

Children of the Maize:

An Exploration of Drought, Warfare, Migration and Puebloan
Philosophy in the Thirteenth Century Mesa Verde Region

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Abstract:

The late thirteenth century saw a mega drought that covered the western half of North America. Of the many affected societies, the ancestral Puebloans of the Mesa Verde region are perhaps the most well-known because of their mass migration out of their ancestral home at the end of the century. In this thesis, I analyze the factors that led to this mass migration through data from five separate communities that were affected by these drought conditions. I compare evidence from the pueblos of Sand Canyon, Goodman Point, Woods Canyon, Castle Rock, and, the most recently excavated, Cowboy Wash and find that they exhibit a wide array of reactions to drought. These variable reactions are most likely, at least in part, a result of the variety of drought conditions these communities experienced. While some communities experienced fairly mild drought conditions, others experienced extreme conditions that could not have been weathered through maize based agriculture. While some communities ritually abandoned their villages, others appear to have planned on returning. Other communities seem to have been depopulated after, and perhaps as a result of, warfare. Furthermore, a study into Puebloan philosophy as it relates to the events of the thirteenth century, including drought, warfare, and migration, shows that the events that took place leading to the depopulation of the Mesa Verde region were much more complex than a simple cause-effect relationship. As a result, this thesis argues that by analyzing the effects of climate change on past societies, we may provide a roadmap to possible reactions that future societies may employ in the face of global climate change.

“There is not one but many truths.”

- Rina Swentzell

I. Introduction

In 1270 AD the Mesa Verde region in southwestern Colorado was home to a flourishing Pueblo society. By 1280 not a single human remained. The people who had once dominated this region had either migrated south or perished in their villages. One of the main causes for this mass migration is one the world has seen a thousand times over and remains a driving force behind conflict and migration today: drought. Although Mesa Verde society had weathered many droughts before, some of which were even more severe than the drought in 1275, they had not faced a drought with as large a population as they had in 1275. Prior to the drought, the population in the Mesa Verde region experienced a period of growth. As the population grew new villages emerged on the outskirts of the region, in areas that were suitable for agriculture at the time, but which were more vulnerable to drought.

As a result, the significantly reduced rainfall of the 1270s made living on the outskirts of the region increasingly difficult and, in some cases, impossible. The need to survive prompted different communities within Mesa Verde Pueblo society to react in a variety of ways to the changing climate. These reactions include warfare, ritual abandonment, and ultimately mass migration. While it is common to view a society as a homogenous group, often societies display a diverse set of opinions and reactions that ultimately depend on local circumstances. In this thesis I will show that individuals within a society can exhibit drastically different perspectives on their society's situation. Furthermore, I will show that cultural worldviews are essential to understanding how societies, and the individuals within them, respond to natural events.

Climate and Migration in the Puebloan World

Recent research of the late thirteenth century drought has shown that the environmental situation experienced by the communities of the Mesa Verde region may have been significantly different than previous literature has suggested. The earliest ideas about the depopulation of the Mesa Verde region relied heavily on the notion that the drought was an overwhelming force of the late thirteenth century (Cordell 1984). This idea has been disputed resulting in a much more nuanced picture of the late thirteenth century that integrates cultural and social aspects as well as the effects of the drought.

One of the main distinctions between contemporary literature and the preceding research is the extent of drought conditions in the Mesa Verde region. It has been theorized for a long time that drought played a significant role in the depopulation. Although researchers have known for some time that drought conditions varied across the Southwest, conditions within the Mesa Verde region were assumed to be fairly uniform until recently (Kantner 2004). “A simple cause-effect relationship [between the drought and the migration of ancestral Puebloan society] cannot fully explain what prompted the abandonment” has been theorized (Kantner 2004: 200). Even as early as the 1990s, before the excavation of several of the sites in this study, it was postulated “that some combination of factors is responsible for the depopulation of the region” (Van West 1994: 189). The other factors that played a part in the depopulation have been assumed to include social tensions, warfare, and economic failings.

One such early theory about the depopulation of the region was that ancestral Puebloan society lacked the internal structure to cope with the population growth of the time period immediately preceding the drought. Previous research has suggested that ancestral Puebloan society did not yet possess “social mechanisms that allowed [many communities in the

Southwest] to prosper into modern times” (Plog 1997: 153). There is some validity to this argument in that if the trade systems within the Mesa Verde region had been more complex, then the ancestral Puebloan population may have stood a better chance at enduring the drought. “The Pueblo were driven from their homes by hostile nomads” is another early theory (Cordell 1984: 305). As I will discuss later in this thesis, more current research in some ways supports this theory. Social tensions between ancestral Puebloans and their hunter-gatherer neighbors would have been affected by the variable drought conditions present in this region and time period. However, the specific instances where it is possible that attacks came from outside societies were most likely not numerous enough to cause the depopulation of the region alone. These early theories, in conjunction with new theories and research, suggest the depopulation of the Mesa Verde region resulted from a combination of factors.

This thesis reflects this shift in opinion about the depopulation of the Mesa Verde region in the thirteenth century. I will build upon new theories and research to show a much more intricate set of situations existed both within ancestral Puebloan society and between ancestral Puebloans and their neighbors that led to the depopulation of the Mesa Verde region.

Literature Review

In this thesis I engage literature on drought, warfare, migration, and Puebloan philosophy as they relate to the late thirteenth century depopulation of the Mesa Verde region and other areas in western North America. With a combination of these literatures, it becomes evident that the depopulation of the Mesa Verde region was a complex process.

Drought certainly played a significant part in the depopulation of the Mesa Verde region. Farming was an integral part of life for many societies in the Southwest for thousands of years,

and increased drought conditions would have put strains on societies like that of the ancestral Puebloans that relied on farming to produce their main source of food (S. Fish and P. Fish 1994). The most recent work on the role of drought is a study by Bocinsky and Kohler (2014). In their study, they determine the potential of specific areas of land to support maize agriculture during a given decade based on the amount of rainfall. By using information from previous excavations, new excavation data from Cowboy Wash Pueblo, and the drought condition data from this study a more nuanced picture of ancestral Puebloan society in the 1270s can be depicted. What their study makes clear is that people living in different areas of the Mesa Verde region would have experienced drought differently. This leads one to consider how drought affected Mesa Verde communities individually as opposed to its global effects. The diversity of drought conditions, in many ways, takes away evidence from previous theories that suggest drought conditions across the region were severe enough to cause mass migration. As the conditions for many communities were not severe enough to cause a mass migration alone, then other factors, such as worldview, become extremely important in understanding what drove ancestral Puebloan people to abandon their homes. This study helps to complete the picture of the natural events that affected ancestral Puebloan society as well as further the discussion of how individuals and communities within the society reacted to their situation.

The Crow Canyon Archaeological Database was also a significant resource used for this thesis. Crow Canyon Archaeological Center has done many excavations in the Mesa Verde region and has partnered with Native Americans resulting in significant advancement in the understanding of native cultures and the human experience. There are some analyses in the site reports that do not consider information from more recent studies. While it is entirely possible that these prior analyses are correct, the data from the reports and new information from recent

studies suggest different conclusions about the state of ancestral Puebloan society and the climate in the Mesa Verde region. For example, the conclusions drawn with regards to Sand Canyon and Goodman Point suggest these two communities experienced extreme drought conditions in the 1270s (Kuckelman 2007a; Kuckelman 2009). However, evidence from the Bocinsky and Kohler study reveals that the drought conditions experienced by these two communities were not necessarily severe enough to force migration from these specific areas (Bocinsky and Kohler 2014).

Warfare was another significant catalyst for the depopulation of the Mesa Verde region. Evidence of warfare, seen across the Southwest, illustrates the social tensions that existed within ancestral Pueblo society and between ancestral Pueblos and their non-Puebloan neighbors. The site reports for both Sand Canyon and Castle Rock also reveal warfare near the end of the villages' occupations that may have contributed to the depopulation of the region (Kuckelman 2007a; Kuckelman 2000a). This information suggests warfare was one of the factors which drove people from the region. The Crow Canyon site reports suggest the warfare at Sand Canyon and Castle Rock may have been the result of attacks from non-Puebloan communities (Kuckelman 2007a; Kuckelman 2000a). It is possible that some of the attacks resulted from internal tensions while others from intersocietal tensions.

Drought conditions may have played a significant part in the warfare of the thirteenth century by pushing groups of people who had been living on marginal land into the same region and into resource competition with each other (Lambert 2002). Furthermore, warfare circumstances of the late thirteenth century may have been significantly different from previous time periods. Introductions of new weapons, such as the recurved bow, into the Mesa Verde region may have made warfare in the thirteenth century deadlier (LeBlanc 1997). The increased

social tensions caused by drought conditions paired with more fatal warfare technology potentially created a toxic environment in the Mesa Verde region.

Another instance of warfare as a possible reaction to environmental stress can be found at Crow Creek in South Dakota. The end of habitation at this site was caused by a massacre that resulted in the deaths of nearly 500 villagers and aligned with a drought in the fourteenth century (Bamforth and Nepstad-Thornberry 2007). By exploring this site and its environmental history, I hope to show the importance of drought in instances of warfare. Like many of the cases of warfare seen in the Mesa Verde region, the battle at Crow Creek coincides with an environmental stressor. The parallels between these two situations, despite cultural and ecosystemic differences, show that warfare may be a common reaction to drought.

In order to understand the migration of the ancestral Puebloans it is also important to understand how other cultures responded to drought during this time period. The late thirteenth century was a time of drought not just in the Mesa Verde region but across the Southwest (Woodhouse et al. 2009). The hunter-gatherer societies of what is now known as California, Nevada, and Arizona reacted to drought conditions through migration (Jones et al. 1999). The evidence of migration in other societies that experienced comparable conditions during the same general period of time suggests that migration may be a common response to drought.

A study of drought in the thirteenth century Southwest found that migration of agrarian societies was common, and extended far beyond the Mesa Verde region (Benson and Barry 2009). This suggests that there was something unique about the circumstances of the thirteenth century drought because it drove many agrarian societies to leave the regions they had been inhabiting for centuries in some cases. The late thirteenth-century drought clearly affected a wide range of both hunter-gatherer and agrarian societies. While these societies reacted to

environmental change in a variety of ways, warfare and migration appear to be common reactions.

The Crow Canyon site reports show evidence of ritual burning that suggests purposeful depopulation of several Mesa Verde region villages, including Castle Rock, Sand Canyon, Goodman Point, and Woods Canyon pueblos (Kuckelman 2000a; Kuckelman 2007a; Kuckelman 2009; Churchill 2002a). While movement within a region was not uncommon, as evidenced by the short occupation periods of many of the villages in the Mesa Verde Region, complete depopulation of the entire region occurred only once. Earlier droughts in the Southwest, that were comparable in magnitude to the thirteenth century drought, did not result in a complete depopulation (Schwindt et al. 2016). Even ancestral Puebloan society did not migrate on a mass scale with great frequency. In the early thirteenth century, ancestral Puebloan society grew in population and spread out across the region resulting in more communities living in marginal areas that were more susceptible to drought, and which would be more severely affected by drought conditions in the late thirteenth century. However, this earlier movement differed from the migration at the end of the thirteenth century in that it involved specific communities instead of an entire society. Also, the movement was within the Mesa Verde region instead of out of the region entirely.

Another factor that may have contributed to the migration of the ancestral Puebloans was economic shortcomings. This is illustrated in the architecture of kivas in the Pueblo III (1150 – 1300 AD) time period (Lipe 1989). It is also evident in the corn grinding structure during the thirteenth century which emphasized the importance of the family unit over the community (Ortman 1998). Additionally, kiln firing research shows a lack of division of labor in the Mesa

Verde region (Bernardini 2000). These lines of evidence suggest that thirteenth century Puebloan society may not have had the internal structure to cope with the variety of drought conditions.

However, Puebloan philosophy portrays a different worldview than that of the modern western world. Traditional pottery making methods reveal a lot about Puebloan philosophy. These methods show the importance of connection and harmony between individuals, society, and nature (Naranjo 1996). The origin legend of the Pueblo people also shows a deep connection to the earth, which influences many other aspects of Puebloan philosophy (S. Ortiz 1992). For example, movement is also an integral part of the Puebloan worldview (Naranjo 1995). As migration is a form of movement, the migration of ancestral Pueblos may have been the result of a need to create movement in a static world. In the traditional Puebloan worldview, home is not defined by a physical man-made structure but as the earth itself (Swentzell 1993). The movement of the ancestral Pueblos may have been affected by drought conditions but it was likely also influenced by their philosophical beliefs.

