo I/early Pueblo II hamlets on Carracas Mesa, just east of Navajo Lake in far northern New Mexico. Data recovery by SWCA in 2008 focused on a portion of a pit house, along with extramural features. The pit house had a lower floor, a bench, and wall niches above the bench. Twelve whole or reconstructible vessels were recovered, including six whiteware vessels in the wall niches, four grayware jars on the bench, and two more whiteware vessels on the lower floor. A pile of approximately 10,000 flakes, mostly of chalcedony and obsidian, was also encountered on the bench near the grayware vessels, and a cache of ground stone tools was found in what appeared to be another wall niche. Extramural features included cooking pits and post-hole alignments that appear to be part of one or more stockades surrounding the hamlet.

*Things Are Looking Up for the Greater Chaco Landscape in 2021*  
Paul Reed

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After four very, very long years, there is light at the end of the tunnel for the Greater Chaco Landscape. The Dept. of Interior has halted the planning process that was rushed in 2020 and announced that it will extend into 2022. However, my research from 2020 in the 10-mile protection zone has revealed site clusters and communities that have yet to be protected by Federal action. New House and Senate Bills to protect the 10-mile zone are pending in Congress. In this presentation, I will discuss new developments and the future of protection around Chaco Canyon.

*Point Pueblo: Investigation of the Great House with Focus on Room 33*

Kegan Roady and Linda Wheelbarger

Ongoing investigation of the Point Pueblo Great House continued during the 2021 San Juan College Field School. Point Pueblo is located south of Farmington, New Mexico and situated above the San Juan River. Previous findings revealed a significant D-shaped Great House complex consisting of 10 or more considerably large rooms, several of which are multi-story, and an enclosed kiva with a painted maroon and white bench. Additionally, an arc of 12-15 masonry rooms was later constructed and attached to the southern aspect of the Great House. In 2021, a portion of a curved wall located in between the arc of rooms and the Great House which appears to represent an interior plaza kiva. This study addresses the key results obtained from one structure, Room-33, of Point Pueblo's Great House community. A burned roof layer discovered in that room revealed abundant carbonized textile fragments, a wide variety of macrobotanical remains, and several burned latillas. A Pueblo III occupation of Room 33 at the time of burning is indicated through the discovery of a whole bowl associated with that period. The research conducted contributes to the examination and public conversation of Ancestral Puebloan societies in the San Juan Basin.

*Totah Archaeological Project*

Steven Rospopo, Jamie Rellstab and Louis Chavez

The 2021 San Juan College field school at Point Pueblo has resulted in a new interpretation on construction and occupation of the Great Kiva. Of primary interest, a second bench, inset by 70cm, was discovered below Floor 3. Three floors are associated with the upper bench and two floors are associated with the lower bench. Mesa Verde ceramics are associated with Floor 1, early and late McElmo ceramics are found between Floors 2 and Floor 3, and Pueblo II ceramics are associated with Floors 4 and 5. Of primary interest, is the fact that a majority of ceramics associated with Floors 4 and 5 are Cibola in origin including Gallup B/W and Chaco B/W ceramics. In general, numerous exotics such as beads, pendants, necklaces, and fetishes, have been found associated with the floors.

*The "La Paz Area" of Alameda Pueblo (LA 421): A Portion of a Classic Period Site Located on Private Property, Bernalillo County, New Mexico*

Juanita Sandoval and Hunter Claypatch

Alameda Pueblo (LA 421) is a well-known Classic period site located in Bernalillo County, New Mexico. The site was originally recorded in the 1930s, and subsequently by the Office of Contract Archaeology (OCA) in the 2000s; however, a significant portion of the site has remained in possession of the Shoats family since the 1950s. While quarantining on the Shoats

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property during the summer of 2020, we obtained permission from the family to conduct an informal survey of the portions of Alameda Pueblo that were located on private property. Investigations focused on a 210 x 125-meter agricultural plot called the “La Paz area”—in reference to Daniel and Maria de La Paz Shoats who originally purchased the property. During the survey, over 700 prehistoric artifacts were recorded. Glaze ware rims suggest a primary occupation from 1300-1490 CE (Glaze A through C). This indirect dating closely aligns with evidence from previous investigations at the site. Although informal, this survey provides important insights into the overall extent of Alameda Pueblo and demonstrates the rich archaeological potential for sites still located on private property.

