



## **NATIONAL ENDOWMENT FOR THE HUMANITIES**

### **Division of Research Programs**

#### **Narrative Section of a Successful Application**

The attached document contains the grant narrative of a previously funded grant application, which conforms to a past set of grant guidelines. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and each applicant is urged to prepare a proposal that reflects its unique project and aspirations. Prospective applicants should consult the application guidelines for instructions. Applicants are also strongly encouraged to consult with the NEH Division of Research Programs staff well before a grant deadline.

Note: The attachment only contains the grant narrative, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

Project Title:           Origins and Tenacity of Myth, Ritual, and Cosmology in Archaic  
                                  Period Rock Art of Southwest Texas and Northern Mexico

Institution:             Texas State University, San Marcos

Project Director:       Carolyn Boyd

Grant Program:         Archaeological and Ethnographic Field Research

## **STATEMENT OF PROJECT SIGNIFICANCE AND IMPACT**

Scholars have argued that cosmological concepts expressed in Mesoamerican religious traditions persisted across time and across cultural, linguistic, and geographical boundaries (Gossen 1986:5-8). López Austin (1997:5) suggests that these perceptions of reality came out of an earlier, almost unchangeable, Archaic core of beliefs, perhaps as old as the earliest migrations into North America. Carolyn Boyd (Project Director) has identified patterns in the Archaic period rock art of southwest Texas and Coahuila, Mexico, which equate in detail to the mythologies of Uto-Aztecan speaking people, including the ancient Aztec and present-day Huichol. She proposes that the complex Pecos River style (PRS) murals of the Lower Pecos Canyonlands (Appendix 1), which are radiocarbon dated to 2700 BC-AD 600, graphically manifest core cosmological concepts identified by López Austin and others, concepts traditionally attributed to later Mesoamerican agricultural societies (Boyd and Cox 2016). If correct, not only does this support the existence of an Archaic core of belief that shaped the Mesoamerican intellectual universe, it provides an opportunity to identify the date, extent, and location of the oldest documented graphic expression of these enduring cosmological concepts.

Our project seeks to answer the following questions: (1) What pictographic elements within PRS murals graphically represent Archaic core cosmological concepts, and (2) are these elements recognizable to modern indigenous societies whose beliefs emerged from ancient Mesoamerican traditions? We propose to combine archaeological and ethnographic fieldwork to address these research questions. Boyd will conduct fieldwork with Phil Dering, archaeology director for Shumla Archaeological Research & Education Center (Shumla). Shumla will provide staff, equipment, transportation, and use of their previously collected rock art data for the region (Appendix 2). Boyd and Shumla staff will identify and photograph pictographic elements in three PRS murals, conduct digital microscopy of intersecting paint layers to analyze mural stratigraphy, conduct formal analyses to identify the compositional structure of each mural, identify relationships among figures, create written descriptions of the art, and note observations regarding the artistic process. The fieldwork results will inform our ethnographic fieldwork and provide graphic reproductions of the three murals to share with indigenous communities.

The belief system embedded in Huichol (Wixáritari) culture most closely reflects ancient Mesoamerican cosmological concepts (Aedo 2003:221). Our ethnographic fieldwork will involve open-ended interviews with Huichol members of the San Andrés Cohamiata community in Mexico. The Huichol have a rich visual culture through which they relate their sacred stories. According to anthropologist Stacy Schaefer (2002:52), “Wixárika art, whether made for sacred or decorative purposes, is a way in which Wixáritari practice their religion, and the creation of these materials is a way in which they visually manifest major symbols within the public domain.” Stacy Schaefer and ethnobotanist Jim Bauml have worked with the Huichol for more than forty years and have a working knowledge of their language and the symbols they use to communicate meaning. They will serve as translators and guides to Boyd and Dering. We will present wide format printouts (approximately 4 ft x 10 ft) of photographic and illustrated mural panoramas to both male and female shaman/artists to elicit discussion and identification of graphic elements we have deemed as associated with the Archaic core. We will record how Huichol consultants relate these images to their cosmology.

The rich graphic vocabulary of symbols and compositional structure of PRS murals provide us with an unprecedented window through which to study the myths, rituals, and cosmologies that have endured for thousands of years. This work will drive new research into the origins and tenacity of myth, Archaic hunter-gatherer social organization, group identity and cultural interactions, the production and consumption of art, and the early development of Mesoamerican myth and art.