Another important aspect of Puebloan philosophy is the significance of dualities. In the Puebloan worldview, balance in the world is achieved through the harmony of opposites such as life and death (Naranjo and Swentzell 1989). It also plays into the understanding of Puebloan philosophy's views on farming, as traditional Puebloan farming system incorporates beliefs about dualities. In order to successfully farm, which many of the communities in this study would have found difficult or impossible, traditional Puebloan philosophy believes that there must be balance between the movement of water and human involvement in the form of prayer (Swentzell and Ford 2015). The failure of agricultural practices in many villages in this study, therefore, may have been perceived by the ancestral Pueblos as a failure on their part.

The warfare present in some of the communities in this study also calls Puebloan philosophy into question. Contrary to the death and destruction that marked the warfare of the 1270s for many ancestral Puebloan societies, modern Puebloan philosophy puts a high emphasis on human life, peace, and compassion (Swentzell 1993). This philosophy suggests that the warfare that was evident at some of the villages in this study may have been the result of outside attacks by non-Puebloan societies in the region. However, modern Puebloan philosophy may differ from, or be informed by, that of their ancestors. If it is informed by the past, Puebloan-on-Puebloan aggression resulting from extreme differences in drought conditions may have shaped modern Puebloan views on violence. The katchina tradition emphasizes the importance of connection to the earth and the role of death within Puebloan philosophy (Bunzel 1973). The significance of death in Puebloan philosophy is further emphasized by Puebloan funeral ceremonies (A. Ortiz 1969). An understanding of Puebloan views on death would have influenced how communities in the Mesa Verde region interpreted the warfare of the thirteenth century.

When considering the role of ancestral Puebloan philosophy in the migration of the late thirteenth century, one should evaluate how much that philosophy may have changed over the last 700 years. While modern Puebloan philosophy emphasizes reliance and importance of community, the economic structure of the thirteenth century suggests that family units ideally were self-sufficient and did not rely on their community for survival (Adler et al. 1996). Other aspects of Puebloan philosophy may have remained more constant. For example, place is extremely significant in Puebloan philosophy and Puebloan groups have inhabited the same place for centuries (A. Ortiz 1994). Furthermore, Puebloan philosophy persisted through Spanish colonialism which put extreme pressures on Puebloan culture to westernize (A. Ortiz 1969).

Puebloan society developed systems to maintain their individual culture through centuries of change due to colonialism and United States anti-Native American legislature (MacLachlan 1994; Sando 1979; Simmons 1979). Modern Puebloan philosophy may have sustained significant changes over the last 700 years but some aspects of ancestral Puebloan philosophy may have persisted into modern times. Aspects of Puebloan philosophy relating to warfare, farming, the definition of home, dualities, and movement, may have contributed as driving forces that caused the migration of ancestral Puebloan society out of the Mesa Verde region. Puebloan philosophy completes the research of this thesis by providing a worldview that offers some insight into the events of the 1270s.

Through an investigation of literature on drought, warfare, migration, and Puebloan philosophy the depopulation of the Mesa Verde in the thirteenth century becomes a more complex situation. In this thesis, I assert that in order to understand the depopulation it is necessary to understand the broader situation of the thirteenth century.

Overview of the Thesis

In Chapter Two, I will discuss drought in western North America. The drought that struck the Mesa Verde region in the 1270s was part of a widespread climate event that affected many societies across western North America. By analyzing reactions of other societies to the same general set of circumstances I will begin to determine what about the Puebloan response is uniquely Puebloan and what is more universal. Understanding how this drought affected other non-Puebloan societies will give context to the broader situation experienced by societies in the American West.

In Chapter Three, I will discuss the methods I use to analyze five communities in the Mesa Verde region inhabited during the 1270s. First I will show that Cowboy Wash, a community on the outskirts of the Mesa Verde region that was only excavated in 2016, was inhabited at the same time as four other AD 1270 villages. To accomplish this, I will analyze the surface pottery of Cowboy Wash and compare it to the pottery of Sand Canyon, Goodman Point, Castle Rock, and Woods Canyon. The similarities between the pottery type percentages across all five sites and the dendrochronology from the four previously studied sites show that all were inhabited during the drought of the 1270s. Next, I will use maize niche probability maps generated in “A 2,000-year Reconstruction of the Rain-fed Maize Agricultural Niche in the US Southwest” by Bocinsky and Kohler to show that the drought conditions experienced by these communities varied substantially. These maps suggest the reactions of individual communities would have also varied. I also compare the population sizes of the various communities to show how larger populations in less impacted areas reacted differently to drought conditions than communities with small populations in moderate and severely drought-affected areas. The warfare that may have contributed to the depopulation of several of the sites in this study could have come from other Puebloan communities in the region as a result of extreme inequalities among different villages. This data will show that within ancestral Puebloan society there was a wide range of circumstances and reactions instead of one society-wide response.

In Chapter Four I take a deeper look into the five sites in this study. Data from the previous excavations of Sand Canyon, Goodman Point, Castle Rock, and Woods Canyon further reveal a variety of reactions within Puebloan society to drought conditions. These previous excavations were analyzed prior to the Bocinsky and Kohler maize niche probability study and therefore could not draw on the data from that study. When paired with these new data, the story

of warfare and migration of ancestral Puebloans becomes much more complex. I will use data from these previous excavations, data from the Cowboy Wash excavation, and the Bocinsky and Kohler study to investigate the broader and more intricate situation created by the 1270 drought that could not have been investigated previously. As Cowboy Wash is the only site dating to the 1270s that lies in a severely drought-affected area, according to the Bocinsky and Kohler study, it is vital to understanding the overall impact of drought for ancestral Pueblo society.

Finally, in Chapter Five I will explore Puebloan philosophy as it relates to drought and migration. By doing this I hope to build up a model of how ancestral Pueblo people would have perceived drought as a phenomenon, and what responses would have been appropriate given this perspective. I will look at the perspective of modern Puebloan cultural leaders because contemporary native perspectives probably provide a closer model to this than our own Western perspectives do. Traditional Puebloan knowledge completes the archaeological data collected through excavations and the new information about the variable drought conditions in the Mesa Verde region. Without understanding the Puebloan worldview, it is impossible to understand the intricacies of the mass migration of ancestral Puebloans.

Summary

By taking an in-depth look at the thirteenth century, I will show that there were a variety of factors that caused the depopulation of the Mesa Verde region. Although drought was a significant event during this period, it was not severe enough across the entire region to result in the mass migration by itself. The drought acted as a catalyst that created increased social tensions which led to internal displacement, conflict, and ultimately migration of the ancestral Puebloans. This more complex situation may also have been influenced by Puebloan philosophy.

Worldview likely had an effect on how ancestral Puebloan communities reacted to the events of the thirteenth century. Although this model is more complex than previous understandings of this event, I will show that it better explains the variety of reactions seen in ancestral Puebloan communities.

II. Climate Change and Other Causes of Migration

Climate change is a topic of great concern for present day societies. While man made climate change is a modern concept, natural climate change has had major effects on prehistoric societies. The connection between human societies and the environments that they inhabit “warrant serious consideration of environmental change as a potentially important factor in explanations of cultural change” (Jones et al. 1999: 138). Natural events can cause change within societies because all humans are a part of the environment that they inhabit. In order to survive in a changing environment, societies must have some fluidity in order to adapt to adverse changes in climate such as drought.

The thirteenth century drought that acted as a catalyst for migration in ancestral Puebloan society affected the entire western half of North America. This event is known as the Medieval Climatic Anomaly. By exploring the reactions of societies across western North America, the reactions of the ancestral Pueblos can be contextualized. If reactions are shared by a variety of societies than these reactions can be seen as more universal reactions to drought conditions. However, reactions that are specific to certain societies may be a result of something other than environmental conditions, such as worldview. Other factors may play a part in reactions even if the reaction is common among cultures experiencing similar changes in climate. For example, warfare may be a common reaction to food shortages caused by drought but how a culture views warfare will play a part in how that warfare manifests. An understanding of how other cultures responded to a similar set of environmental conditions during the same time period as the ancestral Pueblos is important to fully appreciate the findings of this thesis.

Climate Change and Hunter-Gatherer Societies in the American West

Ancestral Puebloan society was dissimilar to many other societies in western North America because they were agrarian. Many western North America societies relied on hunter-gatherer methods of subsistence which most likely would have affected their responses to the drought. Some of the reactions exhibited by hunter-gatherer societies include migration, population decline, and warfare. Discussing the reactions of hunter-gatherer societies is valuable because it helps to show the broader environmental situation of the thirteenth century.

On the central Californian coast, a region populated by hunter-gatherer societies, there were large-scale population movements and a decline in trade that were similar to the movement seen on the Colorado Plateau (Jones et al. 1999). Like their agrarian neighbors, the hunter-gatherer societies of central California responded to drought conditions by moving to more productive areas. Migration seems like a more obvious reaction for a hunter-gatherer society than for an agrarian society because of the intrinsic mobile nature of hunter-gatherer societies. An agrarian society would have to rebuild entire villages and field systems when migrating, making migration a larger undertaking for agrarian societies than for hunter-gatherer societies. The similarity in reactions between these fundamentally different societies shows that either migration may be a universal human reaction to drought and/or there is something specific about ancestral Puebloan culture that leads to migration as a logical response to drought.

In the Mojave Desert, a region of southern California, Nevada, and Arizona, migration, or at least population decline, appears to have taken place during the 1200s due to climatic shifts. Decreased river flooding and ground water sources “suggest that hunter-gatherers of the central Mojave Desert, who were free from the type of climatic dependence that agriculturalists experienced, were nevertheless affected by the unusual aridity of the Medieval Climatic

Anomaly. That fewer dated components from this period exist suggests a reduction in population size as well as a narrower focus on reliable water sources” (Jones et al. 1999: 152-153).

Populations of the Mojave Desert may not have migrated as the ancestral Puebloans and central Californian societies did, but they may have suffered from population decline resulting in a smaller area of occupation while remaining in the same region. These smaller occupation areas would naturally occur in areas with the least affected or largest water sources as they would provide the most abundant food source for Mojave Desert communities. From this evidence, and the evidence from central California, it is clear that the drought of the thirteenth century afflicted many societies across the American West regardless of subsistence methods.

Societies of the Southern California coast had yet another reaction to drought. Violence and warfare appeared among hunter-gatherer societies on the Southern California coast. In a study of Southern California coastal cemeteries dating to a time period with normal environmental conditions, only 1.3 percent of burials were from violent deaths. In contrast, “up to 10 percent of the burials at Calleguas Creek (1200–1300) showed arrow wounds. Moreover, both males and females were victims, suggesting a style of warfare or raiding in which entire communities were exposed” in a cemetery dating to a time period with drought conditions (Jones et al. 1999: 150). The studies of the Southern California coastal societies show that violence is another reaction to consider when exploring thirteenth century drought reactions.

Hunter-gatherer societies across the American West were also affected by drought in the thirteenth century along with the agrarian ancestral Puebloans. The reactions between these two groups seem to have many similarities. Migration is seen in many societies across the American West during the thirteenth century. Population decline is also exhibited by some hunter-gatherer societies. Violence and warfare is another common reaction in thirteenth century, drought-

affected societies. While there are likely other contributing factors in these three reactions, environment appears to have played a part in the migration, population decline, and warfare in the thirteenth century hunter-gatherer societies in the American West.

Climate Change and Agrarian Societies

In agrarian societies across the American West, drought reactions include mainly migration and warfare. These two reactions are seen in many societies during the Medieval Climatic Anomaly including both hunter-gatherer (as discussed above) and agrarian. By looking at other agrarian societies in the thirteenth century, I will explore drought reactions specific to agriculturalists similar to the ancestral Puebloans.

Farming in the Southwest originated thousands of years ago and is an integral part of many southwestern cultures (S. Fish and P. Fish 1994). Native American cultures have successfully survived, and even flourished, because of lucrative desert farming methods. Naturally, these farming practices relied on predictable rainfall and temperatures that would have been altered during periods of drought. Prior to the thirteenth century, extreme environmental changes have coincided with the movement of agrarian societies throughout the Southwest. In the region that ancestral Puebloans lived, the Colorado Plateau, “a study of several major rivers documented a prolonged period of regular flooding between 400 BC and AD 1200, with a peak in flood frequency and magnitude during the last 200 years of this period. A decline in flood frequency between 1200 and 1400 was followed by a second prolonged period of flooding which persisted to the present” (Jones et al. 1999: 145). The decline of flooding reflects a decline in rainfall in the Colorado Plateau. The end of this routine flooding would have caused difficulty for agrarian societies.

