

A NETWORK CATEGORISATION OF UTAH'S ROCK ART

by

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Abstract

The current classifications of Utah's rock art, namely stylistic classifications derived from culture-historical frameworks, are vulnerable to bias, contradict one another, and are based upon assertions of cultural/ethnic affiliation to material culture that are unsupported as the requisite ethnographic record does not exist for Utah. This thesis proposes the implementation of network-based community detection, which categorizes rock art by its function as a communicative network among mobile populations; focusing on areas of suspected mobility, or "travelways", where rock art panels are treated as nodes and shared motifs or special proximity are treated as edges. This project tests the validity of engaging with Utah's rock art as a communicative system in order to assess the validity of the proposed network categorization model. To this end it evaluates three hypotheses: Utah's rock art exhibits a non-random distribution, regional symbolic repetition, and a directional flow of information. Analysis of motif distribution and interactive zones has found support for these hypotheses, indicating that rock art in Utah's travelways served as a communicative network. By acknowledging the current needs of rock art research and moving to a categorization model to suit those needs, this project offers a replicable, testable, and quantitatively driven model for rock art categorization in Utah, consequently removing subjective biases, grounding further research, and supporting conservation of Utah's irreplicable and unique rock art heritage.

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Introduction

The goal of this paper is to propose a methodology for the categorization of Utah's rock art. Drawing inspiration from recent advancements in the field, this paper focuses on addressing perceived flaws in the current categorizing systems implemented for Utah's rock art by suggesting a system that generates empirically testable hypotheses, utilizing quantitative data.

This system is not purposed toward the interpretation of Utah's rock art. While some meanings and relationships can be uncovered by the methods proposed here, the primary goal of the system examined here is categorization. Categorization is here prioritized over interpretation as the former enables the latter to be pursued with greater efficacy, as classification provides the framework from which significance, meanings, and relationships can be accurately identified, and from which interpretation emerges. In other words, how one categorizes something determines how it is analyzed and subsequently interpreted (Manning, 1991; Dobrez and Dobrez, 2019). For example, an inquiry into Utah's archaic rock art may compare Barrier Canyon Style with San Rafael Style as determined by Schaafsma's stylistic classification of Utah's rock art (Schaafsma, 2002). If that classification were inaccurate, then the resulting analysis would be as well.

At the onset of this project, it became readily apparent that asserting any categorization system applying indiscriminately to all rock art in Utah would likely suffer from the same drawbacks current categorizations of Utah's rock art possess, namely being overly broad and subjective (Manning, 1991, 2009; Dobrez and Dobrez, 2019; Neal, 2010). For this reason, the main focus of this project is classification of Utah's rock art in proposed areas of frequent mobility, or "travelways." This is not a random selection, as a great share of Utah's rock art

exists in those areas (Hartley and Wolley Vawser, 1994, 1998; Jenkinson, 2010; Throgmorton, 2017; Johnson, 1995).

Existing research shows that network-based community detection (Collar et al., 2015; Shi et al., 2024; Vargas et al., 2019; Torres-Martínez et al., 2017) has sufficient potential to be considered to satisfy the project's goal. Here, network-based community detection, a form of network analysis, is proposed to be used as a means of categorizing rock art in the specific context of it being an inter/intra-group communicative network in travel routes or other shared spaces. It does this by sorting artworks or motifs into nodes, identifying edges, and establishing clusters and aggregations of clusters until a resolution limit (a pre-determined stopping point) is achieved (Collar et al., 2015). Except for the fact that they don't necessarily pursue cultural affiliation to rock art, those greater clusters become classificatory units equivalent to 'a style', whereas the subclusters become subgroupings. Critically, a "communicative network" does not imply language, as languages have standardized grammatical structures that have not been observed in Utah's rock art. Rather, this refers to a system by which information was recorded and conveyed using signs, such that the groups using the network did not have to speak the same language. In this understanding, rock art actively communicates specific information (e.g. local resources, places of social or religious significance, historic events, territorial markers, markings of identity, and etc.) that is defined by its context and form (Hodder, 1982, 1994; Wobst, 1977). An example of this outside of rock art is that in traffic lights around the world, green typically means "go" and no specific language is required to understand this notion.

The analysis will evaluate the applicability of such a categorization model to Utah's rock art, by addressing three related questions: (1) What characteristics must be present in a rock art

tradition such that network categorization would be applicable? (2) Are those characteristics present in Utah's rock art? (3) How would network categorization address the problems caused by the current mode of categorization of Utah's rock art, stylistic categorization?

In addition, this paper will identify the supplemental analysis that would provide information beneficial to the network categorization of Utah, based on the context of Utah's history and rock art. This additional analysis will include phenomenological, topographic/environmental, and cognitive analysis of the selected art.

The literature reviewed for this project does not indicate that, to date, an inquiry into the efficacy of conducting network categorization at a regional scale has been conducted for Utah. However, there is a corpus of work that supports the validity of the network categorical model for Utah's rock art, giving cause to this inquiry (Collar et al., 2015; Shi et al., 2024; Vargas et al., 2019; Torres-Martínez et al., 2017; Johnson, 1995). The present inquiry also addresses a need consistently identifiable in scholarly literature on Utah's rock art: the problems resulting from stylistic analysis (Manning, 1991, 2009; Dobrez and Dobrez, 2019; Neal, 2010). By proposing a classification method more suitable to Utah's rock art, this project aims to ensure greater conservation and protection of Utah's rock art, on the grounds that more specific classification permits greater allocation of resources toward conservation efforts (Gulliford, 2009).

Description of the Study Area

The geographic boundaries of the study area are those of the state of Utah. These specific boundaries were chosen as a matter of convenience for reference; the contents of the study have no direct relation to the political-geographic organization of the U.S. That said, the general area was not selected coincidentally. Utah possesses a uniqueness in geomorphology and history that gives cause for questioning the validity of cultural-historical perspectives on its rock art. These features suggest that Utah's rock art may have been a communicative network. This, in combination with the previously cited literature on the need of new methodology for the categorization of rock art in Utah, was why Utah was selected for this study.