## **PROJECT NARRATIVE**

### **Argument for Intellectual Significance**

On July 22, 2010, Matsihua, a Huichol shaman, visited the rock art of the Lower Pecos Canyonlands for the first time (Appendix 3). Standing before the complex assemblage of figures painted in the White Shaman mural, he related, “These are my grandfathers, grandfathers, grandfathers. They are all here. All my grandfathers, all my ancestors, they are all here.” Matsihua spoke affectionately and reverently as he conversed with his kin, the ancestral gods from primordial times. Although the canyonlands of the Lower Pecos are far from his home in Jalisco, Mexico, the site inspired an emotional and celebrated reunion with his ancestors. Matsihua had never visited the site and was unaware of Boyd’s analysis of the paintings, yet he was able to identify deities and symbols.

Although it is true that the artists who painted these murals are no longer with us, their myths and belief systems live on in the shared symbolic language of Native peoples living today, as evidenced by Matsihua’s reaction to Archaic period rock art. López Austin (1997:5) argues that this shared symbolic world is a manifestation of an Archaic core, an almost unchangeable “hard nucleus” of ancient cosmological and metaphysical concepts. The actors and details may change, but at the core, basic story lines and concepts are resistant to change. And because of this, through the formulation of hypotheses and corresponding verifications, one can make an accurate reconstruction of the ancient systems from which these traditions and practices emerged (López Austin 1993:310). Boyd’s prior research in the Lower Pecos has demonstrated the utility of this approach.

Drawing on over thirty years of archaeological research and iconographic analysis, Carolyn Boyd (Project Director) and her collaborators have identified patterns in the art that equate in detail to the mythologies of Uto-Aztecan-speaking people, most notably the ancient Nahua (Aztec) and the present-day Huichol (Boyd 1996, 1998a,b, 2003, 2010, 2013, in press; Boyd and Dering 1996; Boyd and Cox 2016; Boyd and Busby, in submission). The identification of these patterns led to Boyd and Cox’s (2016) interpretation of one of the region’s best-preserved murals, the White Shaman, as a pictorial narrative relating the birth of the sun and the beginning of time. On July 22, 2010, Matsihua affirmed their interpretation. The Huichol, Aztec, and Lower Pecos narratives appear to be geographically or culturally localized variants of the same creation story—evidence of an Archaic core. Boyd and Cox suggest that while the Lower Pecos Canyonlands may not be the birthplace of these beliefs, they are perhaps the location of the oldest documented graphic expressions of them. The University of Texas Press published their results in *The White Shaman Mural: An Enduring Creation Narrative in the Rock Art of the Lower Pecos*, recipient of the 2017 Society for American Archaeology Scholarly Book Award.

According to David Whitley (2018:203), Boyd and Cox’s interpretation is “very compelling” and “represents the most detailed interpretation of any rock art corpus worldwide.” However, Whitley astutely points out that the function of the art and the depth of its involvement in the Archaic core will only become clear “when other Pecos sites [beyond the White Shaman] and their contexts are analyzed and interpreted, and the rock art corpus can be considered as a whole.” We agree with Whitley and have designed this project to tap into a vast dataset of unanalyzed PRS pictography contained in three of the largest and most complex murals in the region: Panther Cave (41VV83), Rattlesnake Canyon (41VV180), and Halo Shelter (41VV1230) (Appendix 4).

We will collect data at the three sites to answer the following **archaeological research questions**: What pictographic elements within PRS murals graphically represent Archaic core cosmological concepts? Are other PRS murals compositional in structure and narrative in function? At the White Shaman site, the analysis of the mural’s stratigraphy using digital microscopy revealed a strict paint application order. The artist/s applied all black paint first, followed by red, then yellow, and finally white (Boyd and Cox 2016) (Appendix 5). This provided evidence that the mural is a single composition, not a random collection of

images painted across time. Do other murals follow this same painting sequence? Did PRS artists use other mark-making techniques to communicate information? For example, PRS artists often portrayed figures with a series of lines entering or emanating from open mouths to indicated speech and breath. Artists altered the direction of the brushstroke to differentiate between inhalations and exhalations. Are there patterns in the associations or combinations of recurring pictographic elements? As discussed above, Boyd and her collaborators have identified some patterns in recurring elements, but as Whitley stated, we need a more complete analysis of the PRS rock art corpus. These data will potentially further reveal graphic components of the Archaic core and expand our awareness of the PRS graphic vocabulary. If there are consistent patterns in the association of these elements, we may be able to identify underlying rules that governed the arrangement of pictographic elements, much like rules of syntax.

