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The *Citlalin* Codex: Virtual *Mexicayotl* Star Lore Exhibit

Master's Project

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Contents

Introduction	4
CHAPTER 1: Astronomy in Culture	7
1.1 Cultural Astronomy	7
1.2 Mesoamerican Codices	8
1.3 Dynamics of Star Lore	10
1.4 Comparative Astronomy	11
CHAPTER 2 Fieldwork and Internships	13
2.1 Training Modules	13
2.2 Ethnographic Interviews	14
2.3 Partisipant Observation	15
2.4 Museum of Prehispanic Astronomy El Museo de Astronomía Prehispánica	15
2.5 Society for Cultural Astronomy in the American Southwest	16
CHAPTER 3 The Citlalin Codex, Mexicayotl Star Lore Virtual Museum Exhibit	18
3.1 Codex Inception	18
3.2 Foundational Cultural Astronomy in Mexicayotl Practices	19
CHAPTER 4 Codex Structure	29
4.1 Part I Introduction	29
4.2 Part II Comparative Astronomy	29
4.3 Part III Resources	30
4.4 Codex Community and Continuity	30
CONCLUSION	31
Estonian-language résumé	36
Resumen Español	38
Annex 1: Interview Questions	39
Annex 2: SCAAS Archive Committee	40
Annex 3: Project Timeline	42
Annex 4: The Citlalin Codex	48

Introduction

Indigenous communities of North America have faced immense hardship and cultural erosion due to European and Anglo-American colonization. Assimilation pressures have further contributed to the loss of traditional knowledge. Despite these challenges, contemporary Indigenous communities have persevered in maintaining ancestral wisdom, including star knowledge which represents a sacred connection with the environment, informs origin and migration stories, and forms the basis for timekeeping systems.

For Indigenous peoples of North America the sky serves as a living archive of oral history, and preserving this knowledge is essential for cultural survival. The early 21st century offers new methods for preserving and disseminating this knowledge, and digital archiving and virtual museum exhibits present an unprecedented opportunity to conserve traditional cultural astronomy for Indigenous communities in the greater American Southwest.

Inspired by ancient Mesoamerican codices, I have designed as the practical component of my master's project a virtual book or Digital Codex to display the information using PowerPoint as a structural support. This virtual exhibit can be accessed through the official WordPress site of the Museum of Prehispanic Astronomy, ensuring its availability to a broad audience

By establishing a Digital Codex (virtual museum exhibit) through collaboration with the University of Tartu, the Society for Cultural Astronomy in the American Southwest, and the Museum of Prehispanic Astronomy in Guanujato Mexico, I intend to provide a method for safe documentation and responsible publishing of star lore data, emphasizing its use in terms of family bonding within Indigenous *Mexicayotl* communities, researchers and those willing to learn respectfully about cultural astronomy.

In his book *A Magic Feather: The Science and Theory of Chicano Traditional Healing Practices in Aztlan*, David Atekpätzin Young explains that *Mexicayotl* is a vernacular religious tradition that arose in Mexico in the 1950s. Rooted in ancient Mesoamerican Cosmovision, it was adopted by Indigenous peoples of North America in response to colonization. In both name and practice, *Mexica-yotl* is derived from and pays tribute to the *Mexica*, who were one of the Nahuatl-speaking tribes that ruled the Aztec triple alliance in central Mexico from 1428 CE to 1521 CE (Young, 2020 p. 485). According to the Nahuatl language dictionary, the suffix *yotl* refers to the essence of something, therefore *Mexicayotl* means the essence of Mexica (Online Nahuatl Dictionary, 2000). *Mexicayotl* utilized a combination of encoded syncretized traditions and colonial Spanish chronicles, to piece together an incipient vernacular religious system that includes practices, beliefs, and rituals rooted in ancient Mesoamerica. (Young, 2020 p. 485)

The Chicana and American Indian Movements of the 1960s and 70s were social and political movements centered on opposing structural racism, encouraging cultural revitalization and achieving community empowerment by rejecting assimilation. Chicana advocated for the social and political empowerment of Indigenous Mexican-Americans, i.e. those born in the US with ancestral connections to Mexico, born in the lands ceded to the US after the Mexican American War 1846-1848, including the detribalized Indigenous people of what is now New Mexico and Colorado (Tlapoyawa, 2023).

Vernacular expressions like *Mexicayotl* are among the few ways in which Indigenous people who are unable to be registered with a federally recognized tribe in the United States, can at least recognize each other within their own self acclaimed identity. That is: through traditional family and ceremonial bonds.

My autoethnography illustrates the typical struggle for belonging among Indigenous Chicana people. It was not until I reached about 26 years old that I learned that my grandparents' identification with Spain as well as their English language affiliation, were both attained as part of an acculturation method meant to integrate people into Anglo-American society in the aftermath of the Mexican-American war. Despite all this, there were small pieces of traditional knowledge and practices that were saved and passed down, although I did not recognize them until I began to reconnect with Indigenous elders and teachers. My family story, while unique, is similar to many other Mestizx, people with deep ancestral roots in New Mexico and Colorado. We are Mestizx, those who bear a unique mix of Iberian, and Indigenous ancestry, including colonizers, resisters, collaborators, and survivors.

The conscious decision to heal the generational trauma through intentional Indigenization is one of empowerment and unification, and one in which star lore can serve a powerful role. One way I was able to connect to my Indigenous heritage was through *Mexicoyotl*, a distinct historical and contemporary cosmivision adopted by Indigenous peoples of North America (including Chicana peoples) in response to colonization. Ann-elise lewallen is a researcher focusing on Indigenous Ainu groups. She explains the concept of "becoming Ainu" as a means of individual cultural genesis and 'self craft' by fashioning an Indigenous identity and embodying this as a connection to ancestral lifestyles and spaces. This concept distinguishes between passively inheriting Indigenous ancestry and intentionally Indigenizing through conscious choice (lewallen, 2016).

From this perspective, *Mexicayotl* and its associated star lore represent powerful means of unification and modes of becoming for detribalized and disrupted Indigenous people of North America. While *Mexicayotl* draws on various Indigenous practices of Mesoamerica, there is a heavy focus on the *Mexica/Aztec* cosmivision. The vast majority of colonized people of Mexico descend from tribes other than the Mexica. Tlaxcalteca and Chichimeca are two prominent examples of such tribes (Tlapoyawa, 2023). According to the Commission for the Development of Indigenous Peoples (CDI) and National Institute of Indigenous Languages (INALI) in Mexico, there are 68 different Indigenous Peoples, each with its own unique native language. Together, these languages account for 364 variants. While around 9% of the population identifies as belonging to an Indigenous group, approximately 5-6% of the people in Mexico speak an

indigenous language.(CDI, 2022) Additionally, Indigenous ancestry connected to the local tribes of Colorado and New Mexico plays a significant role as many contemporary Chicax people like myself have family roots and bonds in those communities.

The colonial policies of the United States have created a false sense of belonging for Indigenous people. First, relating to Indigeneity exclusively through the lens of federal recognition imposes an Indigenous identity as it is permitted by the United States government. Second, the enforcement of blood quantum and tribal roles for membership, entails that the tribes themselves perpetuate the colonial policies prescribed to them by the United States government. These policies specifically exclude the detribalized groups who meet the identification criteria of the United Nations for Indigenous peoples: “Practicing unique traditions, they retain social, cultural, economic and political characteristics that are distinct from those of the dominant societies in which they live” (United Nations, 2023). Unfortunately, these groups are often excluded by members of federally recognized tribes, causing further marginalization. An alternative to tribalization is through religion. In the United States, churches and religious groups enjoy a high degree of autonomy and flexibility. The American Indian Religious Freedom Act of 1978 (AIRFA) (42 U.S.C. § 1996) protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use, and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. It is through this act that many detribalized Mestizo/a/x and Chicano/a/x people have been able to intentionally choose to become *Mexicayotl*.

At the time of this writing, the Indigenous People's Community Church (IPCC) was just registered as a church in Boulder Colorado. This church group practices the *Mexicayotl* way of life. Their extended community members have contributed to my ethnographic study. I will note however that the ethnographic work and participant observation took place before the registration of the IPCC through AIRFA. I have been present during the arduous journey and legal struggles to defend the right to ceremonies, testifying myself before the Boulder city council to amend the city ordinance for allowing ceremonial fire designation. It is through this lens that the political relevance of describing *Mexicayotl* as a vernacular religious expression becomes clear.

The culmination of this work is a virtual exhibit to be shown at the Museum of Prehispanic Astronomy website (headquarters are set in Guanajuato Mexico where there are large *Mexicayotl* communities. In addition, a forthcoming digital archive will be housed by the Society for Cultural Astronomy in the American Southwest. This Codex incorporates the concept of digital stewardship for safeguarding cultural astronomy. The Codex project combines traditional knowledge and innovative technology. It will provide a new vehicle for the transmission of knowledge and a means for remote fieldwork. The Digital Codex virtual exhibit project will utilize ethnographic field work, autoethnography, remote sensing data and original artwork integrated with Stellarium planetarium software to illustrate appropriate star lore elements. Nancy C. Maryboy and David Begay’s (2010) comparative astronomy format will provide the methodological approach for presenting data as demonstrated in their book *Sharing the Skies*:

Navajo Astronomy, and Barre Toelken's (1996) *Dynamics of Folklore* will guide the cross-cultural analysis and I also draw on Bradley Schafer's (2017) work on cultural astronomy.

As the Digital Codex exhibit only showcases a small fraction of the data collected, a Cultural Astronomy Archive was needed to aid accessibility for Indigenous communities and academic researchers alike. Through a combination of internships and extensive fieldwork I have accumulated the skills and knowledge necessary to complete this project.

CHAPTER 1: Astronomy in Culture

1.1 Cultural Astronomy

Cultural astronomy is, simply put, the study of how people, both past and present, relate to celestial phenomena. Star lore is a vernacular expression of cultural astronomy folklore and represents some of the most important elements of Native American cosmivision. It describes the foundations of sacred relationships between people and their environment. Star lore is also linked to foundational cultural elements such as timekeeping, ritual activities, navigation/orientation, and knowledge transmission. Indigenous cosmivision views the sky itself as the archive of traditional wisdom. The ability to safeguard such information is essential for cultural survival.

Based on my personal experience, it appears that modernization has led to a growing disconnect between people and the natural world, including celestial phenomena that were once integral to the lives of our ancestors. In today's fast-paced, technology-driven societies, many individuals struggle to identify basic astronomical events that were once commonplace knowledge.

While most people are aware of the Moon's changing phases and seasonal shifts caused by Earth's position around the Sun, there is often a lack of understanding about how ancient civilizations determined significant events like solstices and equinoxes. Despite the prevalence of astrology in popular culture, few can identify zodiac constellations or the movements of planets in the night sky. Major celestial events, such as eclipses or solar storms, are anticipated through news outlets rather than personal observation and prediction.

This disconnect extends to contemporary Indigenous youth in the United States, many of whom have been robbed of their ancestors' profound relationship with the stars. By observing daily natural occurrences like the Sun's shifting position on the horizon throughout the year, one can begin to reestablish a connection to the cosmos and appreciate the intricate knowledge that shaped the lives of our ancestors. Encouraging such observations and promoting a deeper understanding of celestial events can help bridge the gap between modern lifestyles and the natural world for everyone.

Professor Bradley Schafer (2017), an expert in ancient astronomical practices, highlights the development of astronomy for practical purposes by various cultures across the globe and throughout history. Schafer (2017) further emphasizes that these practical aspects of astronomy grew to represent foundational elements within the cultures that cultivated them.

Foundational elements of cultural astronomy and star lore are essential components of ethnogenesis, the process by which new ethnic groups emerge and establish their distinct cultural identity (Schafer, 2017). These foundational elements of cultural astronomy continue to play a vital role in the daily lives of contemporary Indigenous communities throughout North America,

shaping their identities and preserving their cultural heritage. The integration of astronomy into these communities exemplifies the enduring influence of celestial phenomena on human societies.

To establish the digital codex, I conducted an in-depth exploration of vernacular star lore that emphasizes the importance of celestial bodies and events within the cultural practices of Indigenous *Mexicayotl* practitioners in Colorado and New Mexico of the United States. Employing participant observation and ethnographic interviews, I examined how these groups draw upon ancient Mesoamerican cosmology to preserve their ancestral practices, which are ingrained with the foundational cultural astronomy elements of timekeeping, ritual, navigation/orientation, and knowledge transmission. Three vernacular expressions exemplify the seamless integration of these foundational astronomy elements into the cultural fabric of the *Mexicayotl* way of life: the Mesoamerican calendar system, the *Danza Azteca*, and the Mesoamerican Ball Game.

The Mesoamerican calendar system was utilized throughout the region and neighboring communities. Notably, the unique 260-day ceremonial calendar was so ubiquitous that many researchers, such as Edwin Barnhart (2015), define the boundaries of Mesoamerica based on evidence of its use. Barnhart also states that the oldest evidence we have of this calendar usage is 600BCE. Contemporary *Mexicayotl* groups employ an adapted version of the calendar, with its influence found in all aspects of their practice.

Danza Azteca is a contemporary Indigenous folk-dance tradition modeled after historic Mexica and Nahuatl practices. Similarly ubiquitous to the calendar system, *Ullamalitzli*, the Mesoamerican ballgame, is also practiced in a contemporary form, with communities learning to play and revive this game as a valuable tool for community building (Scarborough & Wilcox, 1991). Both *Danza* and *Ullamalitzli*, are rooted in foundational astronomy elements.

Through the preservation and revival of these cultural practices and celestial knowledge, the connection between Mesoamerican communities and the cosmos continues to thrive.

1.2 Mesoamerican Codices

Despite the history of disruption and detachment, there is a rich reservoir of knowledge to draw from since Star lore is an essential part of how traditional knowledge is safeguarded, taught, and passed on to future generations. In addition to oral tradition, our ancestors maintained archives in the form of Codices, beautifully illustrated and folded books. Only four Mayan Prehispanic Codices Works that were written before contact are known to have survived, the most notable of which is known as the Dresden Codex which currently resides in Dresden Germany. It has been instrumental in deciphering the Mayan writing system and contains a detailed almanac with 30,000 years worth of celestial data (Milbrath, 2000).