Geographically, Utah contains part of the Great Basin and Range (Snyder, 1962), the Colorado Plateau (Heitmann et al., 2021), and in some contexts the Southwest Region (Schaafsma, 2001). Topographically, Utah also contains most of what was Lake Bonneville in its western half (Hunt, Varnes, and Thomas, 1953; Inkenbrandt, 2026). This, alongside Utah being an area of spatial overlap between geographic and geological regions, provides Utah with a diverse array of landscapes, including but not limited to canyons, plateaus, basins, valleys, deserts, mountains, plains, and various bodies of water (Kowallis and Hintze, 2021; Hunt, et al., 1953; Inkenbrandt, 2026). Although resource abundance and use vary by time, place, and resource, generally speaking many of the essential resources of pre-contact Utah were available and harvested seasonally (Chamberlin, 1911; Defa, 2000; McPherson, 2000; Beals, 1935; Herzog and Lawlor, 2016; Jones et al., 2003; Arkush and Pitblado, 2000; Jones et al., 2012; Vernon et al., 2024). This, alongside other ethnographic and archaeological records, indicates that through Utah's pre-contact history of human habitation, people frequently had to move to access resource, with the sole exception of Ancestral Puebloans who predominantly practiced

sedentary agrarianism (Medina et al., 2025; Vernon et al., 2024; Throgmorton, 2017; Geib and Fairley, 1992). This could indicate seasonal migration patterns, or patterns of excursions for specific recourses, depending on the time and place different recourses were available.

This mobility is the core reason why Utah's rock art has the potential to be viewed as a communicative network, and why it may be suitable for network categorization. That is, Utah's rock art is here asserted to communicate, at the very least, locational information that is necessary in the context of mobile lifeways—especially so in some of Utah's extreme, navigationally difficult terrain (Hintze and Kowallis, 2009; Hunt et al., 1953; Hartley and Wolley Vawser, 1994). In said terrain, the primary hypothesized mode of movement was through low-cost travelways, such as canyons, washes, and valleys (Jenkinson, 2010). A great portion of Utah's rock art is situated along these travelways (Hartley and Wolley Vawser, 1994, 1998; Jenkinson, 2010; Throgmorton, 2017; Johnson, 1995), which also supports the idea of Utah's rock art being a communicative network.

Past ethnographic research in Utah has been upended, as the long-standing view of the Ute-Aztec immigration into Utah has been challenged by recent research. Based on linguistic evidence, many of the tribes that inhabit Utah today, members of the Ute–Aztec language family, emigrated from California around 1000 years ago, while the Pueblo and Navajo traditions have a different chronology (McPherson, 2003, p. 15). This 1000-year hypothesis comes from Lamb's "Linguistic Prehistory in the Great Basin" (1958), upon which a great part of the lexical study of Utah has been based. Lamb comes from the tradition of lexicostatistics that emerged in the 1950's--specifically the subfield called glottochronology. Glottochronology was started with a series of works by Morris Swadesh that, based on the change in certain linguistic items (i.e., cognates), sought to create formulae for linguistic change that could be

applied to language families of unclear or unknown record (Swadesh, 1955, 1952). However, as noted by dissenters who have been publishing since the inception of glottochronology in the 1950's, the method may not be applicable to tracking Native American language dispersal for three main reasons. First, Swadesh based the rates of linguistic change that define his formulae on Old World languages (Swadesh, 1952), meaning that they do not necessarily conform to the rate of change of any other languages spoken in the Americas pre-contact. Second, the hypothesis contains the assumption that languages change at a uniform and determinable rate (Rea, 1958), which may or may not be true. Third, it is not certain that language can be used as a means to differentiate 'cultures' or 'ethnicities', especially without a written record of the language from the time in which said cultures diverged (Hoiyer, 1956; Rea, 1958). For this reason, glottochronological inquiries into Native American ethnic diasporas should not be taken at face value, and yet, concerning Utah, they commonly are; Lamb's 1000-year hypothesis is often an ongoing assumption in anthropological studies of Utah (Lamb, 1958; McPherson, 2003; Aikens and Madsen, 1986; Gunnerson, 1960).

This hypothesis is contested by recent research. Whitley and Dorn posit that the Proto-Ute-Aztecan groups left Baja California and entered the lower Colorado River region "4000 years ago at [a] minimum" (2026, p.12). This is based on a reanalysis by Greenhill (2024) that excludes the discredited data of Lamb (1958) originally used in Greenhill et al. (2023) on the origin of the Uto-Aztecan Family (2023). Greenhill's (2024) reanalysis was collaborated by Whitley and Dorn's (2026) dating of Colorado River intaglios, alongside ethnographic research (2026). This 4000calBP date for the Proto-Ute-Aztecan diaspora alone does not prove that Ute-Aztecan groups were in Utah at that time; however, it lends credence to the proposition that their habitation of Utah occurred prior to 1000 years ago.

Beyond the dispersal of the Ute-Aztec and Athabaskan language families into Utah, it is difficult to identify ‘cultures’. Anthropological researchers have identified several pre-contact ‘cultures’ of Utah (Gunnerson, 1960; Aikens and Madsen, 1986; Schaafsma, 2002; Allison, 2008; Bowen, 2008). However, for some of these groups, the term ‘culture’ may be misleading, as these groups are not “cultures” in the traditional sense of a people who possess a shared set of customs, values, and beliefs, but rather are mainly archaeologically defined material cultures. Shared material culture over an area is not sufficient to suggest a shared culture in the traditional sense, as it is possible that disparate cultures prefer and thus utilize the same goods as a consequence of those goods being useful or fashionable. This is more likely to be the case for a large area, such as the area inhabited by the “Fremont culture,” for which there is evidence of frequent inter and intra-regional trade (Janetski, 2002). In Utah, this labeling is commonly applied to the Fremont and Desert Archaic “cultures” (Gunnerson, 1960; Aikens and Madsen, 1986; Schaafsma, 2002; Allison, 2008; Bowen, 2008); both of whom do not have sufficient evidence to be considered a unified culture. Indeed, for the Fremont there exists evidence to the contrary (Janetski, 2002; Manning, 2009). Due to this, some researchers, including the present author, use the term “lifeways” instead of “culture”, as the former focuses more on subsistence strategy which can be better determined from material culture than ethnicity can .

This lack of consensus on the ethno-history of Utah is part of the reason why rock art research in Utah needs a new categorical method, specifically one that is independent from associations with cultures. As will be discussed later, current stylistic conventions define rock art traditions (“styles”) as being produced by a culture or cultures, which is detrimental to research as this creates artificial understandings and boundaries of those cultures that are not supportable by the present archaeological record, skewing analysis toward potentially inaccurate results.