With detailed knowledge about the content, context, and artistic process of the three murals, as well as graphic reproductions of each, we will travel to the Huichol community of San Andrés Cohamiata, Mexico. The Huichol have resisted, to a large degree, acculturation and assimilation into Mexican society; however, their culture has not remained static. While holding fast to their own religion, they have reformulated and incorporated components of Christian-Catholic faith. Regardless, scholars recognize that the Huichol belief system most closely reflects ancient Mesoamerican cosmological concepts (Aedo 2003:221). According to Preuss, Huichol art is the nonverbal dramatization of these concepts and their rich mythology (Orellana 2007:73). Huichol shaman/artists “write” their beliefs into gourd bowls, yarn paintings, beadwork, and weavings (Kindl 2000:53). Art is a tool by which the Huichol sustain the existence of the gods and the cycles of the world.

Anthropologist Stacy Schaefer and ethnobotanist Jim Bauml will be our guides and translators (Appendix 6). We will meet with Huichol shaman/artists to discuss the art and address the following **ethnographic research questions**: Are recurring PRS pictographic elements and patterns recognizable to modern indigenous societies whose beliefs emerged from ancient Mesoamerican traditions? Are some recurring PRS elements more readily recognizable to our consultants than others? Can the Huichol offer insights into the image-making process of PRS pictography or offer insights into patterns in PRS and the visual narratives they portray? What do they see that we have missed?

The results of this project will expand, challenge, and contribute to existing studies into indigenous graphic communication systems (cf. Mikulsa and Ofner 2019), theories of writing systems (cf. Boone and Mignolo 1994), iconology, semiotics, and image studies (Lorenz 2016), origins and distribution of the Uto-Aztecan language (cf. Hill 2012; Shaul 2104), the “hard nucleus” of Mesoamerican religions (cf. López Austin 1997, 2004; Carrasco 2013), and ontologies of rock art (Abadia and Porr, in press).

This project is of **significant value to humanities scholars**. It will inform studies into the origins and tenacity of myth, hunter-gatherer social organization and complexity, and the fluid boundaries and cultural interactions between what is now the American Southwest, south Texas, and Mesoamerica during the Archaic. It provides an unprecedented opportunity to reconstruct, to some degree, the cosmology and mythology of Archaic period foragers, to inform our understanding of the evolution and spread of the Uto-Aztecan language, and to identify the date, extent, and location of the oldest documented graphic expressions of the Archaic core.

This project also has **significant value to general audiences**. The Lower Pecos Canyonlands Archeological District was recommended for National Historic Landmark designation by the National Park Service Advisory Board on September 17, 2020 and is awaiting official designation by the Secretary of the Interior. This designation will result in increased tourism to the region. The project director will use results from the project to create interpretive materials for site stewards, including Seminole Canyon State Park and Historic Site and the Amistad National Recreation Area. Rock art is often portrayed as primitive and regarded as low on the scale of artistic appreciation and cultural significance. By communicating the complex nature of the imagery and its content, this work will inform and enlighten public perceptions of the art and the hunter-gatherer artists.

## **Research Design and Methods**

We will conduct archaeological and ethnographic fieldwork to answer our research questions, detailed above. The answers will contribute to our understanding of Lower Pecos metaphysics, Archaic core cosmological concepts, Archaic hunter-gatherer social organization, group identity and cultural interactions, the production and consumption of art, and the early development of Mesoamerican cosmology and myth.

The Archaic period in the Lower Pecos region refers to an archaeological culture defined by a mobile foraging subsistence pattern, a diet of seasonally available wild plants and small game, and a material culture that included baskets, mats, and sandals made of fibers obtained from desert succulents, and wooden implements such as digging sticks and atlatls (spear throwers). The Archaic period lasted from about 7000 BC to AD 1000, ending with the introduction of the bow and arrow and ceramics. Thirty-four radiocarbon dates for 19 pictographs across 12 sites place production of PRS murals to 2700 BC-AD 600.