*Conservation Through Survey: A Collaborative and Educational Approach to Southwest Archaeology*  
Janelle Scarritt, Emerson McDaniel and Connor Ball

In 2017, Marvin and Heather Reichenau partnered with the Crow Canyon Archaeological Center (CCAC) to identify and preserve ancestral Pueblo sites on their property. CCAC conducted Class III Pedestrian Survey on the property in 2017, 2018, 2019, and 2021. With the help of college field school students, 12 sites were identified. Based on diagnostic surface artifacts and visible architectural features, most sites date to Pueblo I and II periods. The survey results provide new paleodemographic data pertaining to ancestral Pueblo sites, Indigenous settlement patterns in the Four Corners region, and they help to better contextualize previous and ongoing CCAC projects and findings. This research exemplifies collaborative efforts between Indigenous communities, landowners, and archaeologists by employing survey and education as a form of preservation archaeology.

*Worlds Forever Changed: Vazquez de Coronado and Pueblo Resistance in the Middle Rio Grande Valley, 1541-1541*  
Matt Schmader

In 1540, Francisco Vazquez de Coronado led the first major exploration by outsiders into the American Southwest. Not only was this the first contact on native peoples made by foreigners, Coronado's (in)famous expedition was one of the largest ever organized under auspices of the Spanish crown. Failing to find his intended goal of a route to Asia by the time he reached Cibola (Zuni), Coronado pressed on to the Rio Grande valley by the end of the year. There, Southern Tiwa villages were overtaken and a series of battles that are now known as the "Tiguex war" broke out. Current research at the largest of these conflict sites near Albuquerque, called Piedras Marcadas pueblo, indicates substantial resistance on the part of pueblo defenders. The mixture of different warfare technologies, different ethnicities of people involved, and the concerted defense put on by the Pueblo people all reflect on a critical turning point in the histories the many who were involved.

*Using Computer Vision and Deep Learning Algorithms to Predict Pottery Types: An Example Using Ancestral Pueblo Pottery from the Central Mesa Verde Region*  
Dylan Schwindt, Kari Schleher, Michelle Turner, Grant Coffey, and Benjamin Bellorado

Computer vision, machine learning, and artificial intelligence techniques have made much progress in the past several years. Here we explore applications of Convolutional Neural Network (CNN) models to classify Ancestral Pueblo pottery types in the central Mesa Verde region of southwestern Colorado, including Chapin B/w (575-880 CE), Piedra B/w (800-920 CE),

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Cortez B/w (920-1060 CE), Mancos B/w (920-1180 CE), McElmo B/w (1060-1280 CE), and Mesa Verde B/w (1180-1280 CE). We compared the efficacy of four open-source CNN models retrained on 903 images of distinctive decorated black-on-white pottery types: 1) Resnet trained on Imagenet, 2) Xception trained on Imagenet, 3) Inception V3 trained on Imagenet, and 4) VCG15 trained on Imagenet. The Resnet model trained on Imagenet and retrained on our data performed the best with our data, accurately classifying 79% of the test classification images. The sherds that were difficult for the models to type are also more problematic for archaeologists to type. Future work on this project will include testing additional augmentation and regularization parameters with the Imagenet model. We also plan to add more pottery sherd image examples, for other types and for the models' problematic types to assign correctly, to improve the model.

*Archaeologists Make Crummy Plastic Surgeons: OAHP's Ongoing Archaeology Education & Outreach Facelift*

Becca Simon

Since 2016, the stability and consistency of the Office of Archaeology and Historic Preservation's (OAHP) archaeology education and outreach efforts have been less than ideal. Many might say that all groups engaged in such efforts are in the same boat because of the pandemic. Reflection and assessing the last five years is necessary to identify the good and the bad in order to grow. This presentation is a reflection. Though, only a short one, as there is fieldwork, lab work, and class work to present. Not to mention, hopefully inspiring others to collaborate and give suggestions for a better tomorrow.

*Shepherders, Cowboys, and Arborglyphs: The Historic Landscape of Haycamp Mesa, Colorado*

Ryan Spittler

During the summer of 2020, Woods Canyon Archaeological Consultants was contracted by the San Juan National Forest to conduct a cultural resource inventory on Haycamp Mesa as part of a multi-year vegetation management plan. Over 1,400 historic aspen arborglyphs were documented during the almost 4000-acre survey. There were a total of 95 cultural resource sites and 120 isolated finds documented. The arborglyphs dated from 1895 to 1970 and were most associated with five separate linear resources: the Lost Canyon and Bear Creek Wagon Road, the Mancos to Rico Wagon Road, the Lost Canyon Stock Driveway, the Highline Stock Driveway, and the Morrison Trail. The arborglyphs are, in effect, historic documents and are of value in reconstructing the cultural landscape of the region. Because of this, the San Juan National Forest was able to use the data from the Haycamp Mesa survey to designate the project area a Historic Cultural Landscape mostly related to grazing and ranching in the area, beginning around 1880 until 1970. These historic cultural resources serve as a reminder of Colorado's rich and diverse history.