More specifically, communities in the Mesa Verde region experienced many droughts before the thirteenth century that did not result in the depopulation of the region. Previous instances of drought in the twelfth century did not result in the mass migration as the thirteenth century drought did (Schwindt et al. 2016). One explanation for the discrepancies in reactions between these reactions is that the population of ancestral Puebloan Society in the thirteenth century was likely larger than populations in the twelfth century. There was a period of population growth between 1225 and 1260 AD in the Mesa Verde region (Schwindt et al. 2016). A larger population would have put a greater strain on natural resources resulting in a possibly more stressful situation. The fact that there was a comparable drought in the Mesa Verde region prior to the thirteenth century shows that there were likely other factors besides climate change that lead to the migration of ancestral Puebloan society.

Drought has been seen throughout the medieval period not just in the Southwest but throughout western United States (Woodhouse et al. 2009). Though the Southwest and the Great Plains have obvious ecological differences, the impact of drought, in many ways, manifested similarly in Great Plains communities as it did in Southwestern communities. For example, drought in the thirteenth century caused movements of agriculturalist peoples throughout the great plains. This “threatened the livelihood of agriculturalists in a way it never had their foraging and horticulturalist forebears” because of a reliance on predictable rainfall (Lambert 2002: 224). Compared to hunter-gatherers, agricultural populations are inherently more vulnerable to drought due to the fact that they are growing domesticated plants that may not be as well adapted to climate cycles as in the places they were being grown as the native plants. Drought continues to appear “to have brought several groups into contact and competition with each other” in the Middle Missouri during the Medieval Climatic Anomaly (Lambert 2002: 224).

When these groups came in contact with each other it caused a rise in tensions that caused an eruption of warfare which is similar to the eruption of warfare seen in the thirteenth century Mesa Verde region. Like in the Southwest, the Plains' communities saw a rise in warfare that appears to be correlated with a rise in drought conditions and a struggle to gain resources.

Desert farmers of the American West, including those in the Mesa Verde region, were susceptible to drought conditions because of their reliance on predictable rainfall. Drought would have impacted their farming practices. This is not to say that the migration of thirteenth century agrarian farmers was caused solely by drought, as there were likely many other factors at play, but there appears to be a connection between the two.

Direct Versus Indirect Impacts of Drought

While drought was most likely a primary cause for the migration of many societies in the American West during the thirteenth century, it is probable that there were other factors as well. Drought has both direct and indirect impacts. The direct effects of the drought were the reduction in maize production in agrarian societies in certain areas. The indirect effects include displacements of people within ancestral Puebloan society, social conflict, and a variety of perceptions of what was happening. For example, social unrest within communities could have contributed to an overall feeling of apocalypse created by worsening drought conditions. Decreased food production is only part of the overall dilemma created by drought.

Societies across the Southwest migrated during the late thirteenth century as drought conditions made maize subsistence farming extremely difficult or impossible. A tree ring study found that many maize farming societies migrated in the thirteenth century in correlation with

drought that swept across the Southwest (Benson and Barry 2009). In the late thirteenth century megadrought (defined as such because it lasted longer than two decades),

“other large areas in the [American Southwest] were abandoned. The Kayenta region in northeastern Arizona/southeastern Utah was abandoned by the late A.D. 1280s/early A.D. 1290s, and the Mesa Verde area in southwestern Colorado was abandoned in the early/mid A.D. 1280s (Dean et al. 1994; Varien et al. 2007). At Guadalupe Ruin, along the Rio Puerco of the East, Pippin (1987) documented a site unit intrusion from the Mesa Verde or Totah areas that occurred during [the late thirteenth century]. At the same time, many of the southern Hohokam villages were abandoned and settlement shifted north to the confluence of the San Pedro and Gila rivers. In some northern Rio Grande districts (e.g., Taos, Jemez, Pajarito, and Santa Fe), population increased during [the late thirteenth century, possibly in response to in-migration of groups from other archaeological regions” (Benson and Barry 2009: 104).

As the societies of the Southwest saw their primary food production method fail they became desperate for arable land and plentiful rainfall. Additionally, ancestral Puebloan society was “heavily dependent on maize agriculture by 400 B.C.” (Benson and Barry 2009: 88). For nearly 1,700 years, the ancestral Puebloans had relied on maize farming as their main form of sustenance. While it is not necessarily true that agrarian societies were forced to migration by drought conditions, these conditions did coincide with migration.

Warfare is another indirect impact of drought. While warfare was common before the thirteenth century, warfare in the thirteenth century was may have been more deadly (LeBlanc 1997). Whether increased warfare caused the emergence of the recurved bow or new weapon

technology caused an escalation in warfare is unknown. Either way, new weapon technology may have resulted in much more destructive warfare. Social tensions were already high because of inequalities created by a wide range of drought conditions. The recurved bow, and the resulting intensified warfare, could have created even higher social tensions. The people of the Mesa Verde region would have been afraid of the uncertain future created by environmental stress and by more deadly weaponry. Migration may have been the result of a need for safety as much as it was the result of a need for profitable farmland.

Not all thirteenth century, drought-impacted societies resorted to warfare however. Communities in the Middle Missouri region built fortifications during times of drought that may have allowed them to manage drought conditions without resorting to warfare (Bamforth and Nepstad-Thornberry 2007). These fortifications may have been a reaction to warfare experienced by nearby communities across the regions. This would have created a sense of fear throughout the region. In order to avoid warfare, agrarian communities in the Middle Missouri region fortified their villages from attackers. These fortifications seen in Middle Missouri villages, along with the instances of warfare seen during times of drought, support the idea that warfare may be a fairly common reaction to drought conditions. More specifically, since the reactions of the communities of the Middle Missouri are, in many ways, similar to those of the communities in other regions, the situation that created these reactions may be similar as well. By this I mean that it is possible that the instances of warfare in the Middle Missouri region may reflect a variety of drought conditions similar to those seen across the American West.

Climate change has a variety of impacts outside of its direct impact on food production in agrarian societies. These indirect impacts are important when considering possible reactions to climatic change in both the thirteenth century Mesa Verde region and in other societies.

Climate Change and Conflict

Many of the societies in this chapter have exhibited warfare in the same time period that they were experiencing climatic change. Therefore, it is valuable to explore thirteenth century warfare in more detail. Perhaps the most important difference between warfare in the late thirteenth century and earlier periods is the emergence of the recurved bow (see fig. 4.3). “Recurved bows, referred to by the early Spanish chroniclers as ‘Turkish’ bows, were far more deadly and dangerous than self-bows, and they had an impact on the entire fighting technology” which could have made warfare in the thirteenth century significantly more destructive from earlier warfare (LeBlanc 1997: 243). Based on the archeological record, “the recurved bow was introduced from the north in the late 1200s which led to destabilization and a great intensification of warfare. As the recurved bow penetrated the Southwest and populations relocated because of warfare and climate, both the recurved bow and intensified warfare could have spread south. Technologies evolved, settlement patterns changed, and social mechanisms were developed to cope with the improved technology and increased warfare” (LeBlanc 1997: 267). In this model, warfare was an extremely important component of the depopulation of the Mesa Verde region and other Southwestern societies. The recurved bow could have made the warfare in the thirteenth century Southwest more violent than previous warfare. The emergence of this new weapon technology in the late thirteenth century would have made warfare in this period of time much more deadly than previous time periods. Increased dangers of warfare could have created increased fear within Southwestern societies. When paired with the environmental changes of the thirteenth century, the recurved bow may have driven Southwestern societies to migration.

For example, Crow Creek, one of the most well-known sites in the North American Plains, has a history that is strongly related to drought. By taking a more in depth look at this site in particular, one can see similarities in the impacts of drought in the Plains region and in the Mesa Verde region. A drought seems to have “driven the ancestors of the Crow Creek townspeople from the central Plains” to central South Dakota during the twelfth and thirteenth centuries (Bamforth and Nepstad-Thornberry 2007: 169). This suggests that migration as a reaction to drought was not confined to societies in the Southwest. This is significant because it further supports the theory that migration is not a reaction to drought specific to a singular culture or geographic region. Furthermore, warfare was also a reaction to drought seen at Crow Creek. A later drought in the mid fourteenth century may have been correlated with a large massacre at Crow Creek that resulted in the brutal death of nearly 500 villagers (Bamforth and Nepstad-Thornberry 2007). While the exact causes of this massacre are unknown, it seems likely that, as with other communities across western North America, one of the factors may have been resource inequalities created by drought conditions.

Warfare in the thirteenth century appears in several societies across the American West at the same time as climatic changes. It appears to be one of the most common reactions to climate change. This is important to remember when studying the Mesa Verde region in particular as warfare is exhibited by some of the communities in this study.

The Mesa Verde Region

In this thesis I will use the Mesa Verde region to provide an in depth look at a variety of reactions to drought. The Mesa Verde region has a significant amount of research collected over the past two decades. This research, paired with new data from the excavation of Cowboy Wash,

makes a community level analysis of the Mesa Verde region possible. A community level analysis is valuable because it provides a more authentic picture than a societal level analysis. Looking at individual communities can reveal a more unique response.

Summary

The medieval period was a time of extreme droughts not only in the Mesa Verde region, but across Western North America. Both hunter-gatherer and agrarian communities in the American West and the Great Plains experienced drought conditions comparable to the drought that caused warfare and migration in the Mesa Verde region. While cultural differences between the societies of Western North America created a variety of specific reactions to drought, conflict and migration appear to have been common responses. In other words, the details of these reactions may differ from place to place, but the instance of the reaction remains. This is important to keep in mind because it suggests that the reaction of ancestral Puebloans to their environmental situation in the late thirteenth century can be viewed as fairly typical. It also suggests that modern reactions to climate change could be similar to those seen during the medieval period because of the similarities of reactions seen in a wide variety of cultures and geographical areas. Because of the large amounts of data collected from the Mesa Verde region from this time period it is possible to get an in depth look at the complexities of one society's reaction to climate change. In this way, we have an opportunity to see a common process, reaction to climate change, in greater detail than is typical.

III. Data and Methods: Excavation at Cowboy Wash Pueblo

My contribution to the research on the 1270s drought in the Mesa Verde region is the analysis of the excavation of Cowboy Wash. This data is of value to the current conversation on drought response in the Mesa Verde region because Cowboy Wash is in an area that has been studied very little. It is also the largest settlement in this area that has been excavated to date.

Field School Methods

Excavations of Cowboy Wash were undertaken over a two-week period in June of 2016 as part of the University of Colorado archaeological field school, led by Dr. Scott Ortman and Dr. James Potter. Our team included ten undergraduate students: Leo Borasio, Annette Cipollini, Amara Dame, Patrick Ingram, Rob Koenig, Elise Loura, Samantha Morrison, Joshua Steinbeck, Charlotte Thompson, and myself, and three graduate assistants: Kaitlyn Davis, Samantha Linford, and Patrick Cruz. The goal of our excavation was to prevent further erosion and destruction of the site caused by an arroyo. The arroyo, intended to drain water off the nearby dirt road, had resulted in the loss of half of a kiva and a roomblock. Our objective was to document Kiva K and a roomblock that are eroding into the arroyo and then try to stabilize them. After excavating parts of Kiva K and the roomblock that could not be stabilized, we then stabilized the side of the arroyo using stones from the excavation with the intent of keeping the rest of the kiva and roomblock intact. We also mapped the site, did a profile drawing of the pre-excavation arroyo side wall, conducted surface pottery analysis, and dug thirteen 1x1m test units across the site. These test units ranged from about 10cm deep to about a meter deep depending on the depth of cultural deposits in each unit. The results from the excavation, test units, and

surface pottery analysis will be used in this thesis to compare the differing reactions of societies in varying levels of drought conditions.