The rock art murals we propose to study are large, complex, and data rich. For example, one of the sites we plan to document and analyze, Rattlesnake Canyon (41VV180), measures 105 ft with figures extending 12 ft above the shelter floor and contains more than 280 PRS figures. Many of the figures are interwoven to create complex arrangements of pictographic elements, most have not been fully documented or described.

Pictographic elements in these PRS murals are based on human (anthropomorphic) and animal forms (zoomorphic), sometimes fused together or with interchangeable parts, and enigmatic figures that are not identifiable as human or animal. As with Mexico (Aztec) pictography from central Mexico (see Boone 2016), PRS paintings are accretive, (cf. Boone 2016, 33), such that human and animal forms provided a framework upon which artists added semantically charged visual attributes, selecting from a wide range of meaning-filled pictographic elements to construct a message. For example, among anthropomorphs, these included headdresses of varying types, adornments attached at the wrist, elbow, waist, or hip, and paraphernalia, such as atlatls, darts, and staffs (Appendix 7). Attribute laden figures such as these function like a graphic vocabulary. The arrangement of the figures in the mural, like syntax, conveys meaning. As noted by Howells and Negreiros (2012:18) “By recognizing the attributes, we recognize the characters and stories, and so help to crack the codes of much mythological and religious paintings.”

### Archaeological Fieldwork and Laboratory Analysis

We have designed a protocol for data collection and analysis necessary for detecting patterns within, between, and among pictographic figures and sites. Fieldwork is proposed at Rattlesnake Canyon and two other comparably large sites, Panther Cave (41VV83) and Halo Shelter (41VV1230). Rattlesnake Canyon is located on the western periphery of the region, Panther Cave in the middle, and Halo Shelter is near the region’s eastern boundary. Rattlesnake Canyon and Panther Cave are managed by the National Park Service (Appendix 8). Halo Shelter is privately owned but managed by Shumla. We are conducting the work in three phases. We propose to use this award to conduct Phase 2, the formal field analysis.

Our methods are non-destructive and exclude excavation, subsurface testing, and artifact or paint sample collection. Our project will not have an adverse impact on properties engaged in this project.

#### *Phase I: High-resolution panel data (status: completed for all three sites)*

Shumla Archaeological Research & Education Center (Shumla) collected high-resolution panel data for the sites through their baseline documentation project (<https://shumla.org/research/alexandria-project/>). This includes:

- Gigapixel panoramas (GigaPans): Gigapixel composite photographs (GigaPans or gigapanoramas) are created using a robotic camera mount that enables DSLR cameras to produce

gigapixel (one billion pixel) images. A robotic gimbal system allows the camera to take overlapping photographs that are stitched together to create high-resolution panoramic photographs.

- **Structure from motion photogrammetry (SfM):** A series of overlapping photographs taken with a handheld DSLR camera are stitched together using AgiSoft Photoscan to create a 3D model of the rock art panels. Inclusion of an L-ruler in the photographs provides a scale, allowing for measurements of figures in the composite image.

*Phase 2: Formal analysis and illustration of murals*

Imaging the rock art panel is a necessary start, but it is insufficient for understanding or decoding the meaning of the art or the process that created it. Merely photographing the panel would be akin to mapping the surface of an archaeological site and drawing conclusions without knowledge of the subsurface site structure. We propose to conduct a formal analysis of the three sites to make connections within and among figures in three dimensions, and to reconstruct the chain of operations that produced the panel.

Based on methods devised and applied to the study of the White Shaman mural, we will conduct a formal field analysis of the sites by imaging, illustrating, describing, and recording the figures and their attributes. We will organize the data into a system of image files and a searchable database of figure and attribute characteristics.