The Dresden, along with other important Mayan examples such as the Paris and Madrid Codices, contains astronomical and astrological data, including a zodiac and predictions and features almanacs with astronomical and astrological content, including Venus cycles and other celestial events. (FAMSI, 2024)

The Codex Borgia is a Prehispanic codex from Central Mexico, which includes astronomical and astrological information related to the native *Mexicayotl* religion, such as depictions of deities and celestial events. Codex Fejérváry-Mayer is another Prehispanic codex from Central Mexico; it contains information on astronomical and calendrical systems, with a focus on the cycles of the planet Venus and other celestial bodies. (FAMSI, 2024)

These codices provide valuable insights into the advanced astronomical knowledge of Mesoamerican civilizations, highlighting their understanding of celestial bodies and phenomena. The codices represent symbols for the safeguarding of Prehispanic, Indigenous star knowledge. It exemplifies the unique style of Indigenous archiving and record keeping. It is this sort of system that has inspired this project to preserve and protect knowledge. Susan Milbrath (2000) states that much of the observational data in the Dresden Codex may have been collected at Chichen Itza in Yucatan Mexico which was the focus of a previous research project that I participated in at the Metropolitan State University of Denver from 2010 to 2011 (Cordova, 2020). This project used Satellite imaging, Lightwave 3d modeling software, and Analytical Graphics Incorporated, Systems Tool Kit (STK) physics modeling software to demonstrate how the architecture of the site was used to aid in such precise observations. It is with these concepts in mind that I envisioned the creation of a separate and independent digital codex, as my current master's project which could include elements specific data collected from my previously published work titled Journey to the Sixth Sun. (Cordova, 2020)

There is also a collection of post-colonial Mexica codices to draw from. Much of what we know about pre-conquest Mexica culture comes from post-colonial Codexis as all the books from Tenochtitlan were destroyed. The post-colonial Codexis were written by converted Mexica scribes doing their best to remember what the old books contained in addition to transcribing oral knowledge. Some were also written by friars who, despite their biases, were committed to recording as accurately as possible to ensure they had good intelligence for the spiritual war they believed they were fighting. The most notable of these Codexis regarding Aztec Astronomy is the Florentine Codex by the Franciscan friar Bernardino de Sahagún, written in the 16th century. It is a reasonably reliable ethnographic research study of Mesoamerica (Barnhart, 2015).

Although scholars, such as Edwin Barnhart (2015), regard Sahagún's work as ethnography, it is important to acknowledge that he was writing from a place of extreme bias, and as Barnhart himself states: it is widely agreed that while his documentation was accurate, one must approach this work with a high degree of caution, while applying the right degree of cultural context to its interpretation. (Barnhart, 2015)

The structure of the Prehispanic codices serves as a blueprint for integrating interconnective resources, such as digital technology and political empowerment (Boone, 2000). Unlike colonial codices that followed a linear narrative, Prehispanic codices employed a cyclical, nonlinear

approach, echoing the Mesoamerican perception of time and space. This distinction highlights the importance of preserving the original structure in the Digital Codex Project.

Prehispanic codices were typically composed of long strips of paper, bark, or deerskin, which were then folded like an accordion (Boone, 2000). This format allowed for the integration of multiple stories and symbols within a single codex, emphasizing the interconnectedness of the narratives and the holistic worldview of the *Mexicayotl* communities.

In contrast, colonial codices adopted a linear structure, mirroring the Western concept of time and history (Lockhart, 1992). This shift represented a significant departure from the indigenous perspective and served as a tool for imposing colonial ideologies on the conquered populations.

In today's context, the Digital Codex Project draws inspiration from Prehispanic codices' structure to preserve and transmit *Mexicayotl* cultural knowledge (Vail & Hernández, 2013). By integrating digital technology with traditional storytelling methods, the project fosters political empowerment within the Indigenous community and challenges colonial legacies (Vail & Hernández, 2013).

Key codices that have been influential in the preservation of *Mexicayotl* practices include the Codex Borgia, Codex Fejérváry-Mayer, and Codex Laud (Batalla Rosado, 2012). These Prehispanic codices contain vital information on *Mexicayotl* astronomy, divination practices, and ceremonial cycles. The Digital Codex Project seeks to emulate these historical resources while incorporating contemporary elements, ensuring that cultural knowledge is not only preserved but also made accessible to a wider audience (Vail & Hernández, 2013).

These factors provide an opportunity to establish a digital codex to aid in accessibility and safeguarding *Mexicayotl* Star lore.

1.3 Dynamics of Star Lore

Folklorist Barre Toelken (1996) describes a method for analyzing a folk event by identifying the apparent and esoteric dimensions. Based on his work with Diné (Navajo) communities, he identified the need to take inventory of factors that are often overlooked by researchers. Approaching Indigenous communities through Western perspectives results in missing important subtle elements. Using the example of a hypothetical documentary about Diné rug making, Toelken (1996) describes the different approaches a Diné filmmaker might take as compared to how a cultural outsider would address the subject. In the outsider version, one would presume a focus on the rug itself and the weaver, describing the weaving process and technique. In the Diné version, however, the focus would likely be on the plants used for dyes and the animals from whose wool the yarn is created, with only a brief mention of the weaver and the rug itself. An understanding of the Diné ontology recognizes that the importance of the rug to them is the creation process, and less on the material production of the rug which would be traded for food or cash (Toelken, 1996).

This example illustrates an important consideration regarding the study of Indigenous Star lore. As is the case with other Indigenous ontologies, the *Mexicayotl* cosmovision is holistic. In other words it does not focus solely on the celestial phenomena as an isolated categorical object, but regards the importance of interaction between all animated beings and the sacred movement of the universe. A hyperfocus on the apparent aspects of *Mexicayotl* astronomy risks missing the greatest elements of traditional interest. Therefore, Toelken's (1996) method offers a framework that guides us to evaluate

“...what items we might have forgotten to consider. Most importantly, its topics recognize that there may be at least two strands of observation to any folk event. There will be those occurrences that are apparent and obvious to any onlooker, and there will be those that are noticed and valued variously by the insiders. Both elements are needed for a full understanding of an event, for the insiders, even though they may overlook similarities between their customs and those of others, while the outsider, lacking the system of values of the insider may fail to appreciate -or even to see- important details of the event” (Toelken, 1996, p. 164).

Toelken's framework serves as a valuable guide for the Digital Codex Project, allowing for the exploration and analysis of the complex, symbolic aspects of *Mexicayotl* star lore. By applying this framework, the project can effectively uncover and preserve the hidden meanings and interpretations ingrained in the traditional knowledge systems.

Toelken's framework emphasizes the importance of understanding the dynamic contexts in which cultural practices and beliefs are rooted, focusing on the interplay between the tangible and intangible aspects of a given cultural expression (Toelken, 1996). This holistic approach aligns with the goals of the Digital Codex Project, as it aims to showcase the interconnectedness of astronomy and other cultural practices within *Mexicayotl* communities.

1.4 Comparative Astronomy

Maryboy and Begay (2010), in their work on Native American astronomy, describe the concept of comparative astronomy, where Indigenous cosmovision is contextualized against Western perspectives. This approach offers a framework for understanding and appreciating the richness and depth of Indigenous knowledge systems in relation to astronomical phenomena. The current project is heavily modeled after Maryboy and Begay's (2010) work, with the Digital Codex serving as a digital, web-based adaptation of their book, catering specifically to the detribalized *Mexicayotl* communities across the globe.

The Digital Codex utilizes original artwork and photographs to illustrate the star lore stories and cultural elements collected through extensive fieldwork. This multimedia, user-friendly format effectively communicates the complexity and beauty of the *Mexicayotl* cosmovision, while encouraging users to engage with the material on a deeper level. By presenting the information in

this manner, the Digital Codex creates an immersive experience for those interested in the intersection of astronomy and Indigenous cultures of North America.

As a testament to the significance of comparative astronomy in preserving and promoting Indigenous knowledge systems, the Digital Codex exemplifies the value of innovative approaches to education and cultural preservation. By combining traditional knowledge with modern technology, this project aims to inspire and connect individuals with the wisdom of the past, ensuring that these vital cultural elements continue to be appreciated and understood by future generations (Schafer, 2017; Maryboy & Begay, 2010).

Chapter 2 Fieldwork, Internships and Practical Elements

Fieldwork is an essential component of the project, which primarily involved five ethnographic interviews and participant observation. By immersing myself in the *Mexicayotl* communities and engaging with the community members directly, I was able to gain invaluable insights into our cultural astronomy practices, beliefs, and stories.

Ethnographic interviews provide a platform for members of the *Mexicayotl* communities to share their personal experiences and knowledge. The interviewees included a local elder and spiritual leader, and members of a *Calpulli* (family group) involved in cultural revitalization efforts. The insights gained from these conversations contribute to a comprehensive understanding of the community's perspectives on cultural astronomy.

Participant observation allows for a deeper understanding of how cultural astronomy is practiced and embedded within the community's daily life. By actively participating in ceremonies, rituals, and other cultural events, I was able to observe firsthand the interplay between celestial knowledge and *Mexicayotl* identity. This method also helps build rapport and trust with the community, fostering a collaborative research environment, and reinforcing my own familial bonds.

Through these fieldwork methods, the project was able to gather authentic and nuanced information about *Mexicayotl* cultural astronomy. The outcomes of these processes contribute to the preservation and dissemination of Indigenous knowledge, as well as the development of educational outreach programs that promote public understanding and appreciation of these rich cultural practices.

2.1 Training modules

In March of 2023, I completed a detailed remote, expert facilitated class about the Mexica calendar system, equipping individuals with the tools needed to effectively use and contextually understand this calendar. This class, taught by Dr Kurly Tlapoyowa of the Chimalli Institute based in New Mexico, United States, helps ensure the calendar's survival for generations to come. The course consisted of six modules with lectures and academic readings, and covered topics such as horizon-based astronomy, the calendar mechanism, years and the year bearers, the leap year, and correlating the calendar.

The International Astronomical Union Office for Astronomy Outreach (IAU OAO) Seminar on the Protection of Dark and Quiet Skies on May 31st, 2023, served as an important platform for raising awareness about the significance of preserving dark and quiet skies for cultural

astronomy practices worldwide. This event brought together a diverse group of individuals, including astronomers, cultural practitioners, artists, activists, outreach professionals, and Indigenous knowledge holders, to share their unique perspectives and experiences regarding the cultural importance of dark and quiet skies.

By participating in the IAU OAO Seminar, I was exposed to individuals from various backgrounds, their expertise, and personal connections to dark and quiet skies, emphasizing the need to protect this vital aspect of our global cultural heritage. The seminar offered an inclusive space for discussion and collaboration.

I was inspired to learn from unique perspectives, fostering a deeper understanding of the diverse cultural practices and traditions that rely on the observation and interpretation of celestial phenomena, especially those of Indigenous knowledge holders who regard the sky as the archive of traditional knowledge and the importance of safeguarding it. This experience heavily impacted my perspective and guided the course of the project direction.

2.2 Ethnographic Interviews

I conducted a series of six ethnographic interviews and surveys from 2022-2023 about the contemporary practice of the Mesoamerican ball game called *Ullamalitzli*, the Folk Dance tradition *Mitotiliztli* or *Danza Azteca* and the *Mexicayotl* expressions of astronomy in Colorado and New Mexico in the United States. I transcribed relevant audio and compiled survey data.

Danza Azteca is intrinsically linked to *Mexicayotl*. According to Atekpatzin, a *Danzante* is someone who has embraced *Mexicayotl* and participates in the *Danza Azteca* (Young, 2020 p.478). In an interview with *Danzante* Daniel Flores Avila of Denver Colorado, he shared that “*Danza* is the rock that *Mexicayotl* stands on” (Flores-Avila, 2023). Many *Danzantes* echo this sentiment.

In an interview with José Kwatlatolli Lugo, a *Danzante* residing in the New England region of the United States with his family, I gained valuable insights into the sense of belonging as it relates to place. The New England region is on the North East coast of the United States. This puts Lugo farther away from the Calpulli in Denver Colorado, then Denver is from the vision site in Queretaro Mexico. It is a region that is predominantly inhabited by Anglo-Americans and Indigenous representation is sparse. In the interview Lugo and I reflected on how we are both so far away from our homeland and our community. He noted that he has gained strength from the *Danza* by connecting with the local environment, adapting to his location and listening to the signs around him. He explained that “Adapting elements of the culture to a different place does not mean making things up. It carries the additional responsibility of understanding how the *Danza* is carried on the homeland to adapt to a new space” (Lugo, personal interview, 2023). He also pointed out that we are still living under the same stars, with the same Moon and the same sun, on the same earth. And we can stay connected in this way by keeping the traditions alive (Lugo, personal interview, 2023).

Additional Interviews regarding the *Ullamaliztli* will be addressed in Chapter 3.2

2.3 Participant Observation and Autoethnography

In the process of developing this project, I have worked closely with Indigenous communities in Colorado, New Mexico, and South Dakota. I have built upon relationships carefully cultivated since 2006 equating to nearly 20 years of experience. This dedicated work adds to my 44 years of family interactions. This work was focused on rebuilding lost cultural connections after many generations of assimilation and acculturation experienced by my living relatives and ancestors. Through these efforts I have gained a deeper understanding of traditional family bonds and their relationship to celestial phenomena worthy of academic analysis. Participant observation through the lens of autoethnography has obtained a wealth of field data regarding Inipi and *Whoopila* (Lakota sweat lodge ceremonies), *Temazcalli* (*Mexicayotl* sweat lodge ceremony), *Velacion* (*Mexicayotl* solstice ceremony), *Danza Azteca* (Traditional *Mexicayotl* dance form), and Native American Church Tipi Meeting Ceremony. Each practice incorporates its own unique and enhanced relationship between the people and celestial phenomena.

2.4 Museum of Prehispanic Astronomy *El Museo de Astronomía Prehispánica*

The Museum of Prehispanic Astronomy is registered as a civil association in Guanajuato Mexico. The museum aligns with the project's focus on preserving and promoting Mesoamerican cultural heritage through its dedication to research, communication, and preservation. Their emphasis on workshops, academic practices, and content generation complements the project's approach to combining digital technology with traditional knowledge systems

Like the Digital Codex Project, the Museum of Prehispanic Astronomy delves into the connections between astronomy and Indigenous lifeways. Additionally, they investigate relationships between the people and architecture, technology, worldview, meteorological concepts, agricultural practices, and harvesting techniques. Their virtual museum focuses on the cosmos and natural cycles, showcasing Prehispanic history through the lens of Indigenous perspectives.