Dating Cowboy Wash

During the excavation, we removed three dendrochronology samples from the kiva and roomblock. Dendrochronology is the process of determining the exact year in which a tree was felled. This data can then be used to determine when a structure was built and the time period during which it was inhabited. The dendrochronology samples from Cowboy Wash are currently being analyzed by the Laboratory of Tree Ring Research at the University of Arizona and are not yet available. So in order to date Cowboy Wash, I compared the surface pottery analysis data to the pottery data from other sites in the region that have been definitively dated to the 1260s and 70s using dendrochronology (see fig. 3.1). The sites, Castle Rock, Sand Canyon, Woods Canyon, and Goodman Point, will be used throughout this thesis as they represent a range of drought conditions and responses. By comparing percentages of decorated pottery types at Cowboy Wash to their percentages at other sites that have been accurately dated to the late 1200s one can determine if Cowboy Wash Pueblo was contemporary with these other settlements. If the sites are contemporary then the responses across this region were, at least in part, reactions to the same drought episode. Figure 3.1 illustrates that there are some discrepancies in the percentages of Late White Unpainted, McElmo Black and White, and Mesa Verde Black and White across these sites. The surface pottery analysis at Cowboy Wash found lower percentages of Late White Unpainted and higher percentages of Mesa Verde Black and White and McElmo Black and White as compared to other sites. When surveying the surface pottery at Cowboy Wash, our

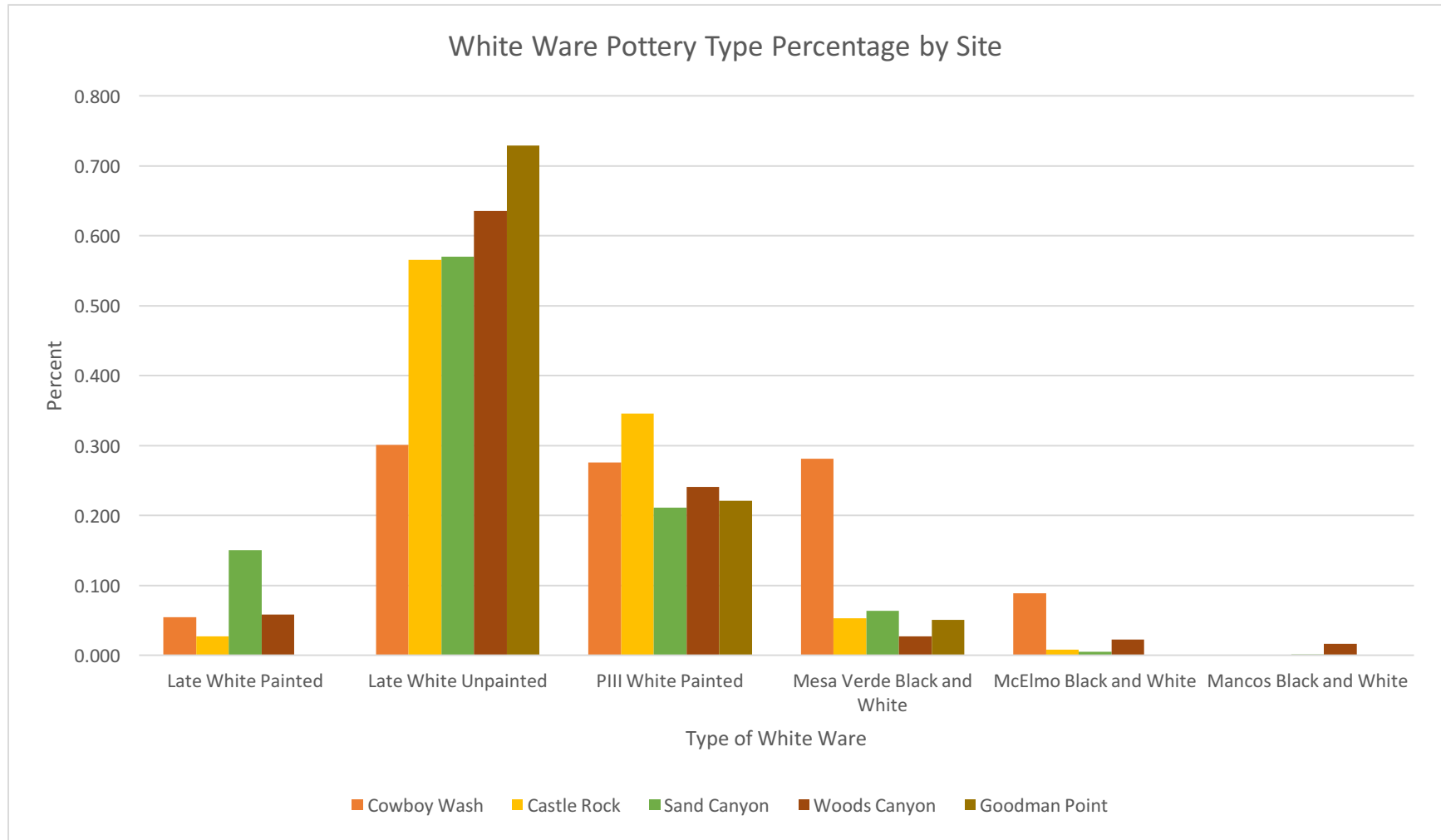


Figure 3.1: White ware type percentages at sites in the Mesa Verde region

methodology did not include sifting the surface layer as was done at other sites. Instead, we recorded all the ceramics we could see on the surface as we walked in lines across the site. As Late White Unpainted is more difficult to see because of its plain design it is likely that we may have missed some of the pottery in this category (see fig. 3.2 left). This created some discrepancies in the data, but once the excavated pottery assemblage from Cowboy Wash is analyzed, these percentages will likely even out and become more similar to those observed at the other four sites. Mesa Verde Black and White and McElmo Black and White are much more visible in the dirt because of their easily recognizable designs (see fig. 3.2 right). The Late White Painted, PIII White Painted, and Mancos Black and White categories all place Cowboy Wash as a contemporary site to Sand Canyon, Woods Canyon, Castle Rock, and Goodman Point.



Figure 3.2 left: PIII White Painted Sherd right: Mesa Verde Black and White Sherd

Additionally, a more in depth analysis of the pottery shows that the percent of rim sherds with exterior paint at Cowboy Wash is within the range of the other sites that have been dated to the late 1200s (see fig. 3.3). In the Mesa Verde region, exterior rim paint is found on pottery that dates to later time periods, PII (AD 950 – AD 1150) and PIII (AD 1150 – 1350). Earlier Pueblo pottery would only have paint on the inside of bowls which would be revealed when the bowl was emptied but the exterior of the bowls remained unpainted. Since the white ware pottery and the rims with exterior paint percentages closely match the other Mesa Verde 1200s sites we can

infer that Cowboy Wash was inhabited during the same time period and was depopulated because of the drought.

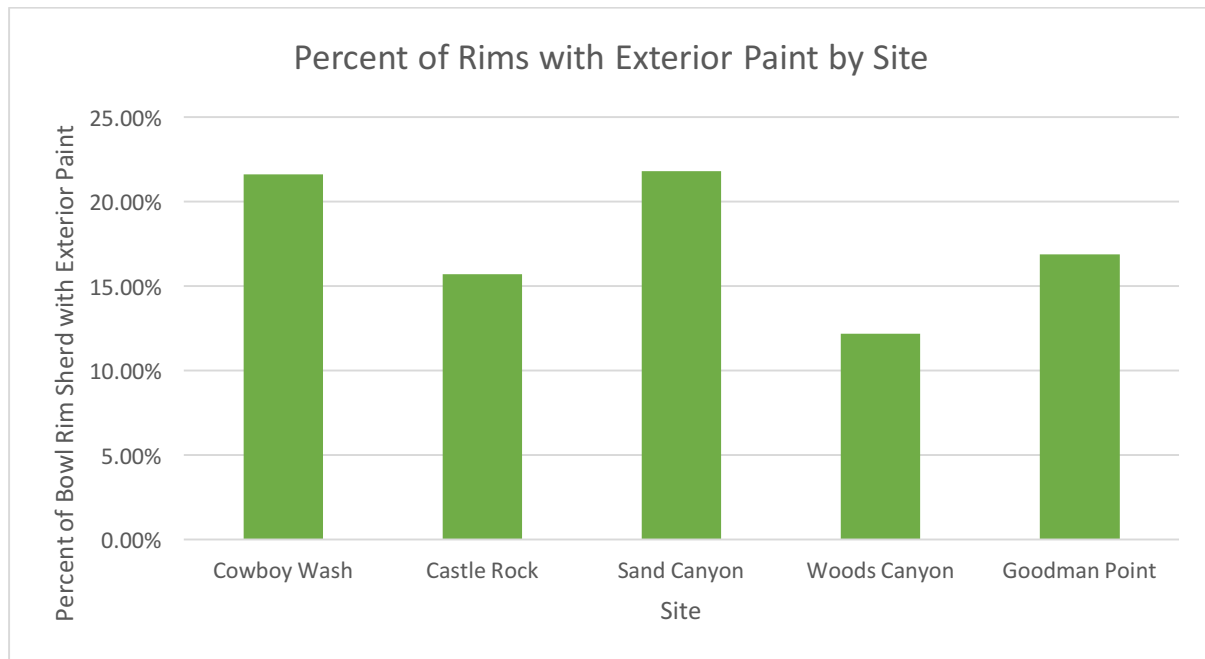


Figure 3.3: Bowl rims sherds with exterior paint found at each site

Experiencing the Drought at Cowboy Wash and Other Sites

Since these five sites are contemporary, the next important question to ask is how the drought affected each community. The answer to this question can be determined by estimating the fraction of years that the land immediately surrounding each site would have been warm and wet enough to grow corn. Recent research has made such estimates, referring to them as maize niche probabilities. These probabilities show the number of years in a decade that it would have been possible to grow corn in a given area based on retrodicted precipitation and temperature derived from tree-ring records. Bocinsky and Kohler (2014) estimated maize niche probabilities for the Mesa Verde region using dendrochronology data to reconstruct spatial patterns in rainfall from one year to the next, as well as temperature patterns. These averages were then used to

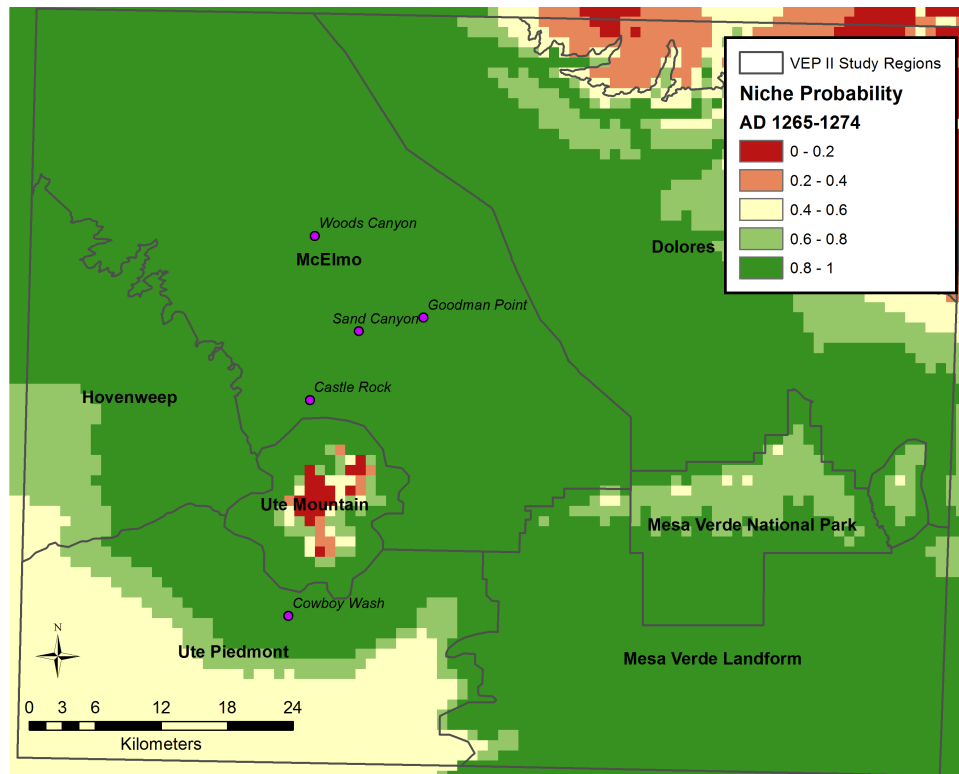


Figure 3.4: Percentage of the decade it was possible to grow maize in the Mesa Verde region between 1265 and 1274

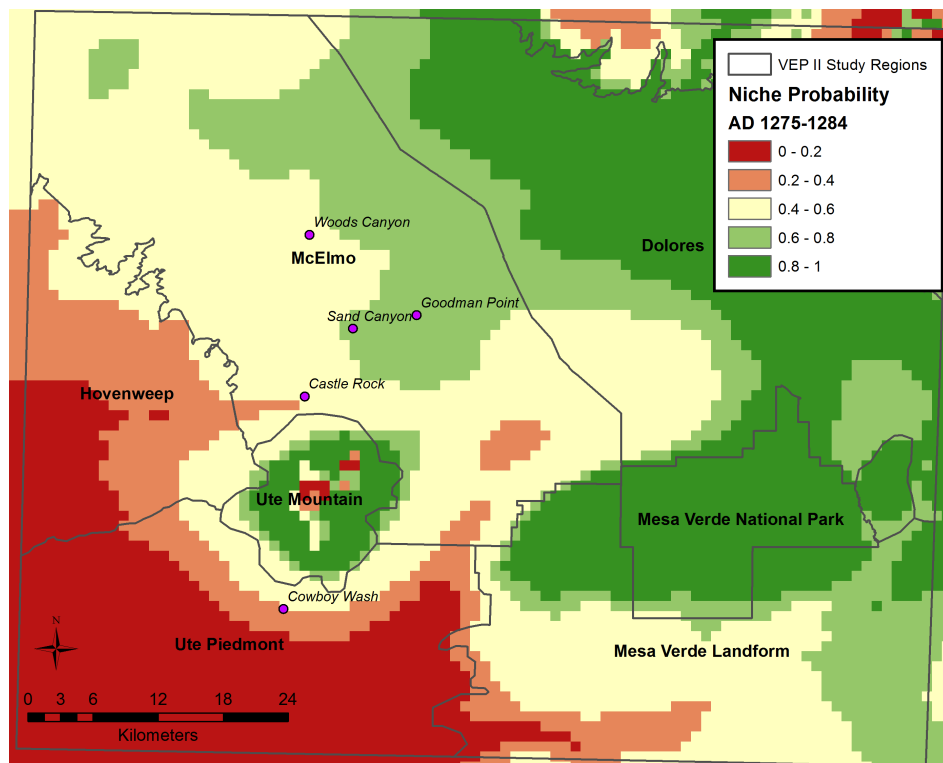


Figure 3.5 Percentage of the decade it was possible to grow maize in the Mesa Verde region between 1275 and 1284

determine where in the region it would have been possible to grow maize during each year (Bocinsky and Kohler 2014). By viewing the probability of growing maize across the Mesa Verde region both before and during the drought, it is possible to see the variation in drought severity between the five sites in this thesis (see fig. 3.4, and fig. 3.5).