Finally, the core aim of this paper is to examine the categorization schemas of Utah rock art. Currently, stylistic categorization is the predominate mode of categorization implemented in Utah. Stylistic classification had arguably been the dominant mode of analysis of art in general-- certainly so for the western tradition. And given its long history, the concept of 'style' itself is very vague (Manning, 1991, 2009; Dobrez and Dobrez, 2019; Neal, 2010). From looking at dictionary definitions of style, the only constant, tangible aspect of 'style' is that it is something that makes artworks distinct from other artworks, or those of another style. In its most basic form, stylistic categorization can be understood to be based on the "technique, form, motif, size, and character" (Maynard, 1979 , p. 99) of the symbol or art piece, in combination with its historical context, where any given style is believed to "have a cohesive set of artistic cannons and principles, presumed to be reflective of a shared ideology by its creators" (Neal, 2010, p. 33). Even this definition has some vagueness, and from this ambiguity, several researchers have developed unique understandings and assigned differing significance to the concept of style.

Then, primarily in the 1970s and 1980s, renowned rock art researcher Polly Schaafsma in a series of seminal works created stylistic classifications for rock art of the Southwest, including Utah (Schaafsma, 2001, 2002). Utah's rock art tradition has, in large part, continued to operate under Schaafsma's stylistic categorizations. In the course of her work, Schaafsma created a convention of style with specific reference to certain goals of rock art research, those being identifying cultural-historical groups (Schaafsma, 2001) and synthesizing a very large amount of rock art panels into a few categories (Dobrez and Dobrez, 2019). Schaafsma achieved both of these goals, creating a taxonomy of rock art of the southwest which, in terms of detail over such a large area, arguably has never been achieved for any other rock art tradition(s) (Dobrez and

Dobrez, 2019, p. 11). The second goal was achieved by extensive surveys conducted by Schaafsma and her teams throughout the 1970's (Dobrez and Dobrez, 2019).

The first goal required a specific understanding of style. Schaafsma wrote that style must be viewed as “the product of a particular group during a particular time period” (Schaafsma, 1985, p. 251), and from this in her categorization of Utah's rock art she asserts that it is both and possible and imperative to connect one style to (typically) one culture or a group of cultures (Schaafsma, 2002, pp. 2-3). Her work in that time-period operated under that assumption (Schaafsma, 1985, 2002, 2001; Dobrez and Dobrez, 2019, p. 11). While some sources Schaafsma did not make this connection explicit (Dobrez and Dobrez, 2019, p. 13), Schaafsma's early works speak to the contrary.

This understanding of style clearly stems from the Culture-Historic approach to anthropology, and likewise has two key presuppositions. The first is that material culture directly refers to the culture of past groups. If I find pottery style A in place B and place C, places B and C are of the same ‘culture’ according to the culture-historic approach. This does not account for preservation bias, for the fact that not all aspects of culture can be expressed materially, or for trade. Secondly, for the Culture-Historic approach to be efficacious, it must be true that cultures are concretely definable units--for example, that culture A existed strictly within time and place A, and so forth. However, this is simply not true. Not only does culture partly possess an intangible composition, but it is also not static. Culture changes through time and moves over space that does not necessarily conform to territories or any other political boundaries (Neal, 2010; Janetski, 2002; Wobst, 1977). For these reasons, both the Culture-Historic approach and the current stylistic categorization of Utah's rock art are outdated, and as noted previously there is insufficient ethnographic data to even assess its validity.

Besides geospatial data, Schaafsma also used predominantly subjective, qualitative data in her original categorization of Utah's rock art. This has been criticized as being ambiguous by several authors (Manning, 1991; Dobrez and Dobrez, 2019) as indeed it is. However, it was methodologically sound given the immense scope of her project in the 1970's and 1980's and given the project's goals as previously discussed. It is important to note that subjective information is by no means 'bad' in rock art research, and in fact can be critical to rock art analysis in general when grounded in the phenomenology of the rock art. That is, rock art is not a photograph, it exists in a three—dimensional space, and consequently, should not be analyzed solely as a two-dimensional artform. Several rock art researchers in Utah support this by attesting to the difference between seeing Utah's rock art while moving through the landscape that contextualizes it vs seeing the rock art in a photo (Jenkinson, 2010; Firnhaber, 2009). That said, some criticisms of the subjective approach to categorizing rock art are valid, namely that subjective assessments are susceptible to bias, and in being grounded in the researcher's thought processes not necessarily scientifically repeatable, and overall that subjective observations may or may not conform to actual phenomena.

Furthermore, as pointed out by Steven J. Manning in addition to the points previously discussed, stylistic classification has also generated conflicting classification schemes in Utah and hinders continued research on Utah's rock art—especially for new researchers (Manning, 1991). For these reasons, subjective modes of categorization, including stylistic categorization, should be done in supplementation to quantitative modes of analysis, such as network categorization.

Literature Review

The main obstacles to narrowing classification methods for the rock art of Utah are: (1) the diversity and scope of Utah's rock art; (2) rock art dating methods with debated efficacy, conflicting results, and small scale of implementation in Utah; and (3) an unclear ethnographic history of Utah—mainly in terms of an unclear applicable time span for the existing record, and the lack of a record for Fremont and the Archaic Lifeways Peoples.

While the rock art of Utah has some general trends, namely a high concentration of anthropomorphic forms (Schaafsma, 2002), Utah's rock art is incredibly diverse (Schaafsma, 2002, pp. 150-63). This is to be expected given the large size of the study area and number of rock art sites in Utah (Schaafsma, 2002). This sheer scope causes difficulty in categorization. For this reason, an efficacious classification system is a cost-effective one.

As noted earlier, Utah does not have the context surrounding its rock art that propagates operative stylistic categorization, and this presents difficulty in categorizing its rock art generally—under any scheme. For any given candidate (ie. artwork), context consists of primary areas for its categorization as a member of a set: (1) when the candidate was made or presented; (2) whom the intended audience of the candidate was; and (3) who made the candidate. Without this information, it is difficult for any given rock art panel or symbol to be sorted into categories that are meaningful to further research.

The first obstacle identified requires accurate dating methods for rock art to be implemented over the study area at least to the extent that all panels have known date ranges based on being dated themselves or on their association with dated panels. While advancements in technology and methodology have caused vast improvements in researchers' ability to date

rock art, this is still an inherently difficult task, and at times a controversial endeavor. Just how controversial rock art dating is varies. On the lower end of the scale are simple disagreements on dates. For example, in 2014 Pederson and colleagues published “Age of Barrier Canyon-style rock art constrained by cross-cutting relations and luminescence dating techniques,” which dated the Great Gallery in Horseshoe Canyon to the more modern time frame of ~1-1000 CE. This is significantly more recent than the time frames previously asserted for the Great Gallery (Pederson et al., 2014). This study was innovative at the time in terms of combining geological relational methodologies with luminescence dating techniques to date rock art. However, as many innovative endeavors are, the novelty of this methodology created space for criticism, which shortly thereafter occurred with Simon and Reed’s “Incorrect representation of Barrier Canyon’s rock art site’s history and other factors invalidate reported dates” (2024). As its title suggests, this article criticized Pederson et al.’s paper on the grounds that it did not properly account for the damage that had occurred to the site, which according to that article was a confounding variable in the original study (Simon and Reed, 2014).