The museum's interdisciplinary approach, incorporating themes like archaeology, cultural astronomy, and Indigenous knowledge systems, resonates with the project's goal of preserving cultural astronomy practices and fostering public understanding. By recovering pre-Hispanic practices and knowledge, both initiatives aim to promote a more conscious and respectful relationship with the environment.

Collaboration with the Museum of Prehispanic Astronomy enables the Digital Codex Project, by providing valuable insights and resources for research and educational outreach programs to

contribute to the preservation of Mesoamerican cultural heritage and promote a deeper appreciation for Indigenous knowledge systems.

In June of 2021, I visited the Cañada de la Virgen archaeological site in Guanajuato Mexico. I made contact with archaeologist Albert Coffee, who had conducted ethnographic work relating to the site and was involved with the ongoing research at the Archaeological zone. Coffee gave me an in depth briefing and personalized tour of the site, detailing the history, archaeology, and ethnography of the region. Coffee introduced me to Dr. Quiroz Ennis, who shared with me the archaeoastronomical features of Cañada de la Virgen and urged me to visit the sites of Peralta and Plazuelas. I was advised to take note of specific architectural aspects indicating where the ball court was located, as well as orientations and design plans etched into the rock for other sites. I met with Dr Quiroz for a post site visit review where we discussed methodology and field skills. She directed me to read her book and articles addressing the archeoastronomy of the region (Quiroz Ennis 2010; Quiroz Ennis 2019). Later I was asked by Dr Quiroz to assist with translating the museum website from Spanish to English. I proceeded to translate and edit text for the English version of the website and Dr Quiroz continues to work with me as a secondary advisor for my master's project.

2.5 Society for Cultural Astronomy in the American Southwest

"The Society for Cultural Astronomy in the American Southwest (SCAAS) is a 501(c)(3) nonprofit organization dedicated to promoting the public's understanding of the cultural significance of astronomical knowledge among the cultures of the American Greater Southwest, both past, and present. The organization supports research, education, and public outreach to fulfill its mission." (SCAAS, 2024)

The Society for Cultural Astronomy in the American Southwest (SCAAS) shares a common goal with the Digital Codex Project, as the organization is dedicated to preserving and promoting the understanding of cultural astronomy practices among Indigenous communities. The alignment in their commitment to research, education, and public outreach highlights the guidance and mentorship they have provided.

SCAAS's dedication to maintaining high professional standards in research design and publication has served as a valuable resource for the Digital Codex Project. By ensuring that the project's research practices adhere to the highest standards, the quality and integrity of the work produced will be maintained.

SCAAS's focus on supporting the effective dissemination of cultural astronomy knowledge through education is closely aligned with the Digital Codex Project's goals and by collaborating with them the Archive piece of the Digital Codex project enhances their educational outreach programs, fostering a deeper appreciation for Indigenous knowledge systems among a wider audience.

The Digital Codex Project has benefited from SCAAS's professional forum for presenting research results and seeking constructive input, ultimately contributing to the project's ongoing development.

In October 2016, I had the opportunity to present my research at the SCAAS National Conference, which led to the publication of a cultural astronomy research paper in 2020. My involvement with SCAAS deepened when I became a Board member in September of 2021. As a board member, I have been actively engaged in various activities, including:

Reviewing and refining bylaws and budget allocations during monthly board meetings. Enhancing public exposure by streamlining the organization's media presence. Assisting with organizing events and moderating sessions at the annual member meeting. Participating in numerous relevant academic and technical training workshops as detailed in the provided references. Consulting with fellow board members regarding the development of my master's project.

A significant aspect of my involvement with SCAAS has been my contribution to the development of a cultural astronomy archive. To achieve this, I have employed innovative technology and cutting-edge Indigenous methodologies, ensuring the archive reflects the diverse perspectives and knowledge within the field. My role in this project includes:

Establishing the archive committee and fostering collaboration among its members to create a comprehensive and valuable resource.

Leading the development of the society archive, which will feature my data collection as a pilot project. This serves as an example of the research and information that the archive aims to preserve and disseminate.

By integrating advanced methodologies and fostering inclusivity, the cultural astronomy archive will not only showcase my work but also provide a platform for the preservation and sharing of knowledge from diverse cultures and perspectives. As the archive continues to evolve, it will serve as an invaluable resource for researchers, scholars, and the general public, further advancing the understanding and appreciation of cultural astronomy.

Through my ongoing involvement with SCAAS, I am committed to advancing the field of cultural astronomy while supporting the organization's strategic priorities and fostering collaboration among members.

Chapter 3 The *Citlalin* Codex, *Mexicayotl* Star Lore Virtual Museum Exhibit

The Digital Codex Project combines cultural preservation, academic research, and digital innovation to showcase the rich astronomical heritage of *Mexicayotl* communities. This innovative presentation format showcases the cultural astronomy data while paying homage to the historical codices that have preserved Indigenous knowledge for centuries.

The choice to host the virtual exhibit on the official WordPress site of the Museum of Prehispanic Astronomy stems from a shared commitment to promoting research, education, and public outreach related to Mesoamerican cultural astronomy. By making the exhibit accessible through the museum's website, the Digital Codex Project ensures that its valuable content reaches a broad audience.

The Digital Codex Project combines ethnographic research, an innovative presentation format, and strategic partnerships to preserve and disseminate the rich cultural knowledge of *Mexicayotl* communities. Through this comprehensive approach, the project contributes to a deeper understanding and appreciation of the unique astronomical heritage of *Mexicayotl* communities.

3.1 The Codex Inception

The digital codex project has evolved a great deal from its original plan. When I left home to study, I was instructed by our community elder Atekwatzin that I should “do something for us”. He wanted me to do more than merely write a thesis to sit on the shelf of a university in Europe. He asked me to do something that would benefit the Indigenous community.

Later, after I had begun work on my degree, I spoke to other relatives back home who were interested in what I was doing and asked me questions about the cultural astronomy I had learned. I was happy to share and grow closer to them through the conversations we had.

One relative asked if there were any children's books about cultural astronomy. While I am aware of a few children's books by Anglo-Americans focusing on Indigenous star lore stories, I was unable to find a book specifically about Mexica cultural astronomy geared towards a younger audience or even the general public for that matter. The closest example I could find was Begay and Maryboy (2010). It was at that point that I realized the need for such a project.

The next phase of evolution came during the second semester of my masters course in Spring of 2023 when we had the course “Methods of Data Collection and Analysis”, one module of which detailed the inner workings of archives and archive management. This knowledge combined with my understanding of my SCAAS colleagues' desire to create a cultural Astronomy archive inspired me to create a digital codex archive project.

The concept of a cultural astronomy archive proposed a means to safeguard my ethnographic data and make it readily available for wider dissemination. Unfortunately, I underestimated the time constraints of the committee formation and board approval process. In addition, recognizing the importance of doing things right from the beginning requires a great deal of dedicated time and attention.

In a meeting with my advisor Quiroz Ennis, she recommended that I adjust my focus to a museum exhibit hosted by the Museum for Prehispanic astronomy. She offered me the use of the official Lunativa website and encouraged me to move forward with presenting my work based on some preliminary designs I had shown her. The *Citlalin* Codex then began to take shape.

3.2 Foundational Cultural Astronomy in *Mexicayotl* Practices

Foundational elements of cultural astronomy are demonstrated through the vernacular expressions of the calendar system, *Ullamalitzli*, and the *Mitotiliztli* (folk dance). These vernacular expressions and their foundational cultural astronomy elements are highlighted and illustrated in the *Citlalin* Codex. Understanding these foundational elements of cultural astronomy in *Mexicayotl* practices provides valuable insights into the complex interplay between *Mexicayotl* communities and the cosmos, revealing the profound significance of celestial phenomena in their daily lives and cultural identity.

Atekpatzin stated in a personal interview in 2020 that the most common and foundational ceremony of *Mexicayotl* is the *Danza Azteca* which was revived after being encrypted in a tradition called *Danza Conchero*. The *Concheros* are musicians who play a type of mandolin made from the body of an armadillo, an animal with a hard shell native to North America. Atekpatzin explains that after the conquest, the traditional *danzas* were outlawed, so they adapted to Hispanicized and Catholic songs and instruments. The *Concheros* preserved the *Danza* drum beats and dance steps in the rhythms of their songs. In the mid-20th century, the *Concheros* felt safe enough to reveal the *Danza* tradition that they had been hiding for so long. It is well known throughout the *Mexicayotl* community that the *Danza* tradition was brought to the US from Mexico in the 1970s during the Chicano Movement by Andrés Segura and Florencio Yescas (Aguilar, 2009 p.3). All the contemporary *Danza* groups in the United States trace their lineage directly to them. The first *Danza* group in Denver Colorado was *Los Danzantes de ColorAztlán*. The Late Raul Chaves began dancing with *ColorAztlán* in 1973. There are now three active *Danza* groups in Denver and all of them trace their lineage to *Danzantes* like Raul. Now the *Danza* is ubiquitous among *Mexicayotl* communities. People request *Danzantes* to celebrate coming-of-age ceremonies called *Qincenerras*, weddings, graduations, funerals, holiday gatherings, political demonstrations, and public events like the Indigenous Pop Culture Expo.

According to Rubin Arillano (2022) a Chicana/Indigenous activist, Aztec dancer, artist, and scholar with a Ph.D. in history from Southern Methodist University, the *Concheros* emerged in the aftermath of the mythologized battle. Arillano explains that Querétaro was besieged by

Christianized Indigenous shock troops and Spanish dragoons for decades. The Indigenous Chichimec and Otomi of the Bajío region had managed to hold back the invasion, but by 1531 the fighting had taken its toll on everyone. The final battle was called the ‘Sangremal,’ (bad blood), and as Rubin describes:

“The dance tradition would not exist in its current form were it not for the belief that a sign from heaven appeared in the sky on that fateful day. According to the traditional telling: After several hours of gruesome fighting, a bright cross appeared resplendent and radiant and stood still in the sky above; at its side, the image of Saint James manifested itself as it was his day in the holy calendar. As nightfall approached, he had been invoked by the Christians to help them win the furious combat that seemed to have no end. Conchero dancers regard this as the precise moment when the Chichimec of the Bajío dropped their “arcos y flechas” (bows and arrows) and adopted the “concha” (shell) guitar from which their name is derived. It is useful to note here that the supposed apparition of St. James assisting the Spanish dates to the Reconquista of Spain from the Moors.” (Arellano, 2022)

In a 2023 lecture for Aztlander Magazine, Atekatpatzin proposes that this vision was an interpretation of a phenomenon associated with an eclipse. Parhelia, commonly known as sundogs, occur when a bright light is distorted by atmospheric conditions or filtered through or around another object. Parhelia causes the light source to appear to elongate on four sides therefore resembling a cross (reference). Atekatpatzin explains that contemporary Concheros make an annual pilgrimage to the site known as la Loma San Gremal in Querétaro, Mexico on September 14th. Both sides knew that an eclipse was coming and they used this knowledge to further their own agendas. They declared the manifestation as a divine message to stop fighting and in response the Chicimeca started to dance to honor the eclipse and to honor peace. This is considered the birth of the *Danza* (Atekatpatzin, 2020).

Arellano’s sources identify *Sant Iago*’s (Saint James) feast day, July 25th for the event. Arellano further explains the association with the *Concha* shell (a large sea shell used as a trumpet in ceremonies) as the symbol of *Sant Iago* and the symbolic aspects of the *Danza Concheros* adopting the imagery of the Spanish patron. Atekatpatzin does not make clear why the pilgrimage to Queretaro occurs on September 14th. It would make sense that the pilgrimage to the site of the vision in Queretaro on September 14th occurs around the Autumnal Equinox (Based on the Julian Calendar before 1589). This is the most notable seasonal marker following the alleged ecliptic vision and an annual recurrence, similar to how Our lady of Guadalupe Feast day occurs on December 12th, commemorating the appearance of *la Virgen* (Virgin Mary)/*Tonantzin* (Aztec Goddess) on Chipoltapek hill on the Winter solstice according to the Julian calendar (Cordova, 2019).

Arellano believes that the story surrounding the battle is somewhat mythologized and therefore gives some flexibility with the date. If the eclipses occurred less than a week after *el dia de Santiago* then it is close enough to count as coinciding with the vision. The fact that the origin story of the *Danza* Tradition is centered around a celestial phenomenon exemplifies the importance of star lore to this foundational cultural expression.

As mentioned earlier, the cultural foundations of astronomy include ritual practice, timekeeping, divination, navigation, and knowledge dissemination. Identifying the aperient and esoteric dimensions of the *Danza* as outlined by Toelken (1996) begins with the participants and their roles (Toelken, 1996 p. 163). The *Malencin* is the Feminine Leader and teaches, guides, and tends the fire. The *Capitan* is the Masculine Leader who teaches, guides and carries the group. The *Wheyweterro/a* is the Drummer who can be anyone of any age and gender. This person must know many *danzas* to play the right beats for any *danza* that may be called. The *Sargento/a* can be anyone and keeps order and intercedes by granting *palabra* or permission to a *danzante* to dance. The *Danzantes* are ones who have embraced *Mexicayotl* and who participate in the *Danza Azteca*. They support the community by dancing and following the steps of whoever is leading each dance. They lead *Danza* when they are called to do so. The Esoteric Participants are The Creator, Ancestors, and Spirits.

Toelken's (1996) framework includes an apparent and esoteric inventory as well, basically identifying everything needed to perform the ritual. Apparent inventory includes;

- In the *Danza*, each of the four natural elements - Earth, Air, Fire, and Water - is given material representation through various objects and instruments, connecting the dancers to the cosmos and the cycles of nature.
- Representing the element of earth is the *Popeshcomi*, a decorated stone or ceramic container meant to hold hot coal. The coal represents the element of fire. Air is represented by an *Atecocolli*, a trumpet made from a large concha shell. Water is represented by *Iiotes* (Seed pods), attached to *Danzantes* wrists, ankles, and other instruments. The sound is meant to emulate the falling rain. \
- Additionally, there is a *Huehuetl* (vertical wooden drum) which keeps rhythm, and *Traje* (regalia) which can be a simple white cotton tunic or elaborate adornments with colorful feathers and materials.
- Each *Danzante* carries a *Sonaja* (gourd rattle), representing seeds and fertility. A *Faja* (woven cotton sash) which is usually red is worn representing ancestral connection.
- Through the integration of these elements and symbols, the *Danza* creates a sacred space where the interconnectedness of all things is honored, and the harmony of the natural world is celebrated.