As seen in Figure 3.5, the decade that immediately preceded the drought, 1265-1274, was a time of plentiful rainfall. This likely promoted population growth, in-migration, and the creation of new villages on the outskirts of this region. Growing populations in the McElmo and Mesa Verde National Park areas likely caused movement of some of the Pueblo population into the Hovenweep and Ute Piedmont areas in search of unclaimed farmland. Based on the data from the Bocinsky and Kohler study, the Hovenweep and Ute Piedmont areas would have been able to support agricultural villages in the 1260s and early 1270s. If sites in these areas were newly inhabited, then they would likely have smaller populations in comparison to other sites.

Site	Direct Drought Impact	Number of Kivas
Sand Canyon	low	90
Goodman Point	low	114
Woods Canyon	moderate	50
Castle Rock	moderate	16
Cowboy Wash	severe	13

Table 3.1: Number of kivas at each of the five sites compared to direct drought impact

The number of kivas at a site can be used to estimate the population as more people would have required more kivas. Table 3.1 shows that Sand Canyon contains the most kivas and therefore probably supported the largest population. It would likely have been significantly more difficult to feed a population this large while only having the ability to grow maize six to eight

years in a decade. However, it would not have been impossible. Cowboy Wash had the least number of kivas of the sites in this study. Furthermore, it was in an area that where it was only possible to grow maize zero to two years between 1275 and 1284. Based on Table 3.1, sites in less severely impacted areas were able to support higher populations while sites in more severely affected areas could only support smaller populations.

Like many of the sites in this study, excluding Woods Canyon, Cowboy Wash was a newly inhabited area. Most of the sites in this study likely came into existence because of a population growth in the 1260s caused by plentiful rainfall. Population estimates at Woods Canyon based on number of rooms range from 180 to 330 people. However, because of its long occupation, “the actual population is believed to have been lower than that estimate because not all of the rooms were occupied at the same time” resulting in a population estimate of 141 to 258 people (Churchill 2002c).

Interestingly, communities with more severe drought conditions tend to have lower populations while communities that suffered relatively mild droughts have significantly higher populations. This is most likely a result of the period of growth within ancestral Puebloan society that occurred right before the drought. As niche probabilities also reflect how productive land was even when drought conditions were not present, it is most likely that villages in low drought-affected areas were able to produce enough food during times of plentiful rainfall to increase their populations. Villages in severe drought-affected areas would likely not have been able to produce enough food during years of plentiful rainfall to increase their populations resulting in larger populations existing on the most profitable land.

When the drought hit, the newly populated areas would have struggled to survive as their chances of growing maize dwindled. Within the sites studied in this thesis, Sand Canyon and

Goodman Point lay in a relatively low drought-affected area of the McElmo region and could have grown maize six to eight years between 1275 and 1284. Woods Canyon and Castle Rock were moderately impacted. These communities would have only been able to grow maize for four to six years in the same time period. Cowboy Wash fared the worst out of these five sites and only would have been able to produce maize two to four years in this decade. The Hovenweep and Ute Piedmont areas, of which Cowboy Wash lies in the latter, were decimated. Across most of these areas, people would not have been able to grow maize most years between 1275 and 1280.

There have been some other Late Pueblo III sites excavated in the Hovenweep area, however the reporting on these sites has been spotty. Furthermore, there has been some excavation in the Ute Piedmont area, but these sites were small hamlets rather than villages like Cowboy Wash. Therefore, Cowboy Wash is the only village dating to the 1270s that suffered from severe drought conditions that has been excavated and fully reported on. Ideally, more villages in the Hovenweep and Ute Piedmont areas dating to the late thirteenth century could be excavated in the future. This would add to the existing data and likely provide more examples of depopulation in severely affected areas.

Response to Drought at Cowboy Wash – Excavation Results

At the southern edge of the Mesa Verde region in the Ute Piedmont areas lies Cowboy Wash. Once a small village in ancestral Puebloan society, Cowboy Wash can now be found to the southwest of Old Aneth Road on the Ute Mountain Ute Reservation (see fig. 3.6). The eastern most roomblocks and kivas K and L have been partially destroyed because of an arroyo

that drains water off the road. With the exception of some looting on midden 1, the rest of the site has remained intact.

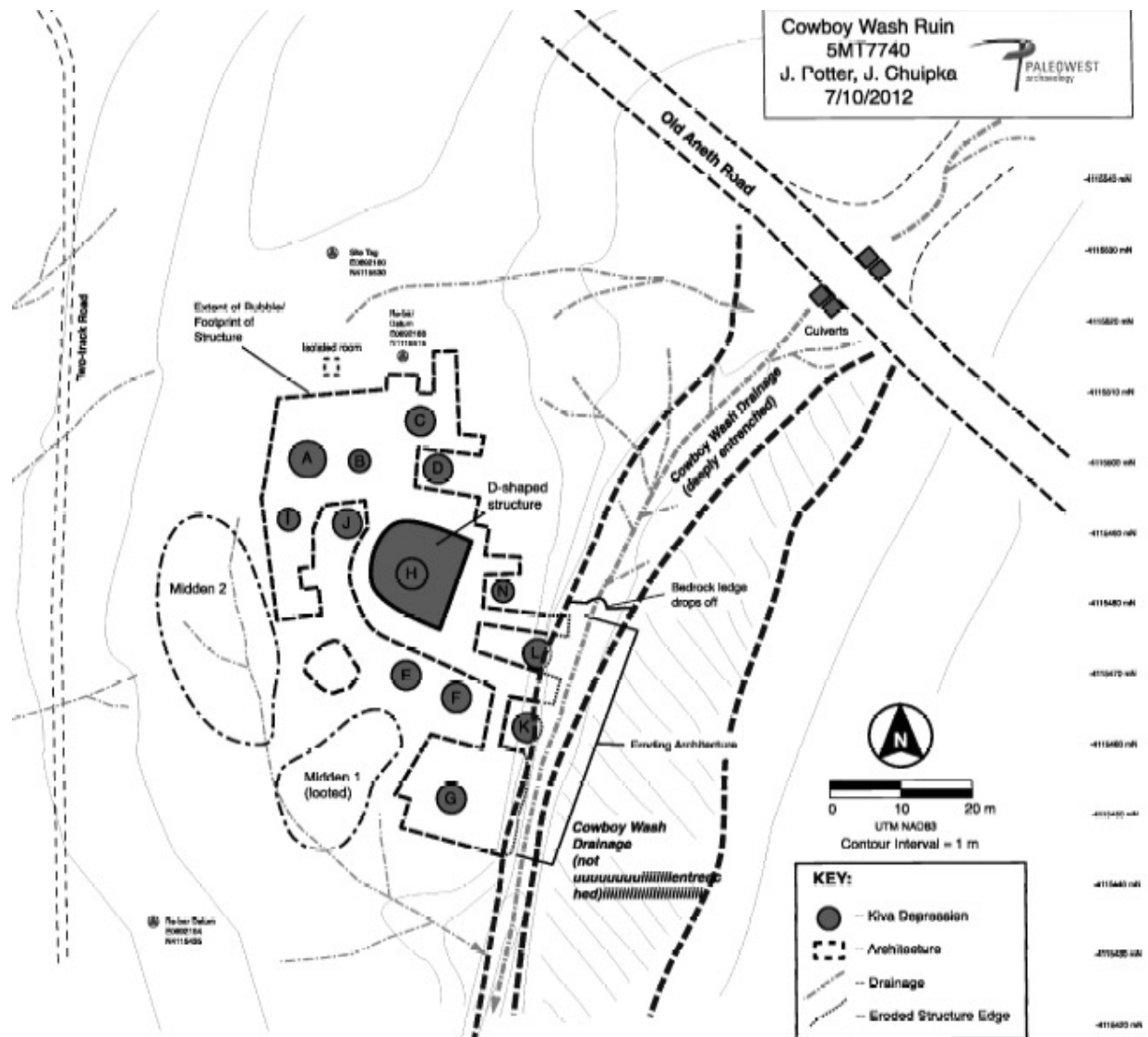


Figure 3.6 Cowboy Wash Pueblo Site Map

As discussed in earlier, Cowboy Wash was in an area that experienced severe drought conditions in the 1270s. Even today, the differences in water availability between Cowboy Wash and Sand Canyon are visible (see fig. 3.7). Sand Canyon is covered with trees and a variety of greenery while Cowboy Wash is mostly covered in sage brush. Furthermore, based on maize niche probability, it would have been impossible for the people of Cowboy Wash to continue to

live at this site through the 1275 drought using maize subsistence farming as their main source of food. In order to survive, they would have had to leave Cowboy Wash and either migrate out of the region entirely or move to another nearby village. Two lines of evidence found during excavation can be used to support the second scenario.



Figure 3.7: left: Cowboy Wash June 14, 2016 right: Sand Canyon June 2, 2016

The first are the roof beams found in the kiva excavation. At sites in more productive environments, such as Sand Canyon Pueblo, the roof beams of kivas were ritually burned at the time of depopulation. Roof beams were a valuable resource that took time and labor to create therefore, the destruction of these roof beams shows that there was no intention to return to this site and that they would be traveling a long way and could not repurpose the beams in a new village. However, none of the roof beams collected from kiva K showed any signs of being burned. As roof burning is an indicator of long-distance migration with no intention of return and there is no roof burning at Cowboy Wash, it is possible that the inhabitants of Cowboy Wash planned to return, though they never did.

The second line of evidence initially looked like a pile of grey dirt resting on the floor of the excavated portion of the eroding kiva. Upon closer inspection, it was determined that this pile

of dirt was actually the remains of a corrugated cooking pot that had never been fired. This is particularly interesting because it suggests the depopulation of Cowboy Wash was unplanned and likely abrupt. Had the inhabitants of the site known they were going to be leaving their home they would have planned for the trip. They would not have been making more pottery to fire because they would have been unable to carry it on their journey. The discovery of an unfired pot on the floor of a kiva suggests that the inhabitants of Cowboy Wash did not plan the depopulation of their village.

The third line of evidence is actually lack of evidence. Perhaps as important as these finds is what was not found at Cowboy Wash. Many of the communities in this region experienced warfare at the end of their habitation. During the excavations of other sites, human remains were found that suggest social conflict between either ancestral Puebloans and their non-Puebloan neighbors or within ancestral Puebloan society. Human remains were not found at Cowboy Wash, suggesting that the village was not a point of interest for nearby communities looking for resources. Because of its location in a severely impacted drought area, Cowboy Wash most likely was not a target for people seeking food, water, and other necessities.