At the other end of the scale are defamation lawsuits. In 1999 (Arizona), Ronald Dorn filed a lawsuit against several researchers who alleged he had engaged in scientific misconduct in the execution of his then innovative rock varnish dating method (Whitley, 2012). The present author refers to these examples with the hope of portraying the controversy present in rock art dating and explaining why rock art dating is difficult.

There are three main ways in which rock art can be dated when the date is readily apparent: (1) direct dating, (2) geologic dating, and (3) relative dating. Direct dating methods, such as the use of luminescence or rock varnish dating, share an inherent challenge. Just as with glottochronology, they assume a degree of consistency that may or may not exist and can be

affected by contamination. For example, for varnish dating to be accurate, the rate at which varnish accrues must be constant, which it is not: the rate at which varnish forms is highly variable and can be affected by changing environmental conditions and human activity (Andreae et al, 2024; Whitley and Dorn, 2026; Fairweather et al., 2026). For this reason, direct dating methods can be unreliable or produce overly broad results, and thus are insufficient to support a categorization model. Geologic dating methods—that is, dating rock art based on its surrounding geology—are frequently broad, as evidenced by the broad geologic time frame attributed to the Great Gallery prior to the Pederson et al. paper—a period spanning thousands of years (Pederson et al., 2014; Schaafsma, 2002; Simon and Reed, 2014). Consequently, reliance on this form of dating can make categorizations overly broad, and without a great degree of distinction between members of different categories. Relative dating (i.e., the dating of rock art based on directly relating artifacts, ecofacts, or features), can be very precise, but is often not available, especially in non-domestic contexts. Dateable material remaining in travelways that has a known, direct connection with rock art is rare in Utah, and thus relative dating is not tenable enough to support a large categorization scheme for Utah’s rock art.

That said, very recent publications show a degree of promise in direct dating (especially rock varnish) techniques (Andreae et al, 2024; Whitley and Dorn, 2026; Fairweather et al. 2026) and, accordingly, more accurate direct dating of rock art may be possible now, especially when combined with other dating methods. Nevertheless, even if one takes this to mean that rock art dating is now without issue, given the lack of consistency in, and number of, dates for rock art sites in Utah, until those improved dating methodologies are pursued at a regional scale, there is not sufficient chronological information to inform a time-dependent categorization of Utah’s rock art. To consider any two panels of rock art as related under any categorization scheme,

current literature suggests there must be a clear, reliable and accurate methodology for dating art (Neal, 2010, p. 53), or the panels must be spatially close enough to refer to a shared site of cultural significance based on that proximity, and possess shared motifs or other characteristics such that it could be reasonably argued that the selected candidates are affiliated.

Another means of ascertaining “mutual affiliation” is to determine the scope of application of rock art—that is, the intended audience for the rock art, expressed geospatially. In a communicative network, information is meant to be conveyed to specific audiences, and at times different information is intended for different audiences (Wobst, 1977). These differences are not necessarily based on, as the intended audience of a panel may have nothing to do with cultural divisions at all. For example, a “keep out” sign typically means keep out regardless of the observer’s cultural identity. It is very difficult to determine the intended audience of ancient rock art due to its age, as doing so requires detailed records about the art itself, or ethnographic data adequate for describing the purposes of rock art directly that can be certified to refer to the time when the art was created. This does exist in certain cases (McDonald and Veth, 2013), but for the most part is lacking for Utah’s Fremont and older traditions.

As noted earlier, in Utah’s tradition of rock art research, who made the rock art has not only been a critical part of the categorization of Utah’s rock art, but one of its explicit goals (Schaafsma, 2002, pp. 2-3). Yet, who made the art, in Utah’s case, is difficult to ascertain for several reasons. Firstly, as noted above, there is no consensus on who specifically (i.e., which culture or cultures) inhabited Utah at any given time prior to 1000 years ago, which significantly hinders any categorization scheme dependent on that information.

On this point, there are three additional factors partly responsible for the difficulty in categorizing Utah’s rock art. The first problem is that thousands of years is a very long time,

especially in a region that has a long history of mobile lifeways that extends back to the Paleoindian (Jones et al., 2012, p. 362; Arkush and Pitblado, 2000, pp. 34, 35, 37; Jones et al., 2003, pp. 7, 8, 25, 32; Herzog and Lawlor, 2016; Beals, 1935, p. 3; McPherson, 2000, pp. 7, 8, 12, 16; Defa, 2000; Throgmorton, 2017, pp. 139, 141, 151; Lowie, 1909, pp. 171, 173; Janetski, 2002, pp. 3, 9, 345, 347, 350, 353, 358, 361, 363, 365; Allison, 2008, pp. 58, 66, 69; Whitley, 1994, pp. 358, 363, 366; Parry, 2000; Chamberlin, 1911; Vernon et al., pp. 443, 454) . This is especially problematic when referring to archaic traditions, and often makes determining who made Utah's older rock art traditions even more difficult. The second problem is that the ethnographic record that does exist is not a static record (Neal, 2010, p. 53). The people who have inhabited Utah interacted and exchanged cultural capital with one another, such that it is impossible to trace "the original record" or "the original culture" if either ever existed. This makes determining who made Utah's rock art in terms of cultural association an arduous task for rock art made by non-modern cultures, and consequently any categorization scheme dependent upon that data is impeded greatly. The third problem is the unknown degree of societal change caused by the horse, primarily regarding group mobility. The archaeological records indicate that Indigenous peoples of Utah started using horses probably sometime between the early 1600's and 1681 (Taylor et al., 2021; Taylor et al., 2023), and while the introduction of the horse to the region certainly caused changes in mobility (McPherson, 2000, p. 16), the degree of those changes is not always clear. Nor is it clear what material in existing ethnographic records refers to the period before these changes and what material refers to the period that followed them. It is also uncertain whether early ethnographic records of Utah's Native Americans can be trusted specifically regarding mobile lifeways (see discussion). This makes it difficult to determine exactly how mobile the people of Utah's lifeways were, which makes any categorization scheme

of Utah's rock art that operates off of an assumption of mobility, like network categorization, difficult to pursue.