The esoteric inventory includes the presence of the following; Good heart, Good intentions, Sobriety, *Conquista* (discipline), *Conformidad y Unión*, Conformity and Union. As *Danzante* Florez Aviala describes; "If you are part of a group you know how things work in the space, everyone knows their role and what is expected of them. If you are not part of a group then you are a guest in the space and you show respect by observing and adapting to their way of doing things" (Florez Aviala, Personal interview, 2023).

One of the key aspects of Mesoamerican culture that has persisted to this day is the use of a 260-day ceremonial calendar system. Although names, and iconography vary, the basic structure is the same. Just as the calendar system helped to unify Mesoamerican culture, so too did the ballgame known as *Ullamalitzli*. The ballgame served as a powerful force for unity across Mesoamerican culture (Barnhart, 2015).

Mexicayotls have incorporated the Mesoamerican calendar system into their practice in the form of the Medicine Wheel. The term "Medicine Wheel" refers to a representation of Indigenous philosophy and cosmology. It is a concept used by many First Nations people, throughout the North American continent.

In its simplest form, the wheel represents the directions, elements, and seasonal markers such as solstices and equinoxes. *Danzantes* celebrate these celestial events with special ceremonies (Young, personal interview 2020).

The Cañada de la Virgen archeological site in Guanajuato Mexico is within 100 kilometers or about 60 miles North West of the vision site in Queretaro. Quiroz Ennis demonstrated that the central pyramid at Canada de la Virgen, commonly known as the House of the Thirteen Heavens, was built to serve as an artificial horizon marker for the sun, moon, and planets. These alignments make it a physical representation of the calendar and a place where terrestrial space was designed to mirror celestial space. It is a place of interface between the heavens and the Earth (Quiroz Ennis, 2019). These practices demonstrate the tangible presence of the calendar for *Mexicayotl Danzantes*, how the Divine is manifested through celestial observation, and how the *Danzantes* in Mexico mirror those in Colorado and New Mexico in the United States.

We usually think of navigation regarding travel but, navigation in cultural astronomy can also be applied to orientation. Orientation in the *Danza* is very important. All *Danza* ceremonies begin by calling the seven directions. Beginning in the east, Following the ecliptic plane (the path of the Sun, Moon, planets, and zodiac constellations) to the west. Then, North, South, above, below and center. The *Danza* is performed in a circle with *Danzantes* moving around the drum and a *Popeshcomi* (central fire), much like the stars do as they rotate in the sky around the north star. This action invokes sacred movement or *Nawi Olin* and reflects the cosmic order of the universe. Following the path of the Sun Moon and planets is called following a sunwise direction and the same motion is repeated in other ceremonies. With only a few exceptions for very specific reasons, the ceremony is always oriented to the east and follows a sunwise direction as taught by Atecpatzin.

The *Danza* is a means of knowledge transmission, the last of Schafer's (2017) foundational astronomy elements. Each *Danza* is distinct with different drum beats, steps, and movements, and they each tell a story. One star lore example of a *Danza* depicts the story of how the spirit *Coatlque* became the Moon. In my participant observation as a *Danzante*, the first *danza* I learned was *Coatlicue*. To be permitted to use the *danza* I had to memorize the steps, the form, the story that goes with it, and recognize when it is appropriate to use. In this way *Mexicayotls* use *Danza* as an opportunity to safeguard and transmit knowledge.

Although Prehispanic Mesoamerican practices were varied and diverse, there were aspects that archaeologists like Barnhart recognize as virtually universal like the ballgame *Ullamalitzli* and the calendar system (Barnhart, 2015).

The enduring practice of *Ullamalitzli* among Indigenous *Mexicayotl* communities in New Mexico of the United States, exemplifies the profound interconnectedness between cultural

astronomy, identity formation, and community cohesion, serving as a sacred tradition that reflects celestial rhythms and fosters resilience in the face of colonial legacies.

The origins of *Ullamalitzli* can be traced back thousands of years, and the game continues to hold cultural significance today. Evidence for the game dates to at least 1600 BCE (Barnhart, 2015). Archaeologists and contemporary practitioners alike recognize that the game is a reenactment of cosmic order and movement in the universe. The court, ball, and players all have associations with the celestial calendar, the sun, and the planet Venus. The contemporary form of the game is played throughout Mexico, and an organization manages teams and leagues. *Mexicayotl* groups in the American Southwest have learned to play *Ullamalitzli* and are working to bring it back and teach it to the community.

To gain a deeper understanding of the game I conducted a series of two interviews and collected one email survey from Indigenous, *Mexicayotl* practitioners, who are working to reconnect with their Mesoamerican ancestors through *Ullamalitzli*. I was interested to discover how much fun it is for people who play and how it also creates a learning environment strengthening familial bonds.

Ullamalitzli is a ballgame with religious aspects that has been played in various forms by Indigenous Mesoamerican people for at least four thousand years. There is evidence to suggest that the game was played in Prehispanic times as far north as the present-day United States. Like the Mesoamerican calendar system, it was a ubiquitous, pancontinental practice and arguably a foundational cultural element (Barnhart, 2015).

Ullamalitzli has been a central part of Mesoamerican culture for millennia. According to the Nahuatl dictionary, *Ullamalitzli* means to play a game with a rubber ball using the hips. *Ullama* refers to the rubber material of which the ball is made. This is where we get the name *Olmec* referring to the “rubber people” as they were historically known to the Nahuatl speakers. *Itzli* is the act of doing something, meaning an activity one is actively engaged in. *Ullamalitzli* is recognized as the oldest game in the world, which has been continuously practiced. It is also the oldest known game to be played with a rubber ball. The game is intended to recreate the cosmic order and movement in the universe. Aspects of the game such as the court, the ball, and the players represent the celestial calendar, the sun, and the planet Venus. Using these interdisciplinary methodologies, I will explain how star knowledge and the cosmic ballgame relate to community and identity building (Barnhart, 2015).

In the *Popol Vuh*, the sacred text of the K'iche' Maya, the ballgame holds a central place in Mesoamerican mythology and cosmology. Described as a pivotal event in the creation story, the ballgame serves as a cosmic battle between the Hero Twins, Hunahpu and Xbalanque, and the Lords of Xibalba, the Maya underworld. (Read, Gonzalez, 2000 p. 57, 58).

According to the *Popol Vuh*, the Hero Twins are tasked with defeating the lords of *Xibalba* in a series of trials, including the ballgame, to avenge the death of their father and uncle. The ballgame, played in the court of the Lords of *Xibalba*, is fraught with danger and supernatural challenges. The lords of *Xibalba*, cunning and deceitful beings, use trickery and magic to gain the upper hand over the Hero Twins. Despite the odds stacked against them, the Hero Twins

demonstrate courage, cunning, and resilience in the face of adversity. Through their skillful play and clever stratagems, they outwit the lords of *Xibalba*, emerging victorious and securing their place among the gods.

The ballgame in the *Popol Vuh* is not merely a physical contest but a symbolic struggle between the forces of light and darkness, order, and chaos. It represents the eternal battle between the forces of life and death, creation, and destruction. As such, the outcome of the ballgame carries profound implications for the cosmic order and the fate of the world.

The ballgame in the *Popol Vuh* is a richly symbolic and mythic event that encapsulates the core themes of Mesoamerican mythology. Through its depiction of the Hero Twins' epic struggle against the lords of *Xibalba*, it offers insights into the cultural beliefs, values, and cosmology of the ancient Maya

Indigenous communities in Mesoamerica have continued to play this game for centuries. Contemporary players have a federation based in Mexico that manages teams and leagues. Gravitating towards practices like *Ullamalitzli* is one of many ways in which *Mexicayotl* communities living in what is now the state of New Mexico in the United States are working to build community and identity. Dr. Kurly Tlapoyawa is an Indigenous Chicana and Archaeologist at the University of New Mexico. He is the founder of the organization Yankwik Mexikayotl, and its website mexika.org, which compiles cultural and historical resources. Tlapoyawa traveled to Mexico, learned *Ullamalitzli*, and brought it back to New Mexico to teach the community.

Erica Padilla-Saiz is a Chicana Activist and Indigenous educator living in New Mexico. Erica's partner Leroy Saiz is a Professor of Chicana studies and Indigenous Studies at the University of New Mexico. Padilla-Saiz, Saiz, and their children have learned *Ullamalitzli* with Tlapoyawa and they were kind enough to share a bit about their relationship to the game with me through a series of recent interviews. (Saiz, personal interview, 22 February 2023)

To understand how *Ullamalitzli's* cultural astronomy shape's contemporary Indigenous identity, Toelken's (1996) framework, as already discussed, explains that there are tangible and more overt aspects of a folk event, and there are elements that are hidden, more metaphoric and carry deeper meaning than what may meet the eye (Toelken, 1996).

The apparent inventory, which is the tangible one, as defined by Toelken (1996) describes what is needed to play the game. First is the ball, a solid galvanized rubber ball made from heated latex of the rubber tree, mixed with morning glory juice. Layers of heated rubber are laid in strips to build the ball to the desired size. The size would typically be up to 4 kilograms or 9 pounds. Next is the court, a designated I-shaped space thirteen units wide and fifty-two units long. The actual size of the courts can vary to accommodate the environment. The unit of measurement is less important than the ratio of the court. The players include anyone fit enough to play. It is a very physical game, but anyone, any age, and any gender is welcome to participate. The *Traje* is a cotton tunic tied around the waist and groin area. This is safety gear, as it is easy for one to hurt themselves if they are not careful (Barnhart, 2015).

The esoteric inventory, in accordance with Toelken's framework, represents the less overt and hidden aspects of the game. These elements also demonstrate the comparative astronomy incorporated into the game. As it was related to me by Saiz, the ball court is a representation of the universe. The ball represents the sun. Players are Quetzalcoatl and Tezcatlipoca, the Mexica versions of the Mayan Hero Twins Hunahpu and Xbalanque (Saiz, personal interview, 22 February 2023). Ivan Šprajc notes ample evidence connecting Venus to Quetzalcoatl as the morning star and Tezcatlipoca as the evening star (Šprajc, 1993).

The planet Venus exhibits a unique and complex observable motion as it orbits the sun due to its status as an inferior planet, meaning its orbit is closer to the Sun than Earth's orbit (Cotter, 2001, p. 27). This results in Venus appearing close to the sun in the morning for 263 days out of the year.

After the morning appearance, Venus enters a phase called Superior Conjunction, during which Venus is directly behind the Sun from our perspective on Earth (Standish, 2004, p. 51). Throughout the 50 days of the Superior Conjunction, Venus is hidden from view by the Sun's glare, rendering it invisible in the night sky. As Venus progresses along its orbit, it eventually emerges from behind the Sun and becomes visible in the evening sky after sunset (Cotter, 2001, p. 29).

Following the Superior Conjunction, Venus appears as the evening star accompanying the sun as it sets for another 263 days. After this period, Venus enters an Inferior Conjunction, passing between the Earth and the Sun, which causes Venus to be invisible from Earth for approximately 5 days (Standish, 2004, p. 53).

The time between one superior conjunction and the next is referred to as a synodic period (Ridpath, 1988, p. 94). For Venus, this period spans about 584 days. Consequently, every 584 days, Venus completes a full cycle of being hidden behind the Sun and subsequently becoming visible once again in the evening sky.

These numbers all bear relevance to the Mesoamerican calendar system and there is consensus among archaeoastronomers that observation of the synodic period of Venus over many thousands of years contributed to the development of the calendar system. Barnhart) points out that Mesopotamia and Mesoamerica were the only two ancient civilizations who correctly identified the morning star and the evening star as the same object (Barnhart, 2015).

The observed motion of Venus and its influence on the calendar are interconnected elements within Mesoamerican culture. Furthermore, the ballgame serves as a means of representing this celestial relationship on Earth, with the players embodying Venus as both the morning and evening star. The Hero Twins, who are prominent figures in Mesoamerican mythology, are often associated with this celestial symbolism in the context of the ballgame.

Saiz explains that "it is important to keep the ball moving to keep the universe moving. This is why it was taken so seriously in pre-colonial times. When someone made a mistake resulting in the ball dropping a sacrifice was necessary. Not always a sacrifice of life, but smaller blood

offerings were most common. If you do things right, you are right with the universe. It is all about syncopation with the universe” (Saiz, personal interview, 22 February 2023).

Continuing with Toelken’s framework we can identify the apparent and esoteric sequence of the event, how the game is played. Padilla-Saiz described that teams get split up equally and gather at opposite ends of the I-shaped court. Someone from one team tosses a rubber ball into the center of the court. The opposite team will hit the ball with their hip and the action will go on, hitting the ball back and forth until someone misses it. In Padilla-Saiz words:

“While it is a traditional game, you want to remember the point is to have fun and move in unison with your team. You are working as a group to reach a result. It is a physical game, so you need to be safe while playing; you need to take the advice of seasoned players regarding where to hit it on your body and what to wear for protection. This isn’t a sports game that requires you to be the one on top, you are not the one, the savior. It requires focus and true teamwork, you are one player among many other players, and it only works when everyone is working together.” (Padilla-Saiz personal interview, February, 2023).

Padilla-Saiz continues by describing what it is like to play.

“It’s so much fun! It makes me happy; it causes me to focus in a way that I don’t do throughout the day. You and all the participants will laugh at all the silly things or mistakes you all do. It is a physical sport, so it makes you sore, and it hurts, but it’s enjoyable” (Padilla Saiz, personal interview, 21 February 2023).

The final piece of Toelken’s framework identifies the simultaneous or overlapped elements and intersections with other events. Here we can incorporate Schafer’s (2017) foundational elements of cultural astronomy, as the game of *Ullamalitzli* incorporates all of them.

An interesting example to emphasize the connection between cosmic elements of ancient Mesoamerica, and contemporary practices is shown by studying the architecture of pre-Columbian ball courts. Researcher Aurelio López Corral (2023) did a survey of pre-Columbian ball courts throughout Mesoamerica including the one at Plazuelas in Guanajuato Mexico.