Though we excavated only one kiva and roomblock, there is no reason to doubt that these patterns were not typical of the entire village. Based on the unburned wood beams, the unfired pot, and the absence of direct evidence of violence, it seems most plausible that the people of Cowboy Wash moved to another nearby village as opposed to migrating out of the region entirely. They did not burn the roof beams of the kiva suggesting that they did not intentionally depopulate the site. The unfired pot suggests that people were trying to live their normal day-to-day lives for as long as they could despite the drought. The excavation of Cowboy Wash suggests the people of this village did not plan to permanently migrate away from their homes.

Instead, they appear to have moved to a nearby village with the intention of riding out the drought. As the ancestral Puebloan society migrated out of the Mesa Verde region before the drought ended, it is likely the people of Cowboy Wash never had the opportunity to return to their village.

Summary

The occupation of Cowboy Wash can be dated to the thirteenth century directly before the depopulation of the Mesa Verde region. An exploration of maize niche probability shows that while some communities experienced relatively limited impacts, others faced certain starvation and death. Communities in the first category did not have to migrate, but communities in the second category, such as Cowboy Wash, would have had to migrate or they would have perished. Evidence shows that the drought simply was not widespread enough to cause mass migration across the entire region by itself. The extreme differences between the most severely impacted communities and the least severely impacted communities were likely a cause of the extreme range of reactions within these communities. Some of these reactions, particularly the violent ones, may have prompted the mass migration in 1280.

The population growth of the 1260s paired with the drought of the 1270s would have put extreme strains on all the villages across the Mesa Verde region. Severe drought conditions in the Hovenweep and Ute Piedmont areas could have caused the populations in these areas to seek refuge in other nearby villages experiencing less severe drought conditions. The influx of people from Hovenweep and Ute Piedmont could have put increasing strains on already strained resources in less-affected areas. With more people and fewer resources, the villages in the McElmo area would have struggled to keep up with the demands for food. It would also have put

extreme stresses on their societies, which could have caused episodes of violence as seen in many drought-affected societies in the thirteenth century American West. In the following chapter, I will discuss four other sites in the Mesa Verde region and how they reacted to the events of the 1270s.

IV. Drought Impacts in Other Mesa Verde Region Communities

In this chapter I take an in depth look at four other sites considered in this study. By exploring each of these sites individually, I will show how each community reacted to their specific set of local circumstances. I will also examine a variety of possible interactions between these communities that could have occurred given the new information about drought conditions in the region. As I have already discussed Cowboy Wash, the least populous and most severely affected community in this study, I will begin this chapter by discussing the somewhat more populous and more moderately affected communities of Castle Rock and Woods Canyon. Then, I will investigate the most populous and least affected communities: Sand Canyon and Goodman Point. Lastly, I will discuss aspects of the thirteenth century that affected multiple communities such as a possible refugee situation and land usage. The data for the sites discussed in this chapter comes from archaeological excavations performed by Crow Canyon Archaeological center over the past two decades.

I will also explore instances of warfare found at several of these sites in relation to differing drought conditions. The villages in this study that experienced warfare immediately before their depopulation were on the border between different levels of drought severity meaning they were experiencing less severe drought conditions than neighboring villages. These instances of warfare may have been the result of tensions within ancestral Puebloan society. Alternatively, they may have been the result of attacks from other communities that would have been struggling because of drought conditions as well. By presenting the information in this way I will show that the specific situations faced by ancestral Puebloan communities had an impact on each community's reaction. There was no single societal response to drought conditions because of the variety of conditions and the variety of options open to each community.

Castle Rock

Castle Rock Pueblo was occupied from 1260 to around 1280 and was home to somewhere between 75 to 150 people (Kuckelman 2000b). According to Taos Pueblo community member and director of the Oo-Oonah Art and Education Center, Marie Reyna, the layout of the village seemed “to focus on a water source. In an arroyo near the site, there are dams and directional barriers that harnessed water, a very precious commodity for survival. [There is also a] line of boulders at one edge of the site. The boulders are massive, but what purpose did they serve? Were they a means of defense? Careful thought and planning are clearly visible in the pattern set by the line of boulders” (Reyna 2000). As seen in Figure 4.1, Castle Rock Pueblo has barriers on southeastern and northern sides created by the boulders described by Reyna and a butte respectively. The idea that these boulders could have been used for defense is supported by the battle at Castle Rock that may have prompted the depopulation of the village.

Drought conditions at Castle Rock were less severe than at Cowboy Wash but more severe than at other nearby villages such as Sand Canyon and Goodman Point. As a result, the inhabitants of Castle Rock may have felt that they could at least try to produce enough food to ride out the drought. It may not have been possible for them to survive the drought at Castle Rock but, based on niche probability, they had a better chance of survival than villages like Cowboy Wash and other severely impacted communities. Additionally, Castle Rock is situated at the edge of severely affected Hovenweep and Ute Piedmont areas and would have been a location through which refugees from these areas would have traveled in search of food. If refugees did travel to Castle Rock it is unlikely that the increased population could have been supported by the diminished crop output. Migration of people from more severely affected areas

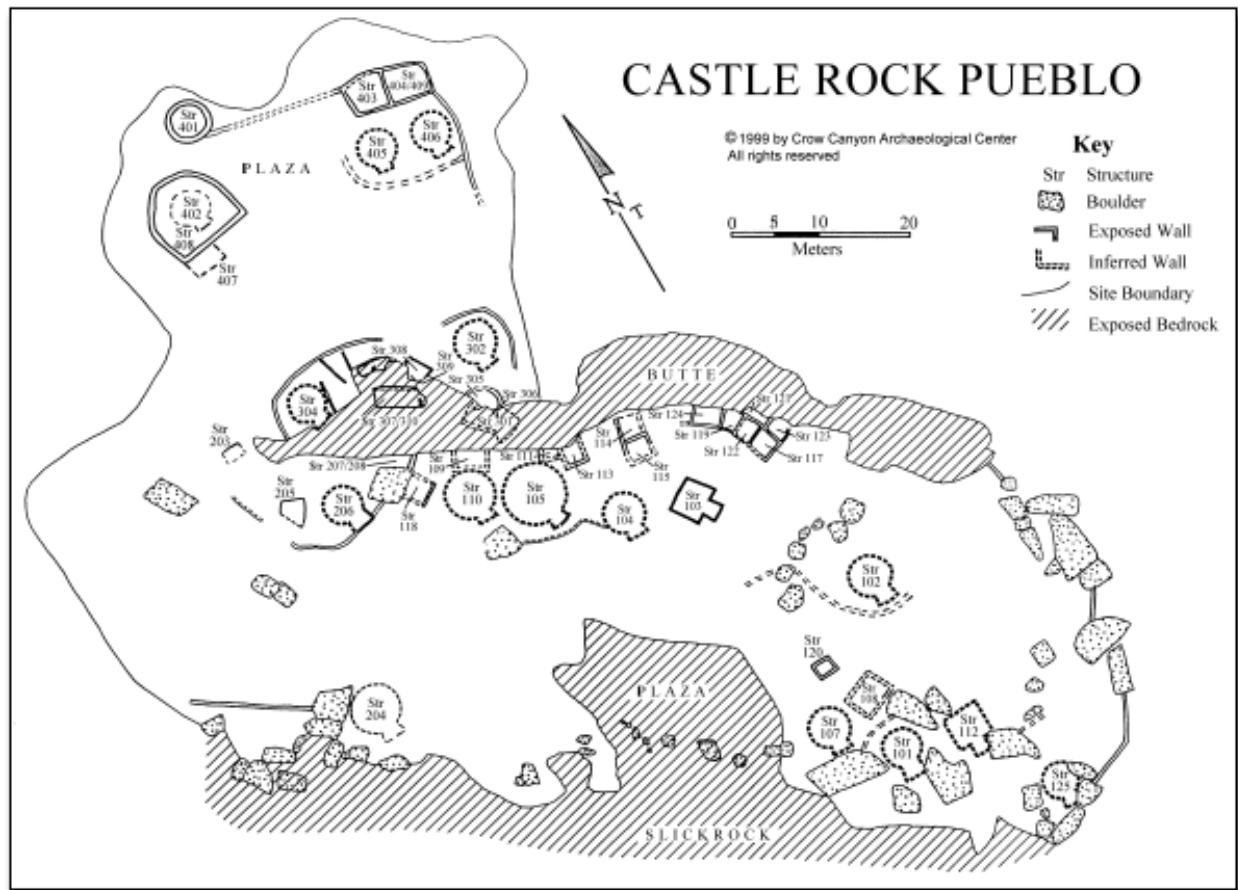


Figure 4.1 Castle Rock Pueblo Site Map

to Castle Rock is just one possibility regarding drought-related movement patterns of ancestral Puebloans in this region.

Excavations of the site in the early 1990s found that an estimated 75 to 150 people were killed at Castle Rock during a violent attack. One theory about these battles is that a non-Puebloan group, most likely from southeastern Utah, attacked Castle Rock (Kuckelman 2000b). This theory is based on the presence of a projectile point that is foreign to the Mesa Verde region. Furthermore, the “skulls of two of the victims at Castle Rock had not been flattened from cradleboarding, a nearly omnipresent trait of ancient Puebloans in the northern Southwest, which leaves open the possibility that these two people were not Puebloan” (Kuckelman 2000b). These

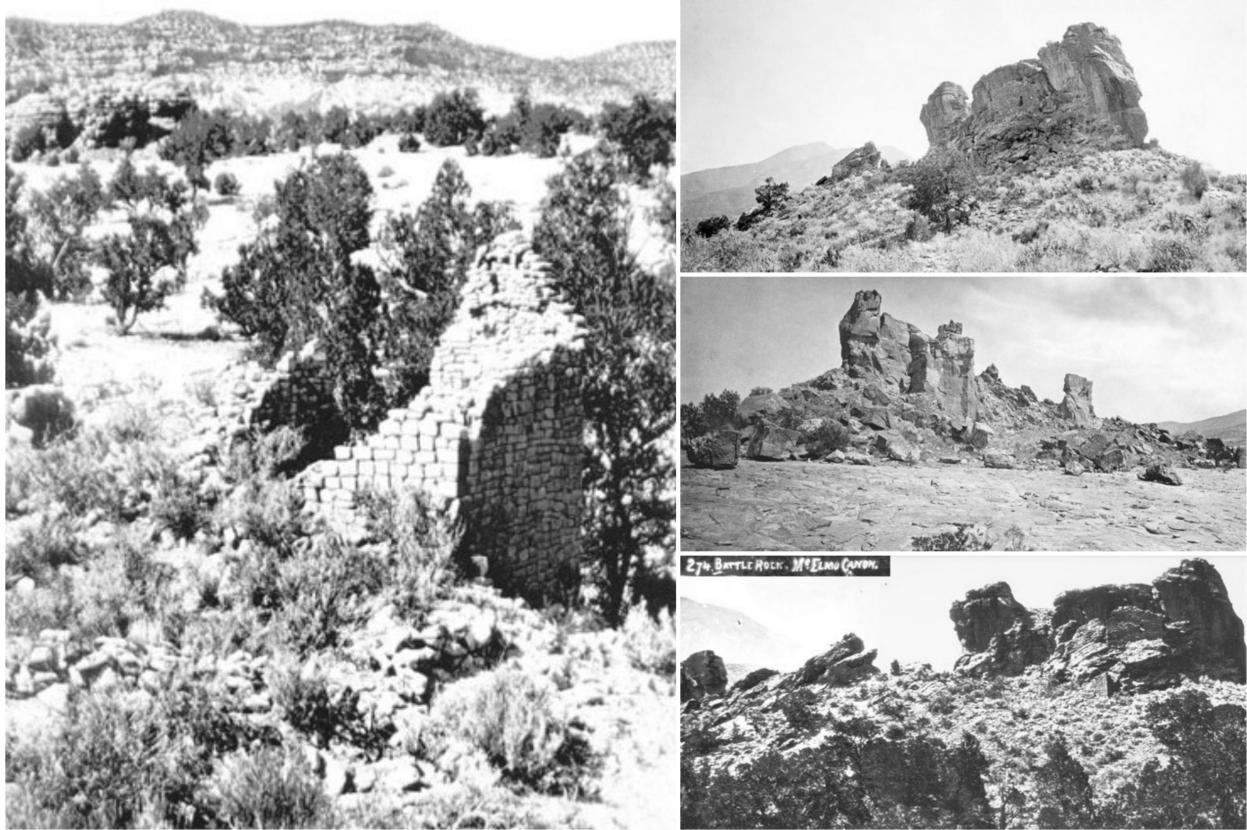


Figure 4.2 Historic photographs of Castle Rock Pueblo by William Henry Jackson circa 1874-1875, left: structure 404/409/410, top right: south-southeast view, middle right: northeast view, bottom right: south view

people also could have simply taken refuge at Castle Rock due to the drought conditions across the Southwest that affected many societies other than the ancestral Puebloans. However, the natural fortress like location of the site created by large rock formations and additional manmade fortifications also support the theory of the community's fear of a possible attack (see fig. 4.2). This battle could have occurred as a reaction to food shortages and increased populations from refugees. This theory is supported by evidence of previous attacks on Castle Rock wherein the population of Castle Rock did not depopulate their village afterwards implying that this battle was somehow different from previous ones. New warfare technology may have contributed to this differentiation. As discussed in Chapter 2, the recurved bow was introduced to the Southwest

in the twelfth century. The recurved bow certainly made its way to the Mesa Verde region as it is depicted in a rock art panel at Castle Rock Pueblo (see fig. 4.3).