There are three main reasons to implement a novel classification scheme for Utah's rock art. First, as noted previously, we lack the data necessary to support current, predominantly stylistic, rock art classifications. Second, it is important for classification schemes to confer as much objective accuracy as possible, as if this is not the case, the following analysis will be skewed. If there is a degree of bias, or a lack of essential data in the classification of Utah's rock art, then the subsequent analysis will be skewed. Based on the literature reviewed for this project, this is evidently the case in some studies of Utah's rock art. An example of this is researchers affirming correlations between Utah's Archaic rock art traditions and peoples (Schaafsma, 2002), correlations that are unfounded given how little modern researchers know about both. An example of this is Schaafsma's shamanistic interpretation of Desert Archaic cultures and their rock art, although there is no ethnographic record to support this claim (2002). Finally, clear and thorough classification enables better protection of these sites (Gulliford, 2009). If the Mona Lisa was solely known as "painting, oil on wood, made in-between 6000 and 500 Cal BP, presenting an anthropomorphic figure," people would likely care a lot less about it. However, its belonging to a clear tradition, the Renaissance, and its subsequent interpretation providing its provenance, greatly enables its protection and conservation as an article of heritage. Stylistic categorization has achieved this to some degree in Utah, but by increasing the rigor of categorization, better protection could be expanded to the often-overlooked rock art sites in Utah, and interpretation could better occur which would also improve the conservation of those sites. This conservation is needed in Utah. Vandalism has a long history in Utah, stretching back to the early 1800s with Denis Julien, and continues today. Unlike the earlier vandalism, which in an odd way helps

scientific research (and following the projection of heritage) by being useful to determining the efficacy of rock art dating techniques given their inscribed date (McNeil, 2002), modern vandalism destroys this truly unique and irreplicable piece of Utah's heritage (Gulliford, 2009; McNeil, 2009).

As discussed previously, this project was not able to reasonably advocate for the implementation of such a design for the whole of Utah, and instead intentionally focused on the rock art present in Utah's travel ways. The selected literature includes that concerning background information on Utah, such as environmental (Kowallis and Hintze, 2021; Hunt et al., 1953), ethnographic (Aikens and Madsen, 1986; Chamberlin, 1911), linguistic (Lamb, 1958; Greenhill et al., 2023; Hoijer, 1956), and other records (Janetski, 2002; Allison, 2008), as well as local (Utah) rock art studies (Schaafsma, 2002; Manning, 1991; Hartley and Wolley Vawser, 1993; Johnson, 1995), global rock art studies (Tylén et al., 2020; McDonald and Veth, 2013), and relevant general hypotheses and theory (Wobst, 1977; Newman and Girvan, 2004; Collar et al., 2015).

Global rock art studies are included here as they are beneficial in addressing the issues present in the identification of a classification scheme for Utah's rock art. In particular, and especially recently, the increased emphasis in global rock art research on pursuing quantitative data such that the discipline can achieve empirical objectivity (Bianconi and Cezero, 2018; Clay et al., 2020; Tylén et al., 2020; De Cruz and De Smedt, 2021; Andreae et al., 2024; Whitley and Dorn, 2026; Fairweather et al., 2026). This is prudent to rock art research, as quantitative data is less susceptible to bias and often does not require the context that is required for efficacious stylistic categorization—which is greatly lacking for Utah rock art (Tylén et al., 2020; Manning, 1993, 2002). This lack of context is also why some studies of rock art traditions older than any

present in Utah are included here, as those studies engage with rock art that also cannot be cultural-historically contextualized.

To bring to light a classification system for Utah's rock art that takes account of the problems with existing classification schemes and the factors that cause difficulty in the creation of classification schemes for this region, this study focused on what is known—namely, mobility. Throughout Utah's prehistory, all of the groups who inhabited Utah consistently show a (varying) degree of mobile lifeways, with the sole exception of the ancestral Puebloans (Medina et al., 2025; Vernon et al., 2024; Throgmorton, 2017). The broadness of this statement makes it appear as conjecture, but the body of research reviewed for this project indicates that it is supported.

The rationale for the claim that migration was common throughout Utah's prehistory is the diversity of its resources, both in terms of geographic location and type. This argument can perhaps be best applied to food resources (McPherson, 2003, pp. 12-13). A degree of mobility was required for the acquisition of foodstuffs throughout the entirety of Utah's precontact history apart from the Ancestral Puebloans. The most obvious objection to this would be the Fremont, given that some Fremont groups experienced periods of a primarily agricultural subsistence strategy. However, until the introduction of corn to the region approximately 3150 Cal BP (Medina et al., 2025, p. 2), agriculture could not account for the totality of diet anywhere in the region. Moreover, corn and other agricultural crops were never the sole foodstuff utilized by the Fremont, as indicated by where corn was grown (Vernon et al., 2024) and archaeobotanical analyses of Fremont sites showing foodstuff diversity (Allison, 2008). This indicates that the Fremont had to practice some mobility for acquisition of food resource. This also extends to all pre-Fremont groups save the Ancestral Puebloans: although corn was introduced to the region

~3150, apart from the Ancestral Puebloans, there is very minimal evidence of farming prior to the Fremont (Medina et al., 2025, p. 2).

Food, of course, is not the only indicator of long-term mobile practices in Utah. Trade is another significant, well-documented indicator of frequent mobility in Utah, especially amongst the Fremont and Ancestral Pueblo peoples and notably at *festivals*—signifying in these cases group movement as opposed to individual travelers (Janetski, 2002, p. 347). This trading is evidenced to occur both within the state and beyond, as attested by an abundance of several items not found within Utah, such as *Olivella* shell from the Pacific Coast and Gulf of California (Janetski, 2002, pp. 349-50). This trade is also represented in Utah’s rock art, with depictions of backpacking figures and processional panels (Janetski, 2002, pp. 363; Throgmorton, 2017), though the latter may refer to movement for reasons other than trade, including scenes from creation myths (Throgmorton, 139, 141, 151). Migration is also a continuous theme in many of the recorded religions of Utah’s contemporary Indigenous groups (Janetski, 2002; Jones et al., 2012; Allison, 2008; Goebel et al., 2021), and evidenced by their known immigration into Utah proper, albeit at an indeterminate time. These myths may refer to various climatic, violent, and cultural events in Utah’s pre-contact history that have forced mass migrations (Lowie, 1909; Kelly, 1934), all evident in the archaeological record (Goebel et al., 2021; Smith et al., 2024; Aikens, 1986).