*Basketmaker Villages with a View: Survey at Muley Point, Cedar Mesa, Utah*

Kim Spurr

Since 2015, the Museum of Northern Arizona has partnered with Glen Canyon National Recreation Area to complete inventory survey and monitoring to provide robust data for long-term management. Survey completed in 2020 included 669 acres around Muley Point, on the southern edge of Cedar Mesa, Utah. This area has seen an exponential increase in visitation in

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recent years, partly due to the proximity of the new Bears Ears National Monument. The project documented 44 sites spanning the Archaic through Historic periods, but the most intense occupation occurred during the Basketmaker II period when large habitation sites and activity areas covered a broad sand dune ridge running parallel to the mesa edge. Slightly more than half the sites show impacts from livestock activity, an equal number show impacts from visitors, and more than one-quarter have damage from illegal wood cutting. Livestock impacts at most sites are not extensive or severe, possibly due to the lack of natural water sources except for seasonal water pockets. Visitor impacts from camping and driving are overall more intensive and extensive but are focused on Muley Point and adjacent overlooks, and so far have caused minimal damage to the large habitations.

*Sacred Scarlets: Scarlet Macaw Conservation and the Desert Southwest*

Kelley Taylor

Kelley Taylor, Founder and Director of Sacred Scarlets and aviculturist, brings along to the Pecos Conference the newest members of her entourage, two fledgling Scarlet Macaws. Sacred Scarlets, a 501(c)(3) since 2010, is devoted to Scarlet Macaw conservation and bringing about awareness of their deep and often mysterious history in the American Southwest and Mexican Northwest. Taylor and her two adult Scarlet Macaw companions, Sedona and Bonita, provide lectures and free-flight demonstrations to various venues including educational agencies, national parks, libraries, institutions serving those with life challenges as well as assisting academic research and conservation globally. Taylor's work explores the physiological and behavioral needs of these birds within the context of the modern archaeological interpretations of procuring, raising and breeding Scarlet Macaws in the prehistoric cultures of the Desert Southwest, the expansive cosmological associations both past and present, as well as conservation efforts and achievements in both Central and South America. Some of Taylor's extensive research is included in an upcoming publication by the University of Arizona Press, *Birds of the Sun: Macaws, Parrots, and People in the Pre-Hispanic U.S. Southwest and Mexican Northwest*, edited by Christopher Schwartz, Stephen Plog and Patricia A. Gilman. Taylor continues her research and is authoring her own book on Scarlet Macaws.

*A Post-Chacoan Cylindrical Vessel from Northern Black Mesa, Arizona*

Michael Terlep, Joel Nicholas, Kelley Hays-Gilpin, and Timothy Ward

A recently identified Tusayan Polychrome (AD. 1125-1290) jar from northern Black Mesa, Arizona represents the only known Post-Chacoan cylindrical vessel. Identified within the midden of a small late Pueblo II-early Pueblo III period habitation site the jar circumstantially connects Ancestral Puebloan groups in the Kayenta area to the Chacoan system. This presentation discusses the context of the jar, Hopi interpretations and insights, and ongoing residue analysis leading to two sociocultural considerations. First, we consider the possible connections between the Ancestral Pueblos of western Kayenta and Chaco Canyon, a 220 kilometers space separated by the Chuska Mountains. Second, we reflect on the ritual beverage consumption associated with Chacoan cylindrical vessels and its connections to the Kayenta heartland.

*Updates from the Northern Chaco Outliers Project*

Kellam Throgmorton

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Since 2016, the Crow Canyon Archaeological Center has been conducting fieldwork within the Lakeview Community near Cortez, Colorado. The central focus of the project has been the Haynie Site, a community center with two Chaco-era (ca. AD 1075-1140) great houses and an underlying village component dating to approximately AD 790-1075. This talk describes the current state of Crow Canyon's research in the Lakeview Community.