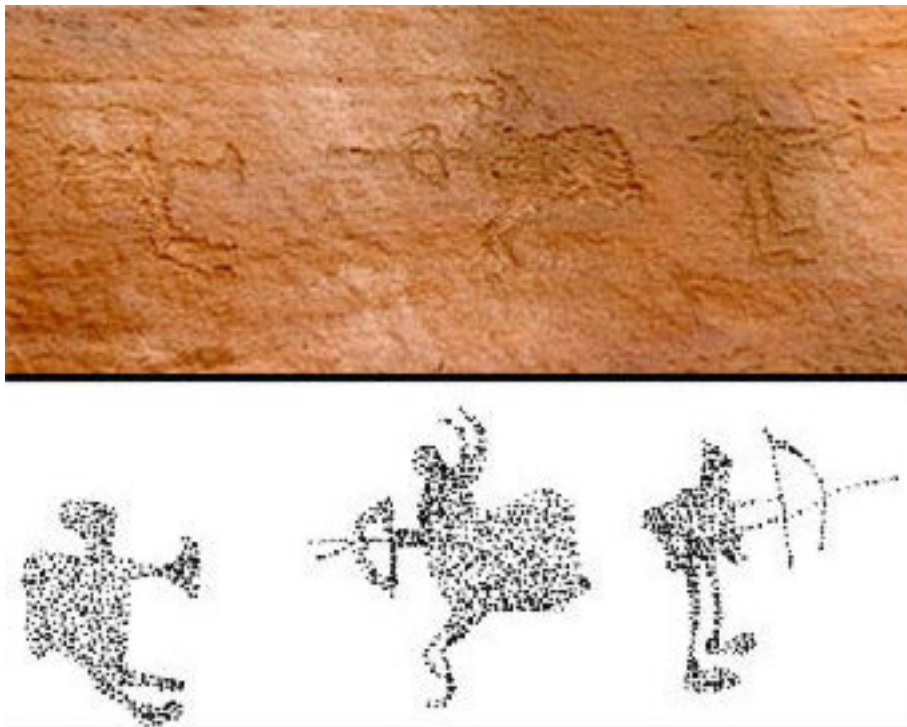


Figure 4.3: Rock Art Panel from Castle Rock Pueblo with recurved bow

Unlike ritually abandoned sites in the region, Castle Rock exhibits evidence of partially-burned roofs, which is suggestive of violence. “A small portion of the roof of nearly every kiva in the village had been intentionally burned” which is unlike other ritually abandoned ancestral Puebloan sites (Kuckelman 2000b). It has been asserted that the use of fire could have been a strategic plan during the attack of Castle Rock. The village was depopulated shortly after the attack and the partial burning of the roof beams making it difficult to know if the partial burning was part of an abandonment ritual or was a battle tactic.

Castle Rock exemplifies the uncertainty in ancestral Puebloan society, and potentially across the Southwest, during the thirteenth century mega drought. Its location near the edge of severely affected areas could have made it a destination for refugees or a target for attackers. As previous decades were a time of population growth and expansion, the amount profitable and

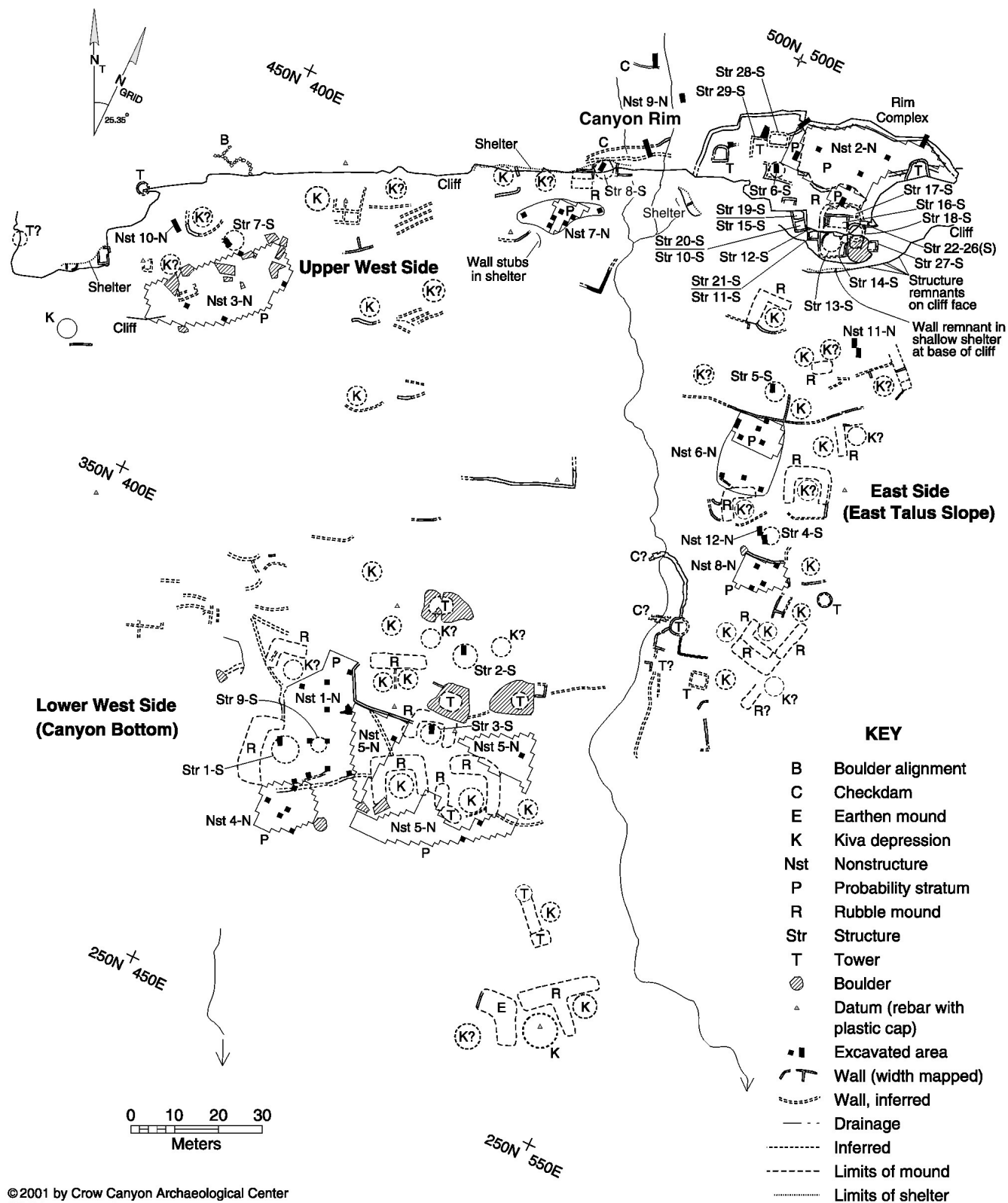
uninhabited land in the region had significantly decreased. The result was that communities that were forced onto marginal land may not have been able to support themselves in times of drought. The battle at this site could show inter-societal tensions or a refugee situation created by drought conditions. This battle either left the village in ruins or prompted surviving inhabitants to permanently and ritually abandon the village.

Woods Canyon

Woods Canyon is the northern-most pueblo considered in this study. Woods Canyon had a significantly longer period of habitation than Castle Rock or Cowboy Wash, approximately 150 years (Churchill 2002b). Population estimates for Woods Canyon are roughly 141 to 258 people (Churchill 2002c). The village lies on steep terrain that possibly guided the layout of the village into four separate areas; Canyon Rim, Upper West Side, East Talus Slope, and Canyon Bottom (see fig. 4.4). Woods Canyon's more complex layout as compared to Castle Rock and Cowboy Wash can be attributed to its long inhabitation. As the village grew it expanded from the Canyon Bottom into the other areas of the village.

Woods Canyon, like Castle Rock, experienced moderate drought conditions from 1275 until its depopulation. However, unlike Castle Rock, which lies on the edge of severely affected areas, Woods Canyon is close in proximity to only moderately affected areas. This likely resulted in a very different drought experience for the people of Woods Canyon. While they still might have failed to produce enough food to feed their relatively large population, their proximity to friends and relatives living on more fertile land could have resulted in an overall less severe experience than at Castle Rock. Unlike Castle Rock, there is little question as to whether or not Woods Canyon was ritually abandoned. Evidence suggests that the Canyon Bottom was

Site 5MT11842, Major Cultural Units



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Figure 4.4 Woods Canyon Pueblo Site Map

depopulated before the drought and followed by the remaining three areas during the drought (Churchill 2002d). Several of the roofs of kivas at Woods Canyon, especially in the Upper West Side and East Talus Slope areas, were “burned or partly burned, suggesting that the residents did not intend to return” (Churchill 2002d). Kivas on the Upper West Side and East Talus Slope had many more artifacts including valuable, but heavy, grind stones. The burning of the roof beams suggests ritual abandonment of the pueblo and the dense artifact coverage in the Upper West Side and East Talus Slope suggests that the people of Woods Canyon planned for a long journey.

There were some human remains found at Woods Canyon. The remains of 10 people were found in structure 5-S however none of these skeletons showed any signs of a violent death (see fig. 4.4). While it is possible to kill someone without leaving evidence on the skeleton, “with so many bones present, it is highly unlikely that there would be no evidence of skeletal damage if human-initiated violence had played a role in the deaths” of these individuals (Bradley 2002). These remains were exposed in a 1x2m excavation and only portions of each body was examined so it is possible that unexamined parts of the bodies showed signs of violence. Another interpretation of these remains suggest that the individuals could have died from violent deaths based on the fact that they were not found in resting positions (which is typical of a burial). This, combined with the fact that the entire skeleton was not examined makes the interpretation of the remains at Woods Canyon unclear.

Woods Canyon exhibits another variation of drought response not seen in the two previously discussed pueblos. Unlike Cowboy Wash, Woods Canyon was ritually abandoned with burned roof timbers. Unlike Castle Rock, there is no definitive evidence that warfare prompted the depopulation of Woods Canyon. Overall, Woods Canyon exhibits a fairly clear

example of ritual abandonment that occurred during the same time period as moderate drought conditions.