The evidence of mobility thus far has primarily focused on the Fremont because pre- and post-Fremont mobility is very well documented in Utah. In the case of pre-Fremont groups, habitual mobility is again asserted primarily based upon the general lack of sedentism and the need to move to acquire various resources (Jones et al., 2012; Arkush et al., 2000; Jones et al., 2003; Goebel et al., 2001). Furthermore, after the introduction of the horse into the region,

mobility dramatically increased (McPherson, 2000, p. 16). Overall, these factors indicate that the peoples who have inhabited Utah have for the most part practiced at least some degree of regular mobility.

The main method of categorizing Utah's rock art proposed here is network categorization. Network categorization is a form of network analysis, an emerging method in the rock art discipline that is gaining traction, especially in work done in Patagonia (Vargas et al., 2019). Network analysis is an interdisciplinary analytical approach that utilizes graph theory and social networks to "look for relational patterns between the units or entities that compose the system under analysis, ... abstracting the most relevant features of a case study and represent[ing] them and their connections as a network" (Vargas et al., p. 1).

This type of analysis can be broken down as a study of its two core components: Nodes, which are the core units of analysis, and edges, which are the relationships drawn that make the study meaningful (Collar et al., 2015). In the context of categorization, Nodes, being what is being categorized (Collar et al., 2015), can be defined as referring to sites (i.e.. panels), motifs, or a combination of both, where sites are linked to the motifs they contain. Each of these has its advantages nodes that refer to sites are useful for a large-scale categorization model; nodes that refer to motifs are useful for more local categorizations; and nodes that refer to a relational combination of both are useful for achieving specificity. In each case, the defining of nodes is not speculative, as one can perform significance testing on the results of the analysis. Edges are quantified similarities between nodes, which are used to define relationships between the nodes (Collar et al., 2015). For example, if nodes are individual sites, the edges could measure how many motifs are shared between each site, or could reflect expected human travel in-between nodes. In the proposed network-based community detection of Utah's rock art, edges would be

mapped spatially and weighed by cost value, how traversable a given area is expressed on a numeric value scale, to prefer low-cost topography. Once it is known what their nodes and edges refer to, numerous spatial analyses can be performed using mapping software. This can tell you where there are clusters (local concentrations of nodes with high levels of intra-connectivity), where there are dominant themes or motifs, when motifs or themes are ubiquitous across a selected geographic area; where there are contact zones (nodes that sit between distinct clusters), and several other useful types of information.

Any rock art collection with a sample size as large as Utah's travel ways could be subjected to network categorization. However, in order for that categorization to have meaning, the panels categorized must have some measure of connection, not necessarily among all panels but at least among some panels, forming communities of panels. If the argument of this paper is incorrect, and the current stylistic categorization of Utah does in fact completely concur with cultural-historical fact, then a sufficient degree of connection already exists in Utah's rock art to make it suitable for regional network analysis. If the stylistic categorization is not fully supported, at the very least it shows that there are communities of shared motifs over specific geographic areas. However, there must be additional context for the network categorization of Utah's rock art to have significance in that space. That context is the art being a communicative network in places of frequent travel (travelways) by habitually mobile groups. This would assign a measure significance of the rock art to its geospatial placement, meaning that several panels in a centralized geographic location may have significance attached to that location and thus be related to one another such that they could be considered a cluster; and would permit defining edges meaningfully either in terms of shared attribute between panels or along paths of suspected human movement between panels.

Other global approaches to rock art inquiry that strengthen the proposed network categorization method are cognitive and geophysical/environmental approaches. The cognitive approach to categorizing rock art involves analyzing the cognitive processes by means of which rock art is engaged with (De Smedt and De Cruz, 2011; Tylén et al., 2020); in other words, how people perceive, interact, interpret, understand, and respond to rock art via various mental processes (Tylén et al., 2020, p. 4578), and using that as a means of categorizing rock art. The network categorization proposed here implements a cognitive approach to categorizing rock art mainly with respect to assessing saliency and node relationships.

Saliency refers to which nodes are more visually apparent. Saliency is the result of a combination of several factors and can be measured in terms of the amount of time needed to identify a symbol. For example, in Tylén et al.'s "The Evolution of Early Symbolic Behavior in *Homo sapiens*," symbol saliency was measured by having participants exposed to "a standard color noise suppressor updated at a constant rate of 100 Hz" in their dominant eye, and have the symbols targeted for analysis randomly fade into view (i.e., gradually appear) in their non-dominant eye. They measured the amount of time required for participants to identify the symbol, which then was input into a "multilevel Bayesian Gamma regression model with a logarithmic link" to model response time and thus saliency of the symbols (Tylén et al., 2020). In simpler terms, Tylén et al.'s first experiment measured saliency by occupying the visual field of participants, having a symbol gradually fade into view on a screen at a randomized time, measuring the amount of time participants needed to identify the symbol. It might not be possible to implement Tylén et al.'s exact model to assess the saliency of rock art symbology in Utah's rock art due to potential issues with scalability. However, the experimental design for rock art categorization by node saliency would be based on the same principles and would be similar to

Tylén et al.’s design—that is, measuring reaction time. If directly assessing saliency is not feasible due to issues of practicality, this paper recommends GIS viewshed analysis, or determining the visibility of panels by geospatial reference. While viewshed analysis of rock art has not been commonly implemented, using GIS to assess the visual and spatial context of rock art has (Hartley and Wolley Vawser, 1994, 1998). Given the significance of visual-spatial relationships of rock art in Utah (Hartley and Wolley Vawser, 1994, 1998; Johnson, 1995; Firnhaber, 2009; Jenkinson, 2010), and the proven success of viewshed analysis of rock art (González Vázquez et al., 2025), this paper asserts that viewshed analysis is a comparable substitute to saliency analysis for network-based community detection of Utah’s rock art.

Saliency or visual-spatial analysis of the nodes would be a useful supplemental analysis for strengthening network categorization of Utah’s rock art, as a means of assessing the significance of said categorizations, especially in confirming categorizations of hierarchy. In the context of network categorization of Utah’s rock art, hierarchy would refer to a ranked ordering of nodes based upon perceived significance (Shi et al., 2024). In hierarchical clusters, there are “local leaders” (Shi et al., 2024, p.1), or a/some nodes with dominant position in the cluster (Shi et al., 2024, p.1-2). A local leader could refer to a complex panel (e.g., large symbol/motif count, size, detail that has several less complex but related panels in its immediate vicinity. A potential example of this is the Great Hunt Panel site in Nine Mile Canyon. The Great Hunt Panel itself, given its relatively high level of complexity, could potentially be a local leader, surrounded by four other less dominate panels. Such hierarchical categorizations of clusters could be significant, where the (not necessarily geospatially) central highly complex panel or panels are a local center of meaning with the surrounding less complex panels patterning out from that panel (Parcero-Oubiña et al., 2024). Alternatively, the cluster might not have significance: the low

number of high-complexity panels could be surrounded by low complexity panels coincidentally or for another reason. Saliency can be used as a tool to assess the significance of hierarchical categorizations, albeit as a check and not as a determinate factor. The local leaders would be expected to be more salient than the other members of their cluster, and saliency could be used to evaluate whether proposed local leaders are such.