*Update of CMT (cultural modified trees) on the Navajo Nation commercial forest and woodlands*  
Will Tsosie

Abstract missing

*Lumping and Splitting: Design Variation on Mancos Black-on-white Pottery in the Central Mesa Verde Region*  
Michelle Turner, Kari Schleher, and Ben Bellorado

Within the central Mesa Verde region, the Mancos Black-on-white pottery type is an enduring enigma. Mancos Black-on-white was produced from roughly A.D. 920–1180 and includes a wide range in variation in design and technology. During its production period, nearly identical designs were used across the broader Ancestral Pueblo world. In the Cibola, Chuska, and Kayenta regions, for example, a similar range of designs were used, but archaeologists in those regions have separated this range of design variation into distinct, temporally sensitive, pottery types. Under the rubric of the Northern Chaco Outliers Project, Crow Canyon Archaeological Center is investigating the Lakeview Community, a cluster of four great houses in southwestern Colorado. Mancos black-on-white is one of the most common pottery types recovered. Crow Canyon archaeologists have devised a detailed, attribute-based analysis, conducted on a sub-set of the 70,000 sherds analyzed to date. The goal of this project is to test whether these differences in design and technology correspond to temporal or production group differences across the Lakeview Community, allowing for more fine-grained discussions of this variable pottery type. Our presentation reports the preliminary results from this exciting study.

*Reassessing Chaco Sites of My Diné Clan Relatives*  
Davina Two Bears

The Diné (Navajo) have an extensive documented history in Chaco Canyon, yet this fact is less well known by the general public and others. This summer I had a once in a lifetime opportunity to participate in reassessing Navajo sites on Charca Mesa at Chaco Culture National Historic Park with Binghamton University under the direction of Ruth Van Dyke. These Navajo sites date from the late 18th to the early 20th century. The Navajo presence is clearly visible from the summer hogans along Chaco Wash to the winter hogans built in defensive locations atop Charca Mesa. Although I worked as a tribal archaeologist with the Navajo Nation for many years, I was unaware of the extensive occupation of Chaco Canyon by my people, which begs the question of “Why?” In this presentation I share my experience of re-visiting and re-assessing Navajo Sites on Charca Mesa and attempt to answer the question of why I and many others know very little about the history of Chaco Navajos and what we can do to change that reality.

*Historical Archaeology on Chacra Mesa: From Diné Communities to Chaco Additions*  
Ruth Van Dyke, Davina Two Bears, Maxwell Forton, Liv Winnicki, and Katherine Peterson

Chaco Culture National Historical Park contracted with Binghamton University to conduct condition assessments of 16 Navajo sites on Chacra Mesa. In partnership with Diné archaeologist Dr. Davina Two Bears, we carried out this fieldwork during June & July 2021. We re-visited and re-documented historical Navajo communities dating from the 1700s through the twentieth century. These communities included refugee sites like Brugge's "Doll House," the great shield petroglyph panel below Shabikeschee Village, and a longterm winter sheep camp for the family of Choche, or Navajo George. The sites tell a story of intensive Navajo occupation of Chaco Canyon spanning over three centuries. Many of the sites belong to the Táchii'nii clan, which is Two Bears' paternal clan. We followed in the footsteps of those who originally recorded these sites: Gwinn Vivian as part of his MA thesis (1960); the Chaco Project led by Tom Windes (1972); Dave Brugge (1980); and the Chaco Additions survey, led by Bob Powers (1984).

*Using XRF to Predict Agricultural Sediments*  
R.A. Varney and Linda Scott Cummings

While there are no elements that we have found to accurately predict the location (either laterally or vertically) of agricultural fields, testing sediment cores with XRF reveals a pattern of spikes in elemental concentration that, when combined with an indicator of sediment porosity, suggests agricultural activity. Spikes in argon concentration correlate with soil porosity. Elements that include potassium, phosphorous, and sulfur are expected to increase in agricultural sediments if the plants are left to rot in place after harvest. Once we have identified signatures that likely represent agriculture, we sample sediment in depths corresponding to the spikes for pollen analysis. Then we rely on recovery of maize pollen or other pollen representing cultigens to provide direct evidence of agriculture. We use two examples – one where we recovered maize pollen in 15 of the 16 samples identified for testing and the other in which we identified maize in 1 of 2 samples identified for testing.

*The Archaeological Conservancy, a 2021 Update*  
Jim Walker

The Archaeological Conservancy is a national nonprofit Conservation organization dedicated to the acquisition and management of significant archaeological and historical sites located on private land. Over the past 40 years, we have established 550 preserves in 46 states. Jim will update the conference on our latest Southwestern projects.