- **Figure Identification and Mapping (status: complete for 41VV180; 25% complete for 41VV83 and 41VV1230).** Description of individual figures in a rock art panel, just like analysis of artifacts from any other archaeological site, provides data for inter- and intra-site patterning. We will categorize figures at each rock art site as anthropomorphic, zoomorphic, or enigmatic based on the presence or absence of specific attributes.
  - Assign a reference code and write a description for each figure.
  - Map the location of each figure using a total data station (TDS) and incorporate this data into the site's 3D model (Appendix 9).
- **Figure Photography (status: 75% complete for 41VV180; no data collected for 41VV83 and 41VV1230).** Figure photographs will be used in publications, to produce figure illustrations, to provide additional visual data for creating digital panel renderings, and for sharing with Huichol consultants.
  - Photograph each figure with and without scale and with a color checker passport for accurate color calibration.
  - In the lab, embed the camera's original RAW file before converting it into a Digital Negative Format (.DNG) for curation. Rename a copy of each original photograph with a unique code, which includes the figure identification number, and store the renamed photograph as a JPEG (.jpg).
- **Identify and Diagram Mural Stratification (status: 50% completed for 41VV180, minimal data for 41VV1230 and 41VV83).** Determining the order in which artists applied the paint layers is critical to understanding the mechanics of the mural and the relationship between and among pictographic elements. The principle of superposition establishes that layers at an archaeological site are deposited in chronological order. In a rock art panel, layers located closest to the rock surface were painted prior to those overlying them. Although the span of time between painting sequences could be a matter of minutes or millennia, interwoven figures are likely part of the

same painting episode. Figures painted both over and under other figures can be used to identify the compositional structure of murals (Appendix 10-11).

- Use a handheld, digital microscope to take photomicrographs of intersecting paint layers to determine color stratigraphy within individual elements and among multiple figures. To avoid subjective bias, different researchers make two or more determinations for each analysis location.
- Enter stratigraphic determinations into Harris Matrix Composer software to manage and graphically diagram paint layer stratigraphy.
- **Figure Attribute Data (status: 75% completed for 41VV83; 50% complete for 41VV180, minimal data for 41VV1230).** As discussed above, figures in PRS murals are portrayed with distinctive attributes. These attributes provide clues to whom and what the figures represent. Think, for example, about the attributes of Medusa from Greek mythology or Thor from Scandinavia. We recognize them in artworks by their very distinctive attributes and accoutrements. Patterns in attribute data, coupled with ethnographic and ethnohistoric texts, facilitated Boyd and her collaborators' previous interpretations of PRS pictography.
  - Record attribute data for each figure, such as size, shape, and color, paraphernalia, body adornments. Enter figure attribute data into Shumla's searchable rock art database using tablets in the field. We have standardized sets of data forms for anthropomorphs, zoomorphs, and enigmatic figures listing about 150 possible attributes (Appendix 12).
  - In the lab, run database queries to identify patterns in the geographic distribution of figures and attributes, and to identify motifs or patterns in the association of figures and attributes.

Through the production of digital illustrations, we will identify artistic similarities and variations in graphic expressions of PRS pictography. This is a critical step. As noted by Frederick Franck (1973:6), "I have learned that what I have not drawn I have never really seen." Through the illustration process, we will identify relationships among figures and the techniques used by artists to produce images, such as dry brushing, underpainting, blocking in, building texture, and stenciling. We will also identify possible tools used by the artists, such as feathers, brushes, plant fibers, stencils, straight edges, and fingers.

- **Produce a digital, layered illustration of rock art panels and figures in Adobe Photoshop using a Wacom Cintiq™ creative pen display.** The high-resolution gigapanorama or figure photograph serves as the base layer. We digitally apply the paint, color layer by color layer, reproducing the painting sequence used by the original artist. Each layer represents one stratigraphic unit or layer. The layered composite, without the background photographs, will represent the final illustration.
  - While producing the illustrations, verify accuracy of the figure attribute data that was entered into the searchable database in the field and expand, as needed, on written descriptions for the figures and the overall mural.

#### Ethnographic Fieldwork and Laboratory Analysis

Our final line of inquiry will be to consult with members of a Huichol community living in the Sierra Madre Occidental mountains of Mexico. The observations offered by Matsihua in 2010 are compelling, but they represent the views of only one individual. Boyd and Dering will travel with Stacy Schaefer and Jim Bauml to the community of San Andrés Cohamiata to interview five Huichol shaman/artists. This is the location of Schaefer's ethnographic fieldwork, which has spanned more than 40 years and resulted in enduring friendships and the publication of three books and numerous publications. With Schaefer and Bauml, we will:

- Conduct open-ended interviews with five Huichol shaman/artists and other community members, both male and female. We will use the wide format scrolls of the PRS gigapanoramas and panel illustrations to elicit discussion and identification of recognizable pictographic elements. We will record how Huichol consultants relate these images to their cosmology. Consultants will be provided with felt pens and paper and encouraged to illustrate their thoughts/stories/myths. Interviews will be digitally recorded and later transcribed by Boyd, Schaefer, and Bauml and copies of narrated myths will be left with the community. Signed consent forms will be obtained before conducting any interviews (Appendix 13).
- Participate in community events. We will join the Huichol in dry-season rituals and ceremonial events, visits to sacred sites, and daily life.
- Learn about Huichol perspectives on art and the artistic process. We will be instructed in weaving and yarn painting by Huichol consultants and community members.
- Provide a presentation on PRS rock art and our research at the local high school.