Relationships are also useful as a means of checking the results of the network categorization. Assessing relationships between rock art by methods such as gauging modern participant association between nodes (Tylén et al., 2020) is a means by which to check the significance of the results of the network categorization. That is, if modern participants could successfully match nodes in the same cluster, that would provide support for the notion that the categorization of said cluster as such holds significance, and is not just meaningless or random patterning. Overall, cognitive analysis of the relationships between nodes would be most useful to ensure that the clusters identified in the network categorization are the most significant possible grouping of clusters. It should be noted that, behaviorally speaking, rock art is a deliberate expression (Tylén et al., 2020) consequently, clustering as revealed in network categorization is not expected to be random.

The geographic and environmental approaches relevant to the proposed categorization model involve the inclusion of specific geographical and environmental conditions as categorizing variables. These can be broken up into three general categories. A phenomenological variable of art would refer to factors that impact the experience of the art, expressed quantitatively. In pursuit of quantitative data, this would mainly be limited to the sensory experience of the art. Examples of this could include light exposure, area acoustics, average weather conditions, color, and so forth. However, not all of these categorizing variables

would be used in the initial network categorization, and potentially would not have significance at all, given that how art is experienced changes through time, and many of Utah's petroglyphs and pictographs are hundreds or thousands of years old (Schaafsma, 2002; Andreae et al., 2024). If one were to incorporate phenomenological classifying variables into the main categorization, the focus should be on variables that don't have significant rates of change, or have known rates of change, in the assessed area. The inclusion of this type of variable in the classificatory analysis could provide more nuanced results. Several papers in Utah's rock art analytical tradition have asserted the significance of conducting phenomenological assessments on Utah's rock art, as much of this art finds itself contextualized in terms of the differing geography, climate, and acoustics of Utah (Waller, 2009; Firnhaber, 2009; Gough, 2009, 2010).

The methodological classifying variable relevant here is the method used to create the art, such as painting (e.g., pictographs) and carving (e.g., petroglyphs) and the technique used to achieve this (e.g., pecking, scraping, drawing). This classifying variable is mainly valuable for assessing whether there is a localization of specific art creation methods.

In a similar vein, a medium classifying variable is one based on the medium of the artwork. Put simply, "medium" refers to the material the rock art was made on or with. This definition of "medium" may be a combination between what is typically known as "materials" and "surface"; however, given that several of Utah's major rock art traditions are predominantly petroglyphs (Schaafsma, 2002)--meaning that material was not added but rather taken away from the rock surface to make the art--this more general definition is believed to better serve in the categorization of Utah's rock art specifically. Similar to a methodological classifying variable, a medium classifying variable would mainly be used to assess whether there is a localization of a specific medium or mediums.

As the basis for further research, this paper proposes two hypotheses for the assessment of whether the rock art in Utah's travel ways constitutes a communicative network and whether network categorization of Utah's rock art would be possible and more effective than current categorizations.

- Null Hypothesis (H_0):
 - o Panels have a random distribution with no evidence of directionality or flow of information, and no presence of regional and sub-regional repetition of symbolic convention; failing to support the perception of Utah's rock art being a communicative network and thus not supporting the rationale that Utah's rock art be categorized via network categorization.
- Alternative Hypothesis (H_a):
 - o Panels have a non-random distribution with evidence of directionality or flow of information, and presence of regional and sub-regional repetition of symbolic convention; supporting the perception of Utah's rock art being a communicative network and thus supporting the rationale that Utah's rock art be categorized via network categorization.

Project Design

In order to find sufficient support for viewing Utah's rock art as a communicative network, panels must evince a non-random distribution, regional repetition of symbolic convention, and directionality of flow of information encoded in the supposed communicative network. Panels must have a non-random distribution to suggest that the rock art traditions of

Utah possess a structure that makes it a communicative network, as such a network would have a structure. The art must demonstrate movement of information because that is what makes a communicative network such--the transmission of information such as, for example, “granary here” or “keep out.” This would be shown by evidence of directionality and flow of information encoded in the rock art. Concretely, this could be observed in several ways, but is best identifiable if one finds two distinct potential cluster groups with a hybridization zone in the travel ways where they border/overlap, as this is a non-random distribution that signifies flow of information, given that the potential cluster groups are distinct. For example, say the eastern quadrant of a canyon was composed almost entirely of petroglyphs of geometric shapes, and the western section of said canyon was composed entirely of pictographs of anthropomorphs with trapezoidal torsos; a hybridization zone in this example could be in the space along the canyon’s corridor where the potential clusters overlap and where the elements of both potential clusters are present—pictographs of anthropomorphs alongside petroglyphs of geometric shapes. This shows flow of information by the information encoded in both the anthropomorph pictographs and geometric petroglyphs meeting in the middle.

In order to find support for the alternative hypothesis, there must be repetition of symbolic convention over larger and smaller areas, as this would refer to the intelligibility of the proposed communicative system across both in- and out-groups (in reference to whoever made the art). This is necessary, as a communication system must be intelligible. This is largely what the current categorization of Utah’s rock art has already observed. That is, stylistic categorization can partly be seen as the identification of the repetition of symbolic convention over a large area (Schaafsma, 1985, 2001, 2002).