In June of 2021, I was able to visit Plazuelas, a site which lies within the Sierra de Pénjamo, in Guanajuato, and was one of the most complex settlements in the region during the Epiclastic period. It lies in the geographical center of Mexico, one of the farthest northern sites of what is considered Mesoamerica. The site has two ballcourts, although only one has been fully restored. Ballcourt 1 was made with quarried rocks and is oriented 353.99° east of north. It measures 64.03 meters in length and 27.88 meters in width. It is slightly asymmetrical along both its vertical and horizontal axes (Corral, 2023, p.8).

Corral’s study found that the combination of the orientation of the buildings and the ratios of building construction correlates to sacred numbers of Mesoamerican cosmology. Including those associated with the calendar (Corral, 2023, p.8). These findings are confirmed by the contemporary players of *Ullamalitzli*

Although it is often difficult just to find space to play, Padilla Saiz, and their relatives take what they can get such as football fields, or recreation center gyms. The field is still laid out in keeping with the spirit of the pre-Columbian architectural ball courts.

Padilla-Saiz explained what it means for her to play the game:

“It is a traditional game that incorporates so much of yourself (mind and body), and with each impact that you have with the ball, you have to be thoughtful about what part of your body you’re going to hit it with, with what force and direction. These decisions have to be made ASAP, there shouldn’t be any hesitation because the opportunity can be lost, and your team misses out on earning a point. This is reflective of life; if you’re not watching and paying attention to the movement that is taking place on the field (life), you miss out. If you’re not paying attention, observing, and planning and projecting into the future (you’re not projecting the direction of the movement projecting the movement/decisions in your life, then you’re missing out on opportunities/life. *Ullamalitzli* is not just about a physical game, but a game that requires teamwork (like many sports), it requires you to be in tune with your body, it requires you to have fun and play your part when you are called upon” (Padilla Saiz, personal interview, 21 February 2023).

Unfortunately, Padilla Saiz did not remember discussing the cosmic aspects of the game. The practice of *Ullamalitzli* not only serves as a physical activity but also holds deep cultural and spiritual significance for Indigenous *Mexicayotl* communities. Through ritualized gameplay, participants engage in a symbolic reenactment of cosmic order and movement in the universe. The ball court itself is conceived as a representation of the cosmos, with its dimensions and layout mirroring celestial proportions. As players step onto the court, they become embodiments of celestial beings, with each movement and action reflecting the rhythms of the celestial bodies.

Moreover, the act of playing *Ullamalitzli* is imbued with layers of symbolism and metaphor. The rubber ball, made from natural materials such as latex and morning glory juice, symbolizes the sun, a central celestial body in Mesoamerican cosmology. As players hit the ball back and forth using their hips, they participate in a cosmic dance, echoing the movements of the sun and the planet Venus.

The game is not merely about competition but about collective participation and collaboration. Players must work together as a team, synchronizing their movements to keep the ball in motion. This emphasis on teamwork and cooperation reflects broader cultural values of communal harmony and solidarity. In a world marked by colonial legacies and external pressures, *Ullamalitzli* offers a space for Indigenous communities to come together, reaffirming their shared cultural heritage and forging bonds of solidarity.

Furthermore, *Ullamalitzli* serves as a means of knowledge transmission, with experienced players passing down traditional techniques and strategies to younger generations. Through oral tradition and experiential learning, Indigenous youth gain insights into their cultural heritage, learning valuable lessons about resilience, perseverance, and the interconnectedness of all things.

Ullamaliztli represents more than just a game—it is a living embodiment of Indigenous knowledge systems, cultural resilience, and community cohesion. By engaging in this sacred tradition, Indigenous *Mexicayotl* communities in New Mexico and beyond reaffirm their connection to their ancestral past and assert their presence in the present. As they continue to uphold and revitalize this ancient practice, they carry forward the legacy of their ancestors, ensuring that their cultural heritage remains vibrant and relevant for generations to come.

CHAPTER 4 The Codex Structure

The codex is modeled after the comparative astronomy model by Maryboy and Begay (2010). In their book, they beautifully illustrate Diné cosmology and juxtapose it with relevant scientific data. Celestial features and phenomena are introduced with a story and artwork by Diné artists. In the spirit of this concept, I have created a similar work for *Mexicayotl*. The structure of this chapter is based on and explains the structure of the Codex.

4.1 PART I: INTRODUCTION

The introduction contains a brief overview of *Mexicayotl* astronomy, cosmology, historical and cosmological origins. It describes the organization of star knowledge, cosmic vision and spiritual worldview, order provided by cosmic processes, special attributes of stars, and nahuatl translations.

Additionally it describes classical astronomy, and why Greek astronomy remains important today. The introduction continues with an explanation of space science and recent scientific advances.

Finally, the introduction explains the Foundational Cultural Astronomy elements of Time Keeping, Navigation/Orientation, Ritual, and Knowledge Transmission.

- *Tonalpohualli*: The Mesoamerican Calendar, The Medicine Wheel, and Timekeeping,
- *Ullamalitzli*: The Mesoamerican Ballgame Cosmic Movement, and Knowledge Transmission Familial Bonding,
- *Mitotiliztli*: *Danza Azteca*,
- The Origin of the Moon, and Ritual, and Moving in a Sunwise Direction: Orientation in Space and Time.

4.2 PART II: COMPARATIVE ASTRONOMY

Part two displays cultural astronomy elements with star lore stories and relevant scientific context. the title headings include:

- Ecliptic Origins, explaining the origin story of the *Danza Conchero* expressed through an eclipse, how contemporary people relate to eclipses, and the science behind them.

- The Scorpion Stars, Another *Mexica origin* story relating to the scorpion constellation, with some scientific discussion about prominent stars within the constellation.
- *Itzpapalotl* and Cassiopeia, a story of how a woman warrior is deified and honored with a constellation, known to western astronomers as the Constellation Cacciopeia
- The Sun, Moon and Venus, description of each object and the *Mexicayotl* relationship to them, along with brief scientific facts.

4.3 PART III: RESOURCES

The final section provides links to the broader archival database I am working on with my colleagues at the SCAAS. In this way, interested parties, including the *Mexicayotl* community members, will be able to access more detailed information using the materials on the Digital Codex and other tools to aid in learning and growth.

Other resources include links to the Museum of Prehispanic Astronomy and the Chichamale Institute with classes on understanding the *Mexica* calendar system.

There is also a glossary of terms and the Stellarium Aztec Sky Cultures page.

4.4 Codex Community and Continuity

The primary purpose of the Codex is to serve as an educational resource for detribalized Native communities. By presenting and preserving traditional cultural astronomy knowledge, it helps strengthen familial connections and ensures the transmission of this wisdom to future generations. It achieves this goal by showcasing historical, cultural, and scientific aspects of Native American astronomy through its engaging and informative slides. It provides opportunities for visitors to explore the unique perspectives and contributions of Indigenous *Mexicayotl* groups. It encourages intergenerational learning by offering an engaging activity and educational materials suitable for all ages.

In addition to its primary objective, the exhibit also seeks to enhance the availability of educational resources related to cultural astronomy. By increasing public awareness and understanding of this field, the exhibit fosters appreciation for the rich cultural heritage embodied in Native American astronomy and contributes to the preservation of this knowledge for years to come.

CONCLUSION

The study of cultural astronomy, exemplified by the enduring practice of the foundation cultural astronomy elements among Indigenous *Mexicayotl* communities, serves as a profound testament to the interconnectedness of celestial phenomena, cultural identity, and community cohesion. Through the lens of Toelken, (1996) Schafer (2017), and Begay, Maryboys (2010) frameworks and interdisciplinary methodologies, I have explored how the ancient *Mexica* star lore practices, with their roots reaching back millennia, continue to resonate with contemporary practitioners in Colorado, New Mexico, and beyond.

These sacred traditions are deeply intertwined with cosmic order and movement in the universe. Learning about the rhythms of celestial bodies such as the Sun, Moon, and Venus help to bring us closer to understanding ourselves and our environment. Star lore serves as a vehicle for knowledge transmission, teaching valuable life lessons about teamwork, focus, and synchronicity with the universe.

Despite the challenges of maintaining consistent participation and preserving cultural heritage in the face of colonial legacies, the *Mexicayotl* communities of Colorado and New Mexico persist in their efforts to revitalize and reclaim their ancestral practices. By embracing star lore as a cultural touchstone, they reaffirm their connection to their Indigenous roots and foster a sense of belonging in an actively colonial environment.

As we reflect on the significance of the foundational cultural astronomy elements, we recognize its power to not only unite communities but also to inspire deeper reflections on our place in the cosmos. By honoring and preserving cultural traditions, we honor the rich tapestry of human experience and reaffirm the importance of cultural diversity in shaping our collective identity.

As we look to the future, may we continue to learn from and celebrate the wisdom embedded in these ancient practices, ensuring that they remain an integral part of our shared cultural heritage for generations to come.

Goals set and achieved through this work have been establishing valuable and meaningful professional connections through the SCAAS and the Museum of Prehispanic Astronomy. Participation in and preparation for the conferences have given me valuable research skills and insights, while contributing to my growing professional network. The strengthening of familial bonds through the cultural connections are invaluable and will provide lasting guidance for me in my professional and personal journey. My strengths are my ability to make connections with people and my ancestral background opens me to community access that would not be available otherwise. That being said, I am still an outsider in many ways and will never be fully integrated into the Indigenous communities I work with and thus run the risk of offending them if my published work betrays any kind of trust. To prevent this I made my intentions clear from the

beginning and maintain open and honest communication with all of my contacts. It is also difficult to engage with Indigenous communities in the Americas while in Europe.

Practical skills and new knowledge gained include visual astronomy and digital modeling, website translation editing, using virtual globes in archeoastronomy and landscape archaeology, Indigenous star lore and the creation of community, the protection of dark and quiet skies. Overall, this experience contributes to personal and professional growth through the collection of rich and diverse field data, and tangible, practical skills. All of which contribute directly to the completion of my Master's project as stated above.

Building upon the successful completion of this project and the establishment of valuable connections within the field of cultural astronomy, there are several promising avenues for follow-up projects and future developments:

Collaborative projects with Indigenous communities: Engaging in partnerships with Indigenous communities to co-create projects that center their voices and perspectives. These collaborations could focus on documenting, preserving, and sharing other aspects of their cultural heritage, such as oral histories, traditional ecological knowledge, or artistic practices.

Expansion of the Digital Codex: Further developing the Digital Codex to include a broader range of Mesoamerican cultural astronomy practices and stories, as well as incorporating additional multimedia elements to enhance the user experience.

Educational outreach programs: Developing educational resources and programs based on the Digital Codex, designed for schools, museums, and community organizations. These programs could help raise awareness of Indigenous cultural astronomy and promote appreciation for the richness and diversity of these knowledge systems.

Preservation of dark skies: Collaborating with organizations working to protect dark and quiet skies, raising awareness of the importance of preserving these conditions for both astronomical research and the preservation of cultural astronomy practices.

Fieldwork and documentation of cultural astronomy practices: Conducting further fieldwork to document and analyze the cultural astronomy practices of other Indigenous communities, expanding our understanding of the diversity and complexity of these knowledge systems.

Development of cultural astronomy workshops and conferences: Organizing workshops and conferences that bring together scholars, Indigenous knowledge holders, and practitioners in the field of cultural astronomy to share knowledge, exchange ideas, and foster collaboration.

By pursuing these follow-up projects and future developments, there can be a continuation of contributions to the preservation and celebration of Indigenous cultural astronomy, while fostering meaningful connections between communities and scholars. In doing so, it is possible to reaffirm the importance of respecting and learning from Indigenous knowledge systems and their role in shaping our understanding of the cosmos.

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Citlalini koodeks: Mexicayotli astraalfolkloori virtuaalne koodeks

Projekti "Citlalini koodeks" eesmärgiks on luua innovaatiline veebiplatvorm, et säilitada ja tutvustada Mexicayotli põlisrahvaste tähistaeva alaseid teadmisi, keskendudes kogukondadele Colorado ja New Mexico osariikides Ameerika Ühendriikides. Etnograafiliste välitööde, autoetnograafia, kaugeire ning astronoomiliste jooniste kaudu annab projekt püsiva ja ligipääsetava väljundi, talletades ja jagades kohalikku astraalfolkloori (star lore).

Projekti raames valminud digitaalne Citlalini koodeks järgib iidsete Mesoameerika koodeksite eeskujul ning on virtuaalsel kujul eksponeeritud Mehhiko Prehispanic Astronomy muuseumi kodulehel. Citlalini koodeks ühendab traditsioonilisi teadmisi innovaatilise tehnoloogiaga, võimaldades teadmussirde ja kaugvälitööde edendamist. Valminud koodeks on kantud pühendumusest rahvaastronoomiliste teadmiste säilitamisele haaravas ja ligipääsetavas formaadis. Projekt toob välja astraalfolkloori olulisuse peresidemete ja kultuuriidentiteedi hoidmisel ja tugevdamisel Mexicayotli põlisrahvaste kogukondades.

Projektis lähtutakse võrdlevast astronoomiast, nagu seda rakendavad Nancy C. Maryboy ja David Begay navaho täheteadust käsitlevas teoses *Sharing the Skies: Navajo Astronomy*, ning Barre Toelkeni eristusest folkloorsete sündmuste ilmsete ja esoteeriliste tahkude vahel. Digitaalse koodeksi loomiseks uurisin osalusvaatluse ja etnograafiliste intervjuude kaudu, kuidas Mexicayotli praktiseerijad toetuvad Mesoameerika kosmovisioonile, et jätkata esivanemate traditsioone, mis on tihedalt läbi põimunud etnoastronoomiliste käsitlustega ajaarvestusest, rituaalidest, navigatsioonist ja teadmussirdest. Nende astronoomiliste elementide lõimitus Mexicayotli eluviisiga tuleb selgelt välja projektis vaadeldavas kolmes rahvapärasest nähtuses, milleks on Mesoameerika kalendrisüsteem, Danza Azteca ja Mesoameerika pallimäng.