This work will be conducted over the course of one month. Our plan, which will be fluid, is to remain in the community for 12 to 14 days, depart for 4-6 days to resupply, reflect, and review our data, and then return for the remainder of the month.

### Data Management and Curation

#### *Archaeological Fieldwork*

On return to the Shumla Headquarters each day, the field hard drive(s) will be backed-up onto the Shumla server, photographs will be downloaded, and paper documents will be scanned. A team member will use Adobe Lightroom CC to rename the photos (RAW and JPEG files), convert RAW to .DNG format, and embed relevant metadata, such as copyright information. At this time, the photographer will perform an image quality check to determine if any reshoots of figure photographs, photomicrographs, or macrophotos are necessary and check the corresponding photo log for completion.

All textual and photographic data will be backed up daily. When the team returns from the field, all data will be copied onto the Shumla server which runs a RAID 50 configuration to maximize performance and data redundancy. The Shumla server is backed-up on a daily, weekly, monthly, and semi-annual basis with off-site backups at three locations. These data also will be copied onto an external hard drive for transportation by Boyd back to Texas State and eventual curation at the Center for Archaeological Studies, an accredited curation facility.

#### *Ethnographic Fieldwork*

We will upload and rename photographs, video recordings, and textual data to a laptop at the end of each day. Field sketches and other paper documents will be photographed and stored on the laptop. Each evening the laptop will be backed up to a solid state external hard drive. Upon returning to the US, these data will be stored on the Shumla server and at the Center for Archaeological Studies at Texas State.

### **Project Director and Collaborators**

Project Director: *Carolyn E. Boyd, Ph.D.: Shumla Endowed Research Professor, Department of Anthropology, Texas State University.* Boyd will supervise and participate in all aspects of the project, including rock art documentation, digital microscopy, production of digital illustrations, and consultation with the Huichol. She also will train and supervise a Texas State graduate student (MA level) in archaeological field methods for documenting and analyzing rock art. Boyd comes to this project with expertise in fine art (muralist), anthropology, field archaeological methods, and teaching. Her experience in fine art has allowed her to develop an understanding of the techniques used by prehistoric artists. As an



anthropologist, she recognized symbolic connections between the prehistoric art and the art of modern groups in Mesoamerica, such as the Huichol. She extended these connections to the symbolic imagery in the codices of the Nahua and demonstrated the existence of an Archaic core set of beliefs previously suggested by Mesoamerican scholars. As a field archaeologist, she developed Shumla's comprehensive method of recording rock art that produces a visual, searchable, and georeferenced database. She has pioneered the use of digital microscopy and Harris Matrix software to determine painting sequences in the murals. Her work has led her to establish close ties with rock art researchers in the US, Mexico, Europe, and Australia. Boyd will coauthor peer-reviewed publications with the collaborators, conduct public and professional presentations, and supervise a Texas State University graduate research assistant. Boyd is a research associate professor with reduced teaching duties and will direct the project half-time during the academic year and full-time for two months each summer.

Principal Collaborator: *J. Phil Dering, Ph.D.: Archaeology Director, Shumla Archaeological Research & Education Center.* Dering has 45 years of experience working in the Lower Pecos Canyonlands as an archaeologist and an archaeobotanist. He is considered an authority on hunter-gatherer subsistence strategies, plant resources, and botanical assemblages in the Lower Pecos. As archaeology director for Shumla and as a collaborator for this project, Dering will coordinate access to rock art sites, including gaining permission from landowners and providing logistical support. He and his Shumla crew will join Boyd in the archaeological fieldwork and will provide help with database queries, producing maps, and access to any Shumla data required for the project. Dering also will join the project director in the ethnographic component of this project. He will describe the landscape and its resources, and the technology utilized to access these resources. Dering will work with Jim Bauml to identify possible representations of ritual plants portrayed in PRS imagery and in the archaeological deposits. He will coauthor publications with the project director and collaborators and will be principal writer of the bi-monthly project blog. Dering will devote approximately 120 days to this project.