*Cedar Mesa Perishables Project Update*  
Laurie Webster, Chuck LaRue, and Chris Lewis

In 2019 and early 2020, the Cedar Mesa Perishables Project focused its efforts on the Hazzard-Hearst collection, divided between the University of Pennsylvania Museum and the Phoebe Hearst Museum at the University of California at Berkeley. The collection was made during the early 1890s by amateur archaeologists Charles McLoyd and Charles Cary Graham in Glen Canyon, north of the confluence of the Colorado and San Juan rivers. It is particularly strong in perishable artifacts dating to the Basketmaker II and Pueblo III periods. Initial documentation work was conducted by textile specialists Laurie Webster and Erin Gearty and wildlife biologist Chuck LaRue, then Webster was joined by Piro-Tiwa Pueblo weaver Louie Garcia and Zuni weaver Chris Lewis for more detailed study of the textile and basketry collections. In this



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presentation, Webster will briefly introduce the Hazzard-Hearst collection, then LaRue and Lewis will highlight artifacts of special interest.

*Renewed Documentation of Chacoan Roads and Ritual Landscapes throughout the Four Corners Region*  
Robert Weiner, Richard Friedman, and John Stein

In this talk, we offer an update on our multi-year project documenting Chacoan roads and ritual landscapes throughout the Four Corners region, which forms the basis of Weiner's PhD dissertation. Sites to be discussed include Chambers, Cornfields, Navajo Springs, Skunk Springs, Llave de la Mano, Holmes Group, Kin Nizhoni, and the Gasco Herradura. We will describe our approach of interweaving drone structure from motion (SfM) photogrammetry, LiDAR, on-the-ground mapping, and perspectives from Diné, Pueblo, and other worldwide cultures. We suggest the roads' monumentalized forms, special-use masonry features, and alignments with landforms highlight the role of these avenues in the materialization of religion and perpetuation of social inequality and regional organization in the ancient Southwest, beginning as early as the Basketmaker III period.

*Update on the 2021 San Juan College Field School*  
Linda Wheelbarger

This summer, with a large group of students, we worked in several areas of Point Pueblo, a greathouse community of the Middle San Juan. Units were taken down within Rooms 31, 32, 33, and 36 of the D-shaped greathouse. Portions of a burned roof layer containing carbonized marobotanical and textile materials were excavated in Rooms 31 and 33. Room 36, adjacent to Room 33 and the painted kiva, contained a large concentration of shaped slabs representing sandal lasts and work lapstones. Expansion of the 2019 trench into the northwestern portion of Room 35, a 6m diameter pitstructure, continued through lenses of midden material to the floor where a slab-lined mealing bin was discovered with an adjacent Piedra B/W bowl. Two rooms of the newly discovered Pueblo III Small House 2 were excavated and earlier Pueblo II midden materials were encountered below both rooms. Two units were excavated into the extensive midden on the east side of the site. And finally, we returned to the west side of the Great Kiva to continue exploring Floors 2 through 5. Gallup B/W, Chaco B/W, and other Cibola sherds were found on and below Floor 4 inside the lower bench.

*Miniature mysteries: A Diné "Dollhouse" at Chacra Mesa*  
Liv Winnicki

Hidden up high and against a cliff face at Chacra Mesa is an elaborately constructed miniature sandstone house associated with the Diné occupation. Named the Dollhouse by Vivian (1960), its curious location complicates assumptions of miniature artifacts. The Hayes Survey (1971-1972) describes three miniatures at Chacra Mesa as "toy houses" which illuminates two key issues in our investigations of miniatures. 1) The language we use for miniature artifacts infantilizes these beautifully and thoughtfully crafted features and 2) The validity of the correlation of miniatures to children. I will explore other possible interpretations for miniatures such as learning practices, ritual offerings, and displays of masterful craftsmanship.

*The Lands Between: Announcing the Partnership to Protect Hewett's "Bluff District"*

Kenny Wintch

The intention of this presentation is simply to announce a broad-based, collaborative effort to advocate for better management -- and eventually, indigenous-informed durable protection -- of about a half-million acres of public and state trust lands in eastern San Juan County, Utah. The two-tiered partnership that has come together for this landscape includes tribes and pueblos, NGOs, research institutions and others. A review of the salient reasons why this place matters to southwestern anthropology will be provided, including a reminder of where Edgar Lee Hewett's "Bluff District" placed within his priorities for federal protection of important archaeological districts within the greater southwest just prior to passage of the Antiquities Act. Some graphics showing the location of this landscape and some of the research being supported by the partnership can be seen at the Friends of Cedar Mesa vendor table -- please stop by.