Multimediaalne digitaalne koodeks sisaldab autori jooniseid, mis on tehtud planetaariumi tarkvaraga Stellarium ning illustreerivad astraalfolkloori, luues kasutajatele haarava ja interaktiivse kogemuse. Innovatiivsete meetodite eesmärgiks on säilitada ja jagada etnoastronoomia alaseid teadmisi kättesaadaval ja kergesti mõistetaval moel, mis arvestab põlisrahva kogukonna vajadustega ja on samas ligipääsetav ka laiemale avalikkusele. Eesmärgiks oli luua sisukas infoallikas, millest oleks otsene kasu nii kogukonnale kui ka laiemale üldsusele, mitte ainult akadeemilisele maailmale.

Magistripjekt on kantud soovist edendada põlisrahvaste astronoomiliste teadmiste säilitamist ja kogundade kaasatust sellesse. Pjekt toetab esivanemate tavade taaselustamist, tõstes esile Mexicayotli kogukondade vastupanuvõimet seista silmitsi koloniaalpärandiga. Lisaks sillutab projekt teed haridusprogrammidele, mis võimaldavad avardada üldsuse arusaama põlisrahvaste teadmistest ning selle pärimuse rollist kosmose mõistmisel. Digitaalse koodeksi haaret saab laiendada, hõlmates suuremat hulka Mesoameerika kultuuriastronoomia tavasid ja pärimust ning lisades täiendavaid multimeedia elemente. Digitaalset koodeksit täiendab Society for Cultural Astronomy in the American Southwest ühingu hallatav digitaalne arhiiv, mis võimaldab põlisrahvaste kogukondadele ja teadlastele ligipääsu astraalfolkloorile.

Resumen Español

El Códice Citlalin: Exhibición Virtual del Folclor Estelar Mexicayotl

El Proyecto Códice Citlalin tiene como objetivo crear una plataforma en línea innovadora para preservar y exhibir el conocimiento estelar indígena, centrándose en las comunidades Mexicayotl de Colorado y Nuevo México, en los Estados Unidos. Al combinar el trabajo de campo etnográfico, la autoetnografía, los datos de teledetección y el arte original, el proyecto proporciona un método seguro y accesible para documentar y compartir el folclore estelar vernáculo.

El Códice Digital terminado es una exhibición virtual de museo, inspirada en los códices mesoamericanos antiguos, que se muestra en el sitio web del Museo de Astronomía Prehispánica. El Códice Citlalin combina el conocimiento tradicional con la tecnología innovadora, facilitando la transmisión del conocimiento y el trabajo de campo remoto. Este proyecto representa el compromiso del proyecto de preservar el conocimiento del folclore estelar en un formato atractivo y accesible. La exhibición destaca la importancia del folclore estelar para fomentar el vínculo familiar y la identidad cultural dentro de las comunidades indígenas Mexicayotl.

El proyecto utiliza enfoques de trabajo de campo etnográfico y autoetnográfico, basados en el formato de astronomía comparativa de Maryboy y Begay en *Sharing the Skies: Navajo Astronomy*, para presentar efectivamente los datos. El análisis transcultural del folclore estelar se basa en la obra *Dynamics of Folklore* de Barre Toelken. Para establecer el código digital, realicé una exploración detallada del folclore estelar vernáculo que enfatiza la importancia de los cuerpos celestes y los eventos dentro de las prácticas culturales de los practicantes indígenas Mexicayotl. Utilizando la observación participativa y entrevistas etnográficas, examiné cómo estos grupos se basan en la cosmovisión mesoamericana antigua para preservar sus prácticas ancestrales, que están impregnadas de los elementos fundamentales de astronomía cultural: medición del tiempo, ritual, orientación y transmisión de conocimientos. Tres expresiones vernáculas ejemplifican la integración perfecta de estos elementos fundamentales de la astronomía en el tejido cultural de la forma de vida Mexicayotl: el sistema de calendario mesoamericano, la Danza Azteca y el Juego de Pelota Mesoamericano.

El Proyecto Códice Digital integra los medios multimedia al combinar el software planetario Stellarium con arte original, ilustrando los elementos del folclore estelar y ofreciendo una experiencia interactiva e interesante para los usuarios. Estos métodos innovadores tienen como objetivo preservar y compartir el conocimiento de la astronomía cultural de una manera accesible. Desde su concepción, el proyecto ha evolucionado significativamente para satisfacer las necesidades de la comunidad indígena y mantener su relevancia para una audiencia más amplia.

Annex 1: Interview Questions

The following Interview Questions were presented to members of the *Clamecaztlan* Institute in the form of email surveys, and video and phone interviews. Although the specific aim of each interview was to collect data on the *Danza Azteca* and the *Ullamalitzli* ball game, the questions were able to be applied to *Mexicayotl* practices in general.

Danza

- Are the sun, moon, and stars important to *Danza*, and if so, how?
- What does *Danza* mean to you?
- How is *Mexicayotl* cosmovision expressed in the *Danza*?
- Please explain how *Danza* is done.
- Are there *Danza*'s that specifically honor celestial phenomena? (If yes please explain)
- What is it like to participate in *Danza* (How does it make you feel)?
- How did you learn about *Danza*?
- What star stories or teachings can you share about *Danza*?
- What do you think is the most important thing people should know about *Danza*?

Ullamalitzli

- What are the similarities and differences between *Ulama* and *Ōllamalīztli*?
- Are the sun and stars still important to *Ulama*, and if so, how?
- Is it accurate or appropriate to call *Ulama* a game?
- What does *Ulama* mean to you?
- Please explain how *Ulama* is done.
- What is it like to participate in *Ulama* (How does it make you feel)?
- How did you learn about *Ulama*?
- What stories or teachings can you share about *Ulama* or *Ōllamalīztli*?
- What do you think is the most important thing people should know about *Ulama*?

Considerations

- Are there any traditional knowledge protocols to consider for the information you provided? (Traditional knowledge protocols include seasonal, women only, men only, secret/sacred, etc.)
- I understand that this information is part of ethnographic research and that it may be published in academic writing. I also understand that this survey will be archived and made available publicly for research purposes. I hereby give my informed consent.

Annex 2 SCAAS Archive Committee

The goals of the Archive Committee are to create a repository for the organization's research collections to be documented and preserved, and to be made accessible to the greater Cultural Astronomy community including the Traditional Indigenous communities and Academics.

The proposed collections are the Von Del Chamberlain Collection, the Cultural Landscape Survey Program Collection, SCAAS Publications and Proceedings, SCAAS Newsletters, the *Citlalin Codex: Mexicayotl* Star Lore Collection, and the Fewkes Project Archive Collection.

To provide representation for relevant Traditional knowledge keepers and cultural consultants as they apply to various research collections.

To establish and ratify a comprehensive, action-oriented cultural awareness policy including but not limited to.

Digital Collection Development (e.g., criteria for inclusion of materials; guidelines for reappraisal and deaccessioning)

Digitization (e.g., guidelines for identifying and prioritizing what to digitize)

Digital Preservation (e.g., guidelines for securely storing digital collections)

Donations (e.g., review procedures, criteria for acceptance, disposition of physical objects)

Access and Use (e.g., metadata procedures, intellectual property, copyright and permissions, conditions of use, such as non-commercial or restricted)

Any additional policies the committee finds relevant:

The committee is administered by a board-appointed Chair who schedules and presides over meetings, identifies, and delegates appropriate tasks and roles, and reports to the Executive board.

The Committee chair is assisted by SCAAS members who volunteer their skills, knowledge, and resources.

The Archive Committee will consult the SCAAS Cultural Advisory Committee on matters that necessitate cultural awareness and sensitivity.

Such matters may include but are not limited to accessioning ethnographic data and assigning Traditional Knowledge Tags.

Digital Stewardship

Digital Stewardship is the management of digital objects throughout their life cycle to facilitate their long-term preservation and use. (Dictionary of Archives Management, 2023) The Digital Stewardship model is the primary guiding principle behind the Digital Archive section of the project. As expressed by the Sustainable Heritage network I have included an explanation of the Digital Stewardship Life Cycle (Sustainable Heritage Network 2023)

The Digital Stewardship principle keeps cultural community values at the heart and includes cultural checks throughout the process.

The first part of the Digital Stewardship Life Cycle is to prepare. As part of the preparation a statement of purpose must be drafted and introduced. The SCAAS Archive committee met over zoom in November of 2023 and produced the following.

Purpose statement

The absence of a centralized compendium of Cultural Astronomy research materials demonstrates a need for archiving the wealth of valuable field data collected by dedicated researchers over many years. The value of cataloging these data and making them available for researchers and source communities alike, cannot be understated. With these ideas in mind, the Society for Cultural Astronomy in the American Southwest, Inc. has taken the first steps toward the foundation of a Cultural Astronomy Archive based on the data collections of our members and colleagues. The SCAAS archive project hopes to combine intentional data management planning and digital stewardship methods to preserve and disseminate SCAAS research collections.

The digital stewardship life cycle continues, step by step with the establishment of policies, budget, resources, and project plans. Gathering includes, digitizing items, seeking out items in external repositories, partnering with community Create new content. Utilize relevant policies and procedures. Enhance File naming File organization Descriptive Metadata Attribution Save File storage Digital preservation File security and integrity Selecting tools Backing up files Disaster planning

Share Appropriate access Digital platforms In-person sharing Access and use policy Copyright Intellectual property.

Annex 3 Project Timeline

Date	Place	Organization	Activity	Contact	Student Work Hours	Type	Notes
December 21, 2012	Colorado USA	Calmekaztlan	Velacion		24	Fieldwork	Participant observation of Mexicayotl Solstice ceremony
January 2013-2015	Colorado USA	NAC	Meeting		64	Fieldwork	Participant observation of Native American Church ceremonies.
June, 2010	Colorado USA	Danza Azteca Mitotilitzli, NAC	Homblecha (Lakota Vision Quest)		48	Fieldwork	Participant observation of multi-day Lakota ceremony honoring the sacred relationship between life and death.
January 2013-2015	Colorado, USA	Danza Azteca Mitotilitzli	Danza Azteca		104	Fieldwork	Participant observation of Mexicayotl traditional dance practice focused on honoring the sacred movement of the cosmos and the peoples relationship to it.
July, 2012	Pine Ridge Indian Reservation, USA	Ogalala Lakota Nation	Lakota Sundance		96	Fieldwork	Participant observation of a multi day ceremony honoring the sun
March 23-25, 2023	New Mexico USA (Remote)	Chimalli Institute	Intro to the Mexika Calendar System	Kurly Tlapoyo wa	8	Fieldwork	Detailed remote, expert facilitated class about the Mexika calendar system, equipping individuals with the tools needed to not just use, but also actually understand this calendar, we help ensure its survival for generations to come.

February 19, 2023	New Mexico USA (Remote)	University of New Mexico	Interview with Leroy Saiz	tlalnami kwiliztli@gmail.com	1	Fieldwork	Ethnographic interviews about the contemporary practice of the mesoamerican ball game Ulamalitzli
November 28, 2022	New Mexico USA (Remote)	University of New Mexico	Interview with Leroy Saiz	tlalnami kwiliztli@gmail.com	2	Fieldwork	Ethnographic interviews about the Mexicoyotl expressions of astronomy in New Mexico
February 22, 2023	New Mexico USA (Remote)		Survey with Ercica Padilla Saiz	epadill6@gmail.com	1	Fieldwork	Ethnographic survey about the contemporary practice of the mesoamerican ball game Ulamalitzli
May 31, 2023	Colorado USA (Remote)	International Astronomical Union (IAU) Office for Astronomy Outreach	The Cultural Relevance of Dark and Quiet Sky Protection		2	Fieldwork	IAU OAO Seminar on the Protection of Dark and Quiet Skies: the Cultural Relevance of Dark and Quiet Sky Protection brings together astronomers, cultural practitioners, artists, activists, and outreach professionals to share their connection to the dark and quiet sky and its importance to the world's cultures. We invite everyone – from students to professional astronomers to Indigenous knowledge holders
February 22, 2023	New Mexico USA (Remote)	NECHIKOLLI: SE OME TLAHTOLLI (MEXIKATLAHTOLLI)	Ollamalitzli	tlalnami kwiliztli@gmail.com	2	Fieldwork	Lecture on the contemporary and historical practice of Ulamalitzli
June 7-10, 2023	Brno Czech Republic	International Society for Ethnography and Folklore	SIEF2023 16th Congress	vincenzoscamedella91@gmail.com	5	Fieldwork	Presentation - Digital Emergence: The Creation of an Indigenous Star Knowledge Archive based on Remote Sensing Computer Models
October - 2023		Riga University	International Conference of Young Folklorists	rigayofog@gmail.com	5	Fieldwork	Presentation - Indigenous Star Lore and the Creation of Community: the Cultural Landscape of Mexicayotl