Collaborator: *Stacy B. Schaefer, Ph.D.: Professor Emerita in the Department of Anthropology, California State University, Chico (CSUC) and former Co-Director of the Museum of Anthropology (CSUC).* Schaefer has lived among and worked with the Huichol as an anthropologist for over 40 years and is fluent in their language. She has authored numerous books and articles about Huichol myth, ritual, and material culture, and the role of women in Huichol society. Her responsibility will be to establish contact with Huichol consultants, serve as a translator, and assist with transcriptions. She will travel with Boyd, Dering, and Bauml to Huichol territory in Mexico. Drawing on her experience with the Huichol symbols, Schaefer will assist Boyd in making connections between modern belief and ancient belief recorded in PRS art. Schaefer will devote approximately 45 days to this project.

Collaborator: *Jim Bauml, Ph.D.: Retired, Senior Biologist Los Angeles County Arboretum, Arcadia, CA:* Bauml has over 38 years of experience recording the ethnobotany of the Huichol. He produced a thesis on the ethnobotany of the Huichol and the origins of domesticated marigold (*Tagetes erecta* L.). Bauml will serve a guide and as translator for all interviews with Huichol consultants. He will work with Dering to identify possible ritual plants portrayed in PRS rock art. Bauml will devote 45 days to this project.

## **Plans for Dissemination**

The intended results of this project will include (1) an expanded inventory of graphic elements and patterns among those elements in PRS pictography, (2) identification of rules governing the production and arrangement of these elements, i.e., PRS syntax, (3) increased knowledge into the significance and meaning of PRS pictography, (4) expansion of the inventory of graphic elements manifesting the Archaic core, and (5) determining whether these core elements are recognized by the Huichol and the degree to which they have persisted in their myths, rituals, and ceremonial cycles.

*Origins and Tenacity of Myth, Ritual, and Cosmology in Archaic Period Rock Art of Southwest Texas and Northern Mexico*

Results will be disseminated during and after project completion through multi-media popular outlets, a bimonthly blog, news interviews, refereed academic journals, and presentations to professional and public audiences. Boyd currently provides webinars and lectures to a diverse audience, such as professional meetings, museum and university lecture series, indigenous community organizations, and local historical and archaeological societies. She will continue to share what she learns from this project through these venues and more.

Shumla provides high resolution, non-georeferenced images online to the public and their database is available to scholars at the Shumla headquarters. New information and images (or links) collected during this project will be posted on the Shumla website, as will the project's bimonthly blog.

(<http://www.gigapan.com/profiles/ShumlaArchaeologicalResearchCenter>)

(<https://shumla.org/shumla-blog>)

While with the Huichol, we will make presentations about PRS rock art within the community and at the high school. We will provide the school with USB flash drives of photographs and relevant interviews for curations within the community. This will be especially important if shamans share Huichol sacred stories. If they are told in Spanish, we will provide audio recordings to the school so that they can translate and transcribe the stories into their native language.

New findings will result in at least four published articles in regional, national, or international refereed journals. One article will be published in a regional journal such as the *Bulletin of Texas Archeology* or *Plains Anthropologist*, one in a national/international archaeological journal such as *American Antiquity* or *Journal of Anthropological Archaeology*, one in a theoretical journal such as *Journal of Material Culture*, and one in an anthropological journal such as *Current Anthropology*. Two will be completed prior to completion of the project and two immediately following completion.

The University of Texas Press has expressed serious interest in the publication of a general audience book resulting from the information collected during this project. Boyd and her collaborators will submit a book concept and outline to the press by December 2023.

## WORK PLAN

***Between submission and start date, August 2021.*** Boyd and her graduate student will familiarize themselves with Shumla's GigaPans of the three murals to determine potential locations for digital field microscopy and conduct a preliminary figure count to estimate time required to document each site. Dering will provide Boyd with Shumla's Rock Art Site Form and other data previously completed for the sites. With this information, Boyd and Dering will develop a detailed plan for fieldwork at each site.