To assess H_0 and H_a , the first part of this analysis will focus on motif distribution, as this is better quantifiable than the more ambiguous conventions of style. In short, there are innumerable references to both motif clustering and ubiquity throughout Utah. Some of the motifs that show this greater, state-level ubiquity are: “Spirals,” “sheep,” “horned anthropomorphs,” “insects,” anthropomorphs with a triangular torso, “crook staffs,” and many others (Schaafsma, 2002; Castleton and Madsen, 1981; Jones, 2009). Several motifs are predominantly clustered over a greater-regional area, such as “bows and arrows,” “abstract anthropomorph,” “necklaces,” “flute players,” “birds,” “atlatls,” amongst others (Castleton and Madsen, 1981). Several motifs are also predominantly regionally clustered, such as “triangular anthropomorphs (Cave Valley Style),” “rainbows,” “Head Hunters,” and others (Castleton and Madsen, 1981). Amongst these, some clusters show evidence of a central zone of high concentration from which surrounding areas of less concentration emerge. Examples include the following: rainbow motifs, which are primarily concentrated in the San Rafael Swell; the head hunters motif that is predominantly present in the north eastern part of the state; Birds and Flute Players motifs, which are concentrated in the southeastern corner of the state (Castleton and Madsen, 1981); and the bighorn sheep motif that is primarily concentrated in Nine-Mile Canyon (Matheny et al., 1997). Finally, there are also some motifs that are hyper concentrated, representing very local phenomena or concepts. These include head or ear disks (Basket maker II style) and duck headed anthropomorphs, both concentrated in the southeastern part of the state (Castleton and Madsen, 1981).

This distribution of motifs does not appear to be random. Several authors have noted the connection between Utah’s rock art and specific topography and geographical zones. Significantly for this project, this includes travel ways, referring to both location in and reference

to low-cost and known travel ways (Johnson, 1995; 89, Hartley and Wolley Vawser, 1994; Jenkinson, 2010; Janetski, 2002; Firnhaber, 2009; Schaafsma, 2002). Authors have also noted the connection between Utah's rock art and other natural features, typically relating to recourse gathering or economic activity (e.g., proximity to water, granary storage locations, hunting areas) or ritual activity (e.g., proximity to ritual sites) (Janetski, 2002; Firnhaber, 2009).

Further evidence for a non-random distribution of motifs can be found in the current stylistic categorization of Utah's rock art, as the classification of "style" itself has required a non-random distribution of motifs. Some of the current stylistic categorizations are incredibly broad, such as the Fremont tradition, which covers a majority of Utah (Schaafsma, 2002), while others are significantly more localized, such as the Cave Valley style (Castleton and Madsen, 1981). These styles are at least partially defined by sharing certain motifs (Schaafsma, 2002). This shows that motifs have been distributed at regional and local levels, which implies that the intended audience of those motifs would have been interacting with them at regional and local levels, indicating that they were intelligible at least to those audiences, at those levels.

Interaction zones between distinct potential clusters have been identified at both local and regional levels. At the local level, the rock art at Hovenweep demonstrates a zone of interaction between Hopi and Zuni groups (Parezo and Olsen, 1987). Parezo and Olsen concluded that there is a high likelihood that the people who inhabited Hovenweep used specific totemic motifs to organize and identify themselves into lineages (1987). If this is true, Hovenweep could have served as an interaction zone between distinct rock art clusters, each referring to a distinct lineage (Neal, 2010, pp. 79-80). This interpretation is also likely to be correct, as Bernardini confirmed the ethnographic significance of that rock art as signatory markers of individual and clan identity (Bernardini, 2002).

Regionally, in southeastern Utah, where the Fremont and Ancestral Puebloan lifeways overlapped, evidence of interaction zones is also present. For example, when one finds Barrier Canyon style they also find Glen Canyon style, and sites that have Glen Canyon style also often have Uncompahgre Style (Neal, 2010). The same can be said of San Rafael style with Basketmaker Style and with Pueblo style (Neal, 2010).

Conclusions

Based on the forgoing analysis, this study finds support of the alternative hypothesis. It finds support for the alternative hypothesis on the grounds that all of the indicators that would suggest that Utah's rock art can be viewed as a communicative system are present. However, this project also recognizes that those indicators alone are insufficient to fully test the applicability of a network categorization of Utah's rock art, and can only realistically be tested via implementation of that process. With the results presented here, this project hopes to justify future engagement in a regional network classification of Utah's rock art.

Discussion

Areas that are travel routes create a unique phenomenological experience that affects how the art is seen. This is also why Utah's rock art is best interpreted from an experiential framework rather than a series of photographs. Several authors have noted the utility of archaeoacousites (Díaz-Andreu et al., 2025; Mattioli et al., 2017), especially alongside other sensory investigations of Utah's rock art (Waller, 2004, 2009), and for that reason this author believes it to be essential to both the classification and interpretation of Utah's rock art.

Regarding the degree to which early ethnographic records of Utah's Native peoples can be trusted, this author recognizes that some of the records may have been made from a biased position. Much of the ethnographic record accessible today comes from surveys taken from the mid 1800's to the early-to-mid 1900's. During which the U.S government conducted ethnographic surveys of several of Utah's Indigenous populations at least partly and at times explicitly for the purpose of dispossessing them of their land (McPherson, 2000; Cuch, 2000), by asserting they never had that land in the first place. This author recognizes that a means of doing this could have been or indeed was the recording of nomadism in the ethnographic literature (Lowie, 1909; Chamberlin, 1911) and grouping all Tribal groups in Utah as "Plains Indians" to somehow perpetuate the idea that they never had a constant territory in the way a traditional nation state does (Aikens and Madsen, 1986; McPherson, 2000). Because of this, it would be foolhardy to assume mobile lifeways for Utah's non-Ancestral Puebloan inhabitants solely based on ethnographic literature. In consideration of this, this study's assertion of various mobile lifeways is not based solely on ethnographic resources.

With regard to the Fremont, while some scholars debate how sedentary the Fremont were, there is clear evidence of mobile subsistence strategies such as foraging. For this reason, this author flat-out rejects the possibility that the Fremont can be interpreted as a monolithic culture, because aside from some shared material culture, there is no evidence to support this. Further, that shared material culture may be principally due to trade festivals (Janetski 2002), and thus may not correspond to ubiquity in craftsmanship across an area nearly the size of Utah itself. Second, this author does not support the notion that the Fremont switched frequently or regularly between fully mobile subsistence strategies and agriculture, on the rationale that farming requires a significant investment of resources, such that the upfront cost of farming

disincentivizes frequent starting and stopping of farming practices in an area (Herzog and Lawlor, 2016; Allison, 2008; Vernon et al., 2024). Third, scholars note that even “committed farmers still practiced hunting game and collecting wild plant resource” (Allison, 2008, p. 72), and the theme of hunting present in Fremont-era rock art indicates its continued significance in the economy. With this in mind, while the Fremont did practice degrees of sedentism, they also nonetheless practiced a great degree of mobility, as evidenced by archaeobotanical remains that are believed to be a product of foraging, and a trading system of favella beads that can be traced to California. For these reasons, the Fremont lifeway, although varyingly so, is still considered to be a mobile lifeway.

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