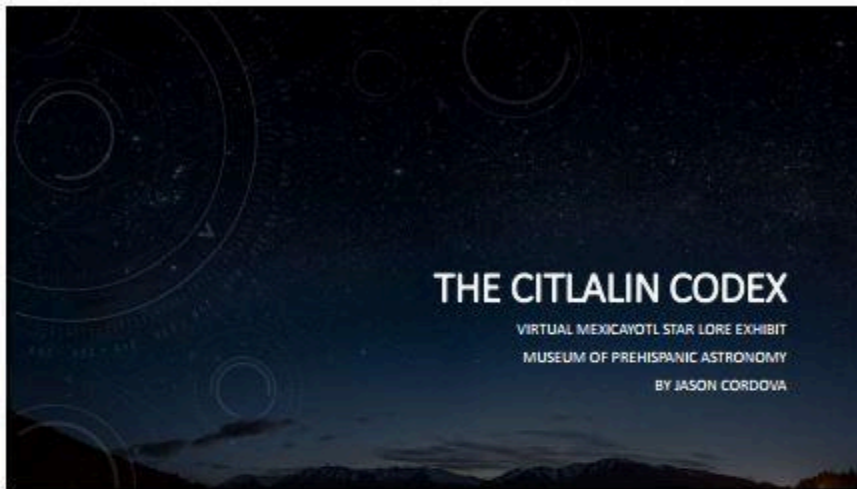
						ork	Astronomy and Belonging.
April 19, 2022	Tartu Estonia	Estonian National Museum	Young Voices	anastasiya.fiadotava@kirmus.ee	5	Fieldwork	Presentation - Journey to the Sixth Sun: Computer Modeling Cultural Context of the Mesoamerican Calendar and Polar Star Precession
October 26th-28th, 2022	Helsinki Finland	University of Helsinki	Young Folklorists	tuukka.karlsson@helsinki.fi	5	Fieldwork	Presentation - Journey to the Sixth Sun: Living Representations of Mesoamerica through Computer Modeling of the Mayan Calendar
June 2nd - 3rd, 2022	Tartu Estonia	University of Tartu	Winter Conference of Folklorists: Anomalies in Folklore	Merili Metsvahi <merili.metsvahi@ut.ee>	5	Fieldwork	Presentation - Naturally Supernatural: Anomalies as Normal in Native American Traditions
March 2nd - 4th, 2023	Tartu Estonia	University of Tartu	Winter Conference	astrid.tuisk@folklore.ee	5	Fieldwork	Presentation - Playing with the Sun and the Stars: Cultural Astronomy of the Mesoamerican Ball Game
March 16th 2023	Tartu Estonia	Tartu Observatory	Astronomy Seminar	juhan.liivamagi@ut.ee	5	Fieldwork	Presentation - Playing with the Sun: Cultural Astronomy of the Mesoamerican Ball Game
November 24th, 2022	Tartu Estonia	University of Tartu	HUMA Autumn School	agnes.unt@ut.ee	5	Fieldwork	Presentation - Sacred Fires of the Sun: Roots of Renewal in Mexica Solstice Celebration
June - 2023	Colorado USA (Remote)	Society for Cultural Astronomy in the American Southwest	Board Meeting	dombrows@gmail.com	2	Interdisciplinary	Board meeting
April 18, 2023	Colorado USA (Remote)	Society for Cultural Astronomy in the American	Journal Club	dombrows@gmail.com	4	Interdisciplinary	Chamberlain, V.D. (2022). Conscience of the Cosmos: Thinking About Mother Earth and Father Sky. International Journal of

		Southwest				p	Archaeology Volume 10, Issue 2, December 2022, Pages: 31-37
May 23, 2023	Colorado USA (Remote)	Society for Cultural Astronomy in the American Southwest	Journal Club	dombrows@gmail.com	10	Inter ns hi p	Chris Layser: Using Virtual Globes in Archaeoastronomy and Landscape Archaeology William F. Romain. Notes on the Accuracy of Google Earth Pro Heading Information for Archaeoastronomy and Landscape Archaeology Studies https://doi.org/10.1558/jsa.25599 Giulio Magil. Archaeoastronomy: Introduction to the Sciences of Stars and Stones Chapter 2.6
December 20th, 2022	Colorado USA (Remote)	Society for Cultural Astronomy in the American Southwest	Journal Club	Christopher Dombrowski dombrows@gmail.com	2	Inter ns hi p	ISAAC Oxford Conference
February 25th, 2023	Colorado USA (Remote)	Society for Cultural Astronomy in the American Southwest	Member Meeting	Christopher Dombrowski dombrows@gmail.com	2	Inter ns hi p	Member Forum
October 12 2021	Guanajuato, Mexico (Remote)	Museum of Prehispanic Astronomy	Interview with Dr. Quiroz	Rossana Quiroz astronomiaprehispanica@gmail.com	1	Inter ns hi p	Post site visit review
		Museum of Prehispanic Astronomy	Reading	Rossana Quiroz astronomiaprehispanica@gmail.com	3	Inter ns hi p	Quiroz Ennis, Rossana ECLIPSE COUNT, CALCULATION OR PREDICTION ACCORDING TO THE HUICHAPAN CODEX
		Museum of Prehispanic Astronomy	Reading	Rossana Quiroz astronomiaprehispanica@gmail.com	3	Inter ns hi	Quiroz Ennis, Rossana, El basamento piramidal de Cañada de la Virgen como calendario de horizonte artificial

				spanica@gmail.com		p	
		Museum of Prehispanic Astronomy	Reading	Rossana Quiroz astronomiaprehispanica@gmail.com		6	International Quiroz Ennis, Rossana, El Cerro y el Cielo, 2010, Instituto Nacional de Antropología e Historia, Mexico
		Museum of Prehispanic Astronomy	Reading	Rossana Quiroz astronomiaprehispanica@gmail.com		3	International Quiroz Ennis, Rossana, IMAGENES Orientaciones astronómicas en la zona arqueológica Cañada de la Virgen y en la cuenca central del río Laja
		Museum of Prehispanic Astronomy	Reading	Rossana Quiroz astronomiaprehispanica@gmail.com		3	International Quiroz Ennis, Rossana, Orientaciones astronómicas en la zona arqueológica Cañada de la Virgen y en la cuenca central del río Laja
March 14th, 2023	Colorado USA (Remote)	Society for Cultural Astronomy in the American Southwest	Journal Club	Christopher Dombrowski dombrows@gmail.com		4	International Raney, M. & Williamson, R.A. (2020). Star Beings of the Tewa. In GE Munson, RA Williamson and BC Bates (Eds.), Before Borders: Revealing the Greater Southwest's Ancestral Cultural Landscapes, Occasional Papers on Cultural Astronomy No. 1. SCAAS Multimedia Publications
July 1 2021	Guanajuato, Mexico	Museum of Prehispanic Astronomy	Site Visit Peralta and Palzuelas	Rossana Quiroz astronomiaprehispanica@gmail.com		8	International Under the direction of Dr Quiroz I visited the Archoastronomy sites of Peralta and Plazuelas in Mexico and was advised to take note of specific architectural aspects. The Ballcourt, orientations and design plans etched into the rock for other sites are a few examples.
February 25th, 2023	Colorado USA (Remote)	Society for Cultural Astronomy in the American Southwest	Member Meeting	Christopher Dombrowski dombrows@gmail.com		2	International Virtual Astronomy and Digital Modeling: Dr. Georg Zotti

June 29 2021	Guanajuato, Mexico	Museum of Prehispanic Astronomy	Site Visit Canada de la Virgen	Rossana Quiroz astronomiaprehispanica@gmail.com	6	Inter ns hi p	Visited the Archaeoastronomy site of Canada de La Virgen on Mexico Guided by a colleague of Dr Quiroz.
November 2021	Guanajuato, Mexico (Remote)	Museum of Prehispanic Astronomy	Website Translation Editing	Rossana Quiroz astronomiaprehispanica@gmail.com	16	Inter ns hi p	Website Translation Editing
					467		

Annex 4 The Citlalin Codex



1



2

INTRODUCTION TO CULTURAL ASTRONOMY

Cultural Astronomy is the study of how people of the past and the present relate to celestial objects and events. Many cultures throughout the world and throughout history have strong connections to the stars and the night sky. Many cultures also have foundational elements of astronomy woven into the fabric of their daily lives. Astronomy provides roots for cultural grounding in the form of Time Keeping, Navigation/Orientation, Ritual, and Knowledge Transmission.

5

INTRODUCTION TO MEXICAYOTL ASTRONOMY

Historically, the Mexica were one of the tribes who ruled over what most people know of today as the Aztec Triple Alliance. They thrived in what is now central and southern Mexico along with many other great Mesoamerican Nations, such as the Maya, Otomi, Zapotec, Tlaxcaltec, Mixtec, and many others. Through waves of colonization much of the knowledge and traditions of these ancestors has been lost. Despite these losses the people were able to survive, and adapt. Some of the most valuable knowledge, the traditional star lore was preserved in various ways. Some was documented by early Spanish chroniclers, such as Diego Duran and Sahagun. Others were transcribed by converted Mexica scribes, while more was hidden and encoded in the form of music dance, ceremonies and oral traditions.

Today Mexicayotl represents a distinct cultural religious movement, based on the philosophies and practices of ancient Mesoamerica, adopted by detribalized Indigenous people of North America (including Chicano/a/x's) as a means of Indigenization.

6

INTRODUCTION TO MEXICAYOTL ASTRONOMY

Mexicayotl Astronomy integrates the Cosmivision of the Indigenous Mesoamerican ancestors who observed and documented the celestial cycles for an estimated 30 thousand years or more. The people of ancient Mesoamerica were masters of art, and science. They were able to calculate and predict the complex movement of the planets, and eclipses. They devised a calendar system that is equally elegant as it is precise. These concepts were displayed in art and poetry and integrated into monolithic architecture. Every aspect of life was in balance with the surrounding environment.

Additionally, Nawi Olin (Sacred movement) is an essential part of Mexicayotl cosmology. It is to move in a sacred way, that is to recognize natural flow and go with it rather than to fight it. Nowi Olin reflects the sacred order of the universe and ties into orientation in space and time.

7

INTRODUCTION TO MEXICAYOTL ASTRONOMY

Mexicayotl ceremonies begin by calling 6 directions. Beginning in the east and Following the ecliptic plain (the path of the sun, Moon, Planets and zodiac constellations) to the west. Then the north and south, above, below and center. The Danza is performed in a circle with Danzantes moving around the drum and a Popeshcomi (central fire). Much like the stars do as they rotate in the sky around the north star. This represents sacred movement or Nawi Olin and reflects the cosmic order of the universe. This is called following a sunwise direction and the same motion is repeated in other ceremonies. With only few exceptions for very specific reasons, the ceremony is always oriented to the east.

8

PART II FOUNDATIONAL MEXICAYOTL ASTRONOMY

Tonalpuhali – The Mesoamerican Calendar

Ullamalitzli – The Mesoamerican Ballgame

Mitotiliztli – The Danza Mexica

9



10

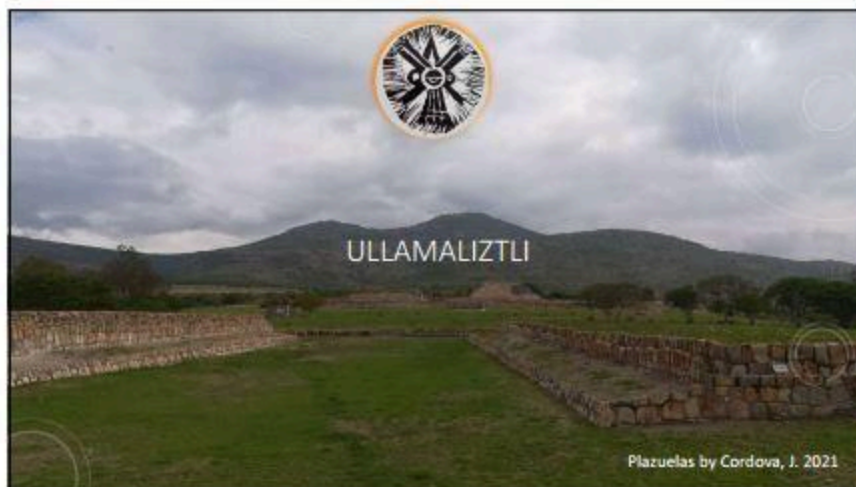
THE CALENDAR AND THE MEDICINE WHEEL

The Mesoamerican calendar system is based on 30,000 years' worth of detailed and precision astronomical data. Mexicayotl have incorporated the Mesoamerican calendar system into their medicine wheel. The term "Medicine Wheel" refers to a representation of Indigenous philosophy and cosmology. It's a concept used by many First Nations people, throughout the continent. The medicine wheel depicted here is representative of the one used by the Mexicayotl practitioners in Colorado.

In its simplest form the wheel represents

- The directions,
- Elements
- And Seasonal markers such as Solstices and equinoxes

11



12

ULLAMALIZTLI THE MESOAMERICAN BALLGAME

An example of that connection can be seen in Ullamalitzli the Mesoamerican Ball game. During my visit to Plazuelas I was able to view a remarkably preserved and beautiful example of an ancient ball court. Evidence for the game dates to at least 1500 BCE. The game is a reenactment of cosmic order and movement in the universe. The court, ball, and players all represent the celestial calendar, the sun, and the planet Venus. The contemporary form of the game is played throughout Mexico and there is an organization managing teams and leagues.

Mexicoyotl groups in New Mexico including members of Calmekatzlan have learned to play Ullamalitzli and are working to bring it back and teach it to the community. Interviews and email surveys from those who are working to reconnect with Ullamalitzli show how much fun it is for people who play and how it also creates a learning environment strengthening familial bonds.

13



Photo courtesy of Daniel Flores Avila



Raul Chavez Portillo performs Danza Mexica.
Courtesy of Renee Fajardo

MITOTILITZLI DANZA AZTECA

14

MITOTILITZI THE DANZA MEXICA

Danza Azteca, is contemporary Indigenous folk dance tradition from Mexico based on the culture of the Indigenous Aztecs and Mexica. It was brought from Mexico to the U.S. in the 1970s during the Chicano Movement. The Danza itself is imbued with star lore, with one example being a dance depicting how the Deity Coatlicue became the moon. The Danza is also done in a circle with practitioners moving around the drum and a Popeshcomi (central fire). This represents sacred movement or *Nawi Olin* and like the ball game reflects the cosmic order of the universe

15

DANZA AZTECA



Video by Jason S. Cordova, Danza Azteca Huitzilopochtli, Indigenous Pop Expo Denver, July 26, 2019

16

PART III: COMPARATIVE ASTRONOMY

Icualoca/Eclipse

Colotl Ixayac/Scorpius

Itzpopotl/Cassiopeia

Tonatiuh/The Sun

Citlalpol (a bright star of the morning)/Venus

Metzli/Moon

17

ICUALOCA/ECLIPSE

There is an indigenous Chichimec legend that explains the emergence of a folk-dance tradition called the Dance Cochecho. According to the story, the Chichimec and Otomi people were among the Mesoamericans to be subdued by the Spanish Conquistadors. Soon after the fall of the Aztec capital of Tenochtitlan in 1521 there was a great battle in what is now Guatemala, Mexico. Somewhere around 1521/22 the battle known as Caguatzen (Red Blood) raged on for days and cost many casualties on all sides. Until finally, one day:

"After several hours of gruesome fighting, a bright comet appeared resplendent and radiant and stood still in the sky above; at its side, the image of Saint James manifested itself as it was his day in the holy calendar. An angelic appearing, he had been invoked by the Chichimecs to help them win the furious combat that seemed to have no end. Cochecho dancers regard this as the precise moment when the Chichimec of the Itzpo dropped their "arroz y flechas" (bows and arrows) and adopted the "cochecho" (dance) gesture from which their name is derived." Indigenous beliefs hold that this vision was an eclipse and a manifestation of a divine message to stop fighting. They began to dance to honor the eclipse and to honor peace.