The Shumla office in Comstock, located within 35 miles of the three sites in our project, serves as our field laboratory. It houses the primary servers for storage of field data and high-speed computing capability needed to rename and process large numbers of high resolution still images. The Shumla staff live in Comstock.

***September 2021-August 2022. Phase 2.*** With Phase 1 (high-resolution panel data) completed prior to the launching of this project, Boyd, a graduate student, and Shumla staff will begin Phase 2 archaeological fieldwork in September 2021. We anticipate that the team will require eight weeks of field work during this period to complete Phase 2 in August 2022.

- Figure identification and mapping, figure photography.
- Digital microscopy of mural stratigraphy.
- Collecting figure attribute data.
- Boyd, her graduate student, and Dering will analyze photomicrographs and enter results into Harris Matrix Composer software.
- Dering will begin publishing the project's bimonthly blog.
- Boyd and Dering will present a progress report and preliminary findings at the Texas Archeological Society Annual Meeting (Fall 2021) and at the Society for American Archaeology (Spring 2022).
- Boyd will produce the digital panel illustrations.
- Boyd and Dering will share results from the archaeological field work, analyses, and illustrations with ethnologists Schaefer and Bauml.

### Milestones:

- Rock art attribute forms and associated imagery completed.
- Written descriptions of the panel elements completed.
- Completed Harris matrix of each site.
- Six blogs describing the field work and introducing preliminary findings to the public on the Shumla website.
- Two presentations at professional meetings reporting the ongoing work and preliminary findings.
- Digital illustrations of the three murals.

***September 2022-December 2022.***

- Boyd and Dering will run database queries to identify patterns in motif association and distribution.
- Boyd, her graduate student, and Dering will return to the archaeological sites to collect additional information as needed.
- Boyd will print wide-format scrolls of the panel illustrations and GigaPans.
- Schaefer and Bauml will be arranging logistics and communicating with the Huichol community in preparation for the fieldwork in Mexico.
- Boyd and Dering will prepare forms, equipment, presentations and data to transport and to share with the Huichol community members.
- With Schaefer and Bauml, Boyd and Dering finalize interview questions.
- Boyd and her graduate student will present an update on the project at the Texas Archeological Society Annual Meeting (Fall 2022). Dering will continue producing the bimonthly blog.

**Milestones:**

- Graphic and textual data from the PRS murals digitally stored on the Shumla server, (eventual curation at Texas State University in the Center for Archaeological Studies), and on two tablets in readiness for the ethnographic fieldwork.
- Hard copies of images and text organized into a binder for taking to Mexico.
- GigaPans and mural illustrations printed as wide-format scrolls.
- One presentation at a fall professional meeting reporting project progress.
- Three more blogs.

***January 2023-March 2023.***

- Boyd and Dering will travel with Schaefer and Bauml during the dry season to the community of San Andrés Cohamiata to conduct the ethnographic component of this project. We will be in the region for 30 days.
- We will meet with members of the Huichol community, Huichol shaman/artists, and other scholars working in the region.
- We will record the interviews with consultants and backup the results to an external hard drive.
- We will give public presentations to share images of Lower Pecos rock art with the Huichol.
- We will also have images and information stored on portable USB flash drives for distribution to members of the Huichol community.

**Milestones:**

- Voice recordings, video, and still photographs from the field.

*Origins and Tenacity of Myth, Ritual, and Cosmology in Archaic Period Rock Art of Southwest Texas and Northern Mexico*

- Drawings and sketches, made by the Huichol consultants, that illustrate the concepts they are discussing.
- Field notes.
- Blogs published upon returning from the field.

***April 2023-December 2023.***

- Boyd, her graduate student, and Dering will transcribe recordings and begin analyzing interview results, with the assistance of Schaefer and Bauml.
- Boyd will create a textual and graphic inventory of pictographic elements and patterns recognized and interpreted by the Huichol.
- Boyd, Dering, and a graduate student will prepare a photo album to send to their Huichol hosts and will provide lectures to the public and professional audiences to report the results of the project. Boyd will complete the field report and two peer-reviewed publications.

**Milestones:**

- Submission of two peer-reviewed journal articles and a field report.
- Preliminary outline and concept of a general audience book.
- Completed transcriptions of interviews.
- Presentation on research results at a professional meeting.
- Two public presentations and blogs reporting the results of the project.