This story illustrates an event in which the Indigenous Chichimec and Otomi adopted Christianity and the folk-gestures of a new sacralized dance tradition that preserved and encoded a wealth of traditional knowledge.



Eclipse by Jason S. Cordova

18

ECLIPSES AND THE CALPULI

Contemporary Mexicayotl relatives are taught that, eclipses are not something that our communities have always entertained as positive or spectacles like the media frenzy we often see. On the contrary, it was customary to bring children indoors, not watch the eclipse and for the pregnant women to take precautions for the benefit of the child in the womb.

While it can be easy to cast these customs off as superstitions, at the very least you should be aware and not ridicule those of us that still practice old customs.

When the second night comes, you will hear a change in nature, there will be a silence and the birds will begin to sing as they do at dawn, confused by the sudden change. You will feel an energetic shift if you are paying attention.

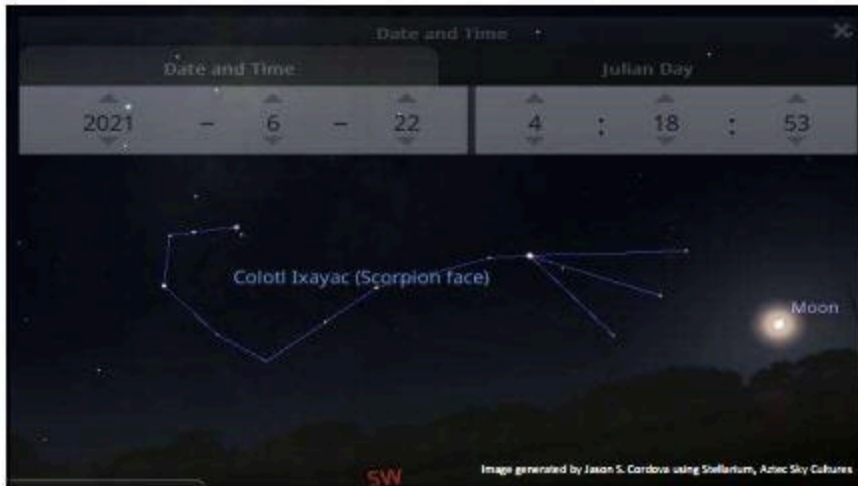
Pregnant women should wrap their waist with a red sash and over the womb tuck a black obsidian stone, a safety pin or something metal (like a key). [David Atekwatzin Young, MA, Curandero]

19

THE NATURE OF ECLIPSES

- An eclipse is an awe-inspiring celestial event that drastically changes the appearance of the two biggest objects we see in our sky: our Sun and Moon. On Earth, people can experience solar eclipses when Earth, the Moon, and the Sun line up. Even though the sun and the moon are drastically different sizes and very far away from each other, from earth they appear to occupy the same size and shape in the sky. Due to the way that the earth orbits the sun, and the moon orbits the earth, these two objects do not cross paths often. When they align, they appear to unite or consume one another. This can happen during the day or at night. A lunar eclipse occurs when the earth passes directly between the sun and the moon, causing the moon to be cast in the earth's shadow. When it happens during the day, it is called a solar eclipse, and the opposite is happening. The moon passes directly between the sun and the earth, causing us observing it on earth to be cast in the moon's shadow. (SeaSky.org)

20



21

COLOTL IXAYAC

Mexicayotl Teot-eya-cani (spiritual leader) Atecpatsin says that the Scorpion Stars brought people to the world on its tail and deposited them on the earth. The Colotl Ixayac (Scorpion Face) is a constellation in the Northern hemisphere that shares most of the stars of the Western constellation Scorpius.

On a few nights a year this constellation is visible for the entire night starting just after sunset in the east and orients itself parallel to the horizon in the early morning hours in the west. It appears to land and the last three stars in the tail disappear below the horizon just before dawn. This happens most dramatically on the night following the observed summer solstice. This constellation is also represented with its own month in the traditional calendar

22

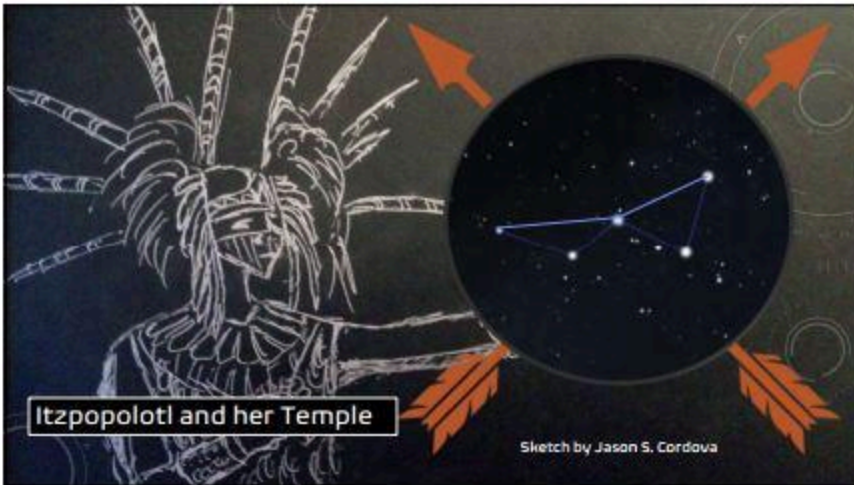
SCORPIUS

Pronunciation: (SKDR-pee-us)
 Abbreviation: Sco Genitive: Scorpii
 Right Ascension: 17 hours Declination: +40 degrees
 Area In Square Degrees: 497
 Crosses Meridian: 9 PM, July 20
 Visible Between Latitudes: 40 and +90 degrees

The constellation Scorpius, the scorpion, is located in the southern hemisphere of the sky. It can be seen in summer from the northern hemisphere but is low in the sky and is best seen from the southern hemisphere or southern United States. It is visible at latitudes between 40 degrees and -90 degrees. It lies between Libra to the west and Sagittarius to the east. It is a medium-sized constellation that occupies 497 square degrees of the sky. It ranks 33rd in size among the 88 constellations of the night sky. Scorpius is easy to find due to its distinct "J" shape, also described as a fishhook. It is one of the thirteen constellations of the zodiac. This means it lies along the path the Sun travels in the sky during the year.

Scorpius is one of the 48 constellations identified by the Greek astronomer Ptolemy in the second century. It is an ancient constellation that pre-dated the Greeks. The Sumerians called it GIT-TAB, which means "the scorpion." In Greek mythology, it represented the scorpion sent by a jealous Artemis to slay Orion. It was this scorpion's sting that caused Orion's death. In another version, it was the Earth that sent the scorpion to kill Orion after he bragged about being able to kill any wild beast. The scorpion still chases Orion across the heavens but will never catch him because it rises in the East after Orion has set in the West. (SeaSky.org)

23



24

THE TEMPLE OF ITZPOPOLOTL

In a story told by Atecpazin, The deity Itzpopolotl (Obsidian Butterfly) fired four obsidian tipped arrows in the cardinal directions. She instructed her warriors to follow the arrows and share their knowledge with the people of the world. Itzpopolotl is deified as a woman warrior and the protector of those who die in childbirth. She is fierce and mighty in the stories and many Danzantes emulate her in various ways.

Itzpopolotl is honored with a pyramid in the stars, known to western astronomers as the constellation Cassiopeia.

Cassiopeia is a prominent constellation that rotates around the north star opposite to the big dipper. It is an easy constellation to locate and useful to help orient oneself for direction finding, both physically and spiritually.

25

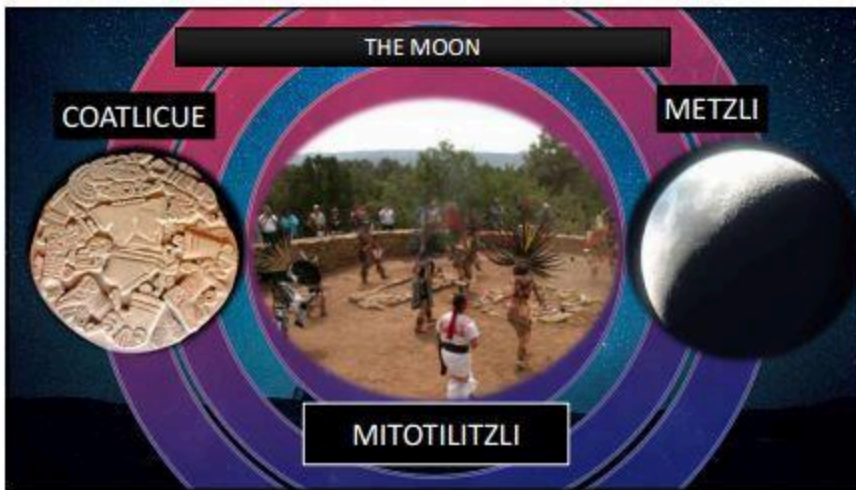
CASSIOPEIA

Pronunciation: (KAS-ee-oh-PEE-yuh)
Abbreviation: Cas- Genitive: Cassiopeiae
Right Ascension: 1 hour Declination: 60 degrees
Area in Square Degrees: 598
Crosses Meridian: 9 PM, November 20
Visible Between Latitudes: 90 and +20 degrees

The constellation Cassiopeia, Queen of Ethiopia, can be seen in the northern hemisphere all year long. It is visible at latitudes between 90 degrees and +20 degrees. Since it is located close to the north celestial pole, it is completely below the horizon for anyone located south of +20 degrees. It is a mid-sized constellation occupying 598 square degrees. This makes it the 25th largest constellation in the night sky. It is bordered by Andromeda to the south, Perseus to the southeast, and Cepheus to the north.

Cassiopeia was the wife of Cepheus and mother of Andromeda. She is represented as being chained to her throne in the heavens as punishment for her boast of being more beautiful than all the Nereids. As punishment, the god Poseidon placed Cassiopeia and Cepheus in the sky. Cassiopeia was condemned to circle the celestial pole forever. As the stars rotate throughout the night, Cassiopeia can sometimes be seen hanging upside down as punishment for her vanity. (SeaSky.org)

26



27

COATLIQUE

- The Danza itself is imbued with star lore, with one example being a dance depicting how the Deity Coatlicue became the moon. The Danza is also done in a circle with practitioners moving around the drum and a Popeshcomi (central fire). This represents sacred movement or Nawi Olin and like the ball game reflects the cosmic order of the universe! have been a Danzante for many years and the first Daza I learned was Coatlicue. I can speak to the sense of communitas that occurs when these danzas are being performed.

28

THE MOON

Earth's Moon is the brightest and largest object in our night sky. The Moon makes Earth a more livable planet by moderating our home planet's wobble on its axis, leading to a relatively stable climate. It also causes tides, creating a rhythm that has guided humans for thousands of years.

The Moon was likely formed after a Mars-sized body collided with Earth several billion years ago.

Earth's only natural satellite is simply called "the Moon" because people didn't know other moons existed until Galileo Galilei discovered four moons orbiting Jupiter in 1610. In Latin, the Moon was called Luna, which is the main adjective for all things Moon-related: lunar. [NASA]

29

RESOURCES

Society for Cultural Astronomy in the American Southwest, Cultural Astronomy Archive (Coming Soon)

<https://scaas.org/>

The Museum of Prehispanic Astronomy, *El Museo de Astronomía Prehispánica*

<https://lunativa.com.mx/en/museo/>

The Mexica Calendar System

<https://mexicanewyear.com/>

30

GLOSSARY

- Calpulli - Literally "big houses," usually a subunit of an *altepetl*, and earlier an egalitarian kin group with migration associations. (Nahuatl Dictionary)
- Chicano/a/- - 1. An American of Mexican origin or descent. (Oxford Dictionary) 2. A social and political identity formed for the empowerment of Indigenous Mexican-Americans, born in the US, with ancestral connections to Mexico, and all the lands ceded to the US after the Mexican-American War.
- Concheros - 1. Members of a centuries-old tradition centered around dance and music of indigenous origin mixed with Catholic influences. 2. An amixture and adaptation by indigenous people of Mexico into forced Catholic indoctrination. 3. A tradition steeped in the principles of *tlaxol*, *conformidad*, y *conquista* - which can be understood as a communal agreement or purpose (justice), acquiescence to the process and communal objective (conformity), and support of aligned communities (conquest/capture). 4. The tradition from which Aztec dance or *Danza Azteca* originated. 5. A founding tenet of Mexicayotl. (Atekapatzin)
- *Hispanic/Latino*- A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race. (US Census Bureau)
- *Mestizo/a/-* - 1. In Latin America a person of mixed race, especially one having Spanish and indigenous descent. (Oxford Dictionary) 2. "Half breed, mongrel dog" represents the racialized, self-deprecating associations among acculturated Americans of Mexican origin or descent. (John S. Cordova)
- Mexica - Historically the Mexica were one of the Nahuatl-speaking tribes who ruled the Triple Alliance in central Mexico commonly known today as the Aztec Empire. (Jason S. Cordova)

31

GLOSSARY

- *yotl* - Having the nature of; an abstract or collective nominal suffix that, when possessed, expresses inalienable or organic possession of the noun. (Nahuatl Dictionary)
- Mexicayotl - Vernacular religious tradition that arose alongside the Chicano movement, is rooted in ancient Mesoamerican Cosmology adopted by Indigenous peoples of North America in response to colonization. (Atekapatzin) The name pays tribute to the historical Indigenous Mexica people of central Mexico while remaining distinct. (Jason Cordova)
- *Mihcoziliztli* - Ceremonial dance form of a community. (Atekapatzin)
- *Ullamaliztli* - To play a game with a rubber ball using the hips. (Nahuatl Dictionary)
- *Ollama* - Refers to the rubber material the ball is made of. This is where we get the name Olmec referring to the "rubber people" as they were historically known to the Nahuatl speakers. (Nahuatl Dictionary)
- *Itzli* - Is the act of doing something, meaning you are conceptually thinking about it. (Nahuatl Dictionary)

32

CONSTELLATION LOCATION GUIDE

Nahuatl Name	Western Name	Notes
Itzpopolotl	Cassiopeia	Represented as the temple of Itzpopolotl in the shape of a butterfly
Colotl Itxayac	Scorpius	Represented as a scorpion descending from the heavens

33

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- Savanna-Rivka Powell

34

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38