Sand Canyon

Sand Canyon Pueblo was one of the largest settlements in the Mesa Verde region during the late thirteenth century. The population of this community ranged from 400 to 600 inhabitants that erected and inhabited Sand Canyon during the late 1240s or early 1250s (Kuckelman 2007b). A stone wall enclosed the village on the north, west, and east sides leaving the south side

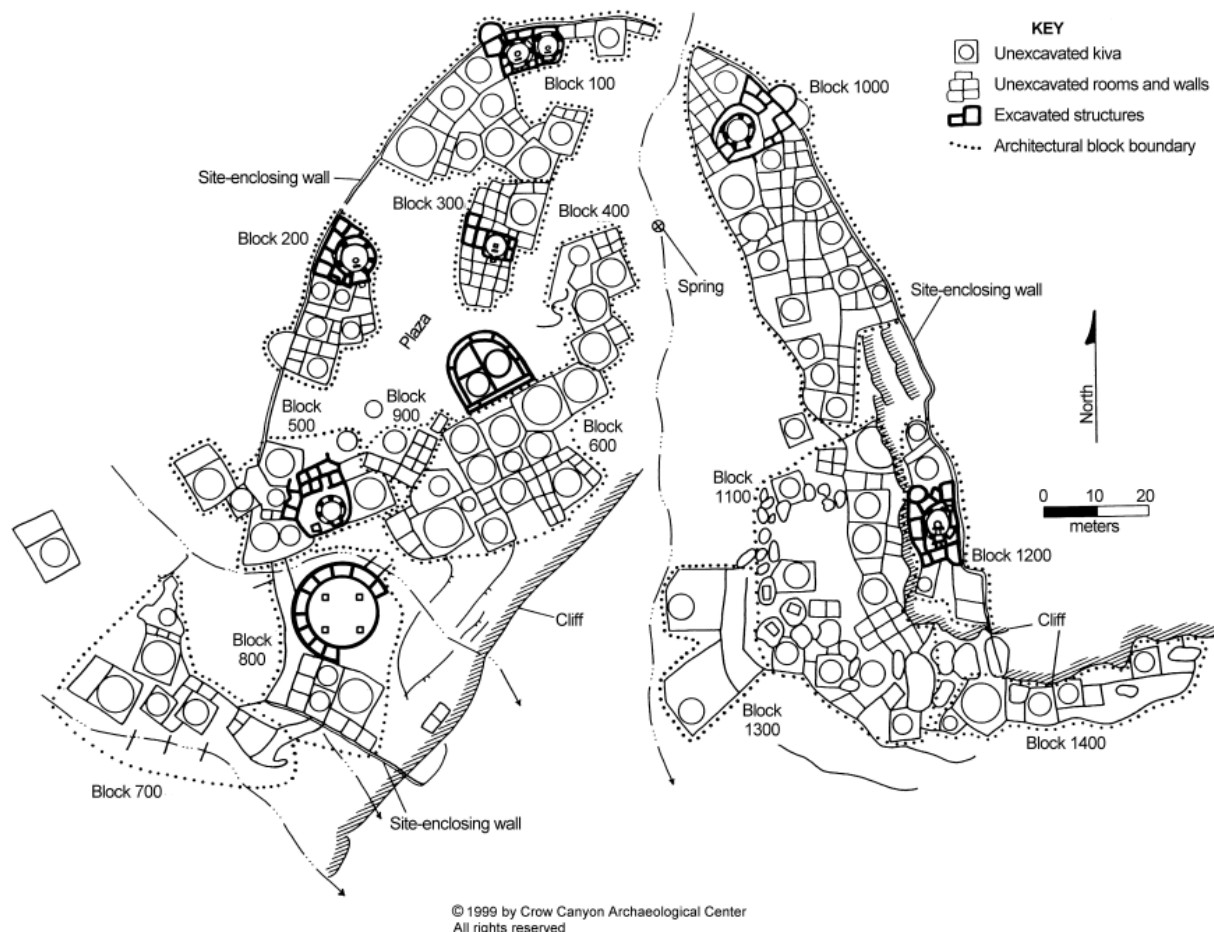


Figure 4.5 Sand Canyon Pueblo Site Map

open to the canyon (see fig. 4.5). Several towers were built around the boundary of Sand Canyon making it easily defensible. The village was split into an east and west side by a spring. This

bisection could have been a coincidence, the result of ancestral Puebloans orienting the village to the spring as it was their main water source, or it could reflect “a bilateral social division of the settlement, one perhaps akin to the dual division found in many historic pueblos” (Kuckelman 2007b). This social division would have been two distinct communities, the summer and the winter people, occupying either side of the bisection and working together at times. If this social division did exist it would likely have had some effect on the inhabitants of Sand Canyon’s reaction to drought conditions.

Unlike previously discussed sites, Sand Canyon was located in an area that was affected only lightly by the drought, but within a few miles of moderately affected areas. Nevertheless, the people of Sand Canyon, like the rest of Mesa Verde society, did migrate out of the area in the late 1270s to early 1280s. It seems unlikely that the people of this community were forced out of the region by direct effects of drought in the form of decreased agricultural production and indirect effects in the form of increased social tension and warfare. They would have been able to produce enough maize to survive the drought without migrating away from Mesa Verde. Still the inhabitants of Sand Canyon would have been aware of the conditions faced by nearby villages such as Castle Rock and Woods Canyon and perhaps migrated out of fear of worsening drought conditions and/or social instabilities.

The depopulation of Sand Canyon Pueblo appears to have involved ritual closure. As at other ritually abandoned sites, “roofs of numerous structures at the site had burned to some extent” (Kuckelman et al. 2007a). There is also some evidence of warfare or skirmish at Sand Canyon at the time of depopulation. Several instances of human remains were found throughout the village during its excavation. Sand Canyon may have experienced “a violent event that resulted in the careless deposition of human remains” which appears to coincide with the

depopulation of the village (Kuckelman et al. 2007b). The deposition of human remains at Sand Canyon is unclear which makes it difficult to tell whether these people were killed in a battle. It is also possible that some inhabitants of Sand Canyon did not migrate with the rest of the village and were attacked after most of the population had already left.

Like Castle Rock and Woods Canyon, the layout of the village suggests that its inhabitants feared attacks. They had a large population which would have deterred attackers. They also constructed a large wall and towers around the perimeter of the village. Furthermore, “several nonlocal projectile points were recovered” that are typical of the Fremont people from a region to the northwest of the Mesa Verde region (Till and Ortman 2007). This suggests that there could have been attacks on Sand Canyon from non-Puebloan communities. This does not rule out the idea that Sand Canyon was “attacked by Pueblo people from one or more other villages. Competition for dwindling resources might have been at least one catalyst for the violence documented at various sites in the Mesa Verde region” (Kuckelman et al. 2007a). Due to worsening drought conditions, ancestral Puebloans from nearby villages that faced worse drought conditions may have attacked Sand Canyon to obtain food and water. Like at Castle Rock, such battles may have been the result of an environmental refugee situation and failing social networks between Sand Canyon and their neighbors in less advantageous areas.

The depopulation of Sand Canyon was not caused by their inability to produce enough maize as was possibly the case in moderately and severely affected sites. Despite being in a low drought-affected area, Sand Canyon has several important similarities with moderately affected Castle Rock. Initially, both villages had measures for protection such as large boulders or an enclosing wall. The occupation of both villages ended in conflict that resulted in the death of village inhabitants. Also, both communities appear to have ritually abandoned their villages

shortly after the conflict. Finally, both villages lie on the more favorable side of a drought condition boundary. Castle Rock is in a moderately affected area but very close to a severely affected area. Sand Canyon is in a low drought-affected area but very close to a moderately affected area. The depopulation of these two villages, despite differences in drought conditions and population, could have been similar in nature.

Goodman Point

Goodman Point Pueblo is the largest community considered in this study. Based on tree ring dating, the pueblo “was constructed and occupied during the terminal portion of the Pueblo III period, from about A.D. 1260 until regional depopulation about 1280” (Kuckelman et al. 2009: 5). Despite its relatively short occupation period, the estimated population of Goodman Point is 570 to 800 people (Kuckelman et al. 2009). Like nearby Sand Canyon, the inhabitants of Goodman Point prepared for a possible attack by building an enclosing wall and towers (see fig. 4.6). The pueblo’s large population, paired with the presence of a Great Kiva, suggests that it was an important settlement in Mesa Verde Society.

Like Sand Canyon, Goodman Point Pueblo was located in a low drought-affected area. The inhabitants of Goodman Point may have struggled more than they would in an average year to produce maize but they would have been able to produce enough to survive without migrating. Goodman Point was further away from a drought condition boundary than Sand Canyon which could have further improved their situation. They would have been further away from villages seeking refuge from drought conditions that may have increased tensions in other pueblos like Sand Canyon and Castle Rock.

Goodman Point Pueblo, 2005 Fieldwork



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Figure 4.6 Goodman Point Pueblo Site Map

The depopulation of Goodman Point suggests that it was ritually abandoned during the same period of time as the other sites in this study. Majorities of the kiva roof beams were either salvaged for use at another building or burned (Kuckelman et al. 2009). Goodman Point may have experienced some warfare. The excavation of Goodman Point found 14 instances of human remains. Although direct evidence of violence has not yet been identified on these remains, they were found in similar contexts to many of the remains found at Castle Rock and Sand Canyon. As these sites exhibited clear signs of violence near the end of their occupations, the “remains at Goodman Point might also be indicative of violence associated with the depopulation of the village and the region” (Kuckelman et al. 2009: 66). Warfare at Goodman Point during this time period could suggest serious internal dispute because the drought conditions were fairly mild. Unlike the other instances of warfare in this study, Goodman Point is not on the boundary between differently affected drought areas. However, “Goodman Point Pueblo served as the center of what was perhaps the most populous community in the Mesa Verde region between A.D. 1260 and 1275” as suggested by the size of the pueblo (Kuckelman et al. 2009: 65). This may have made it a target for desperate attackers because they would have been sure to find food and water at Goodman Point.

Goodman Point, like other nearby sites, was ritually abandoned despite its location in a low drought-affected area. The drought did not force the inhabitants of Goodman Point to depopulate their village. Tensions created by the drought could have resulted in warfare and prompted the depopulation of the village.

Factors Affecting Multiple Communities

The interactions between the communities discussed above are another important aspect to consider. Two important factors that affected multiple communities in this thesis are a potential refugee situation and a lack of division of labor in ancestral Puebloan society. The word refugee implies a modern state system that was not present in the thirteenth century Mesa Verde region. However, the situation of individuals in the Mesa Verde region may have been strikingly similar to that of modern refugees. Therefore, I will use the term ‘primitive refugees’ when discussing this situation because of the lack of a modern state system. The lack of division of labor within ancestral Puebloan society may also have contributed to the migration.

Primitive refugees would logically have moved in with nearby family members before they would have depopulated the region all together. Individual communities in severely and even moderately drought-affected areas most likely did not leave the region at the time that they depopulated their homes because of their close proximity to family members in neighboring communities. In less wide-spread disasters, such an attack on a specific village, these familial ties would be a valuable resource. A community or family could take temporary refuge with their nearby relatives. However, the mass effects of the drought across the Mesa Verde region created too large an issue to be solved by familial ties and social networks. The social networks that likely existed between Cowboy Wash and nearby Castle Rock may have been widely ignored in the drought because of the desperateness of the situation for both communities.

Another issue within ancestral Puebloan society that would have affected the Castle Rock, Cowboy Wash, and Woods Canyon communities, in particular, as they were in the least viable areas, is a lack of division of labor. Overall, it was possible for the landscape to produce enough maize to support the entire ancestral Puebloan society (Van West 1994). If communities

in viable areas, like Sand Canyon and Goodman Point, had grown enough maize to trade with communities in nonviable areas, like Cowboy Wash, Castle Rock, and Woods Canyon, for other products then the mass migration may not have occurred. Due to the population growth and expansion of ancestral Puebloan society in the 1260's, there was no viable land to move to when the drought hit in the late 1270's (Adler et al. 1996). This means that communities in non-viable areas could not move to a viable area without encroaching upon the land of another community. There simply was not enough viable land during the drought to support a society of that size that relied on each family growing enough food to support themselves rather than on a trade network where food was grown on viable land. This lack of division of labor is also exemplified in a study of kiln firing groups by Wesley Bernardini. This study found that the primary form of pottery production was by individual family units rather than by specialized potters (Bernardini 2000). Each family unit was creating its own pottery rather than having one group of people dedicated to pottery production. This demonstrates that each family unit was economically independent from each other which could have proved problematic in times of drought.

Inter-community factors played an important role in the variety of reactions seen in the Mesa Verde region. Primitive refugees may have created a desperate situation for the entire Mesa Verde society by creating over population in some areas. Lack of division of labor could have made survival even more difficult for ancestral Puebloan society especially for those living in severe and moderate drought-affected areas. Interactions between the communities in this study show a complicated and unique set of circumstances leading up to the depopulation of the region.

Summary

From Cowboy Wash to Goodman Point, the situations and reactions of villages during the late thirteenth century drought varied widely. While some appeared to have simply left their homes, others fought hard to protect their homes, only to purposefully depopulate them shortly thereafter. Despite the wide range in drought conditions, from survivable to impossible, all villages in the Mesa Verde region were depopulated between 1275 and 1280. The warfare exhibited at many of these sites may have been a contributing factor to the migration of the ancestral Puebloans. This warfare may have come from an outside source or it may have been caused by internal tensions created by the drought. These tensions may have been similar to modern day refugee situations where migratory patterns within the Mesa Verde society created distinct groups of 'have' and 'have-nots'. The 'have-nots', those living in severely affected (and possibly moderately affected) areas, became primitive refugees in search for food and water. The 'haves', those living in low-affected and moderately affected areas, could not handle the increase in population creating a conflict within the society.

V. The Pueblo Response

In this chapter I argue that, in addition to drought and warfare, Puebloan worldview should also be considered as one of the major factors that led to the collapse and mass migration of ancestral Puebloan society. In order to understand the response of ancestral Pueblo people to the 1270s drought, it is important to also understand present-day Puebloan philosophical views. By understanding how Mesa Verde people viewed the world around them it may become clearer how they would have reacted to the environmental changes and social tensions of the 1270s. Puebloan views on their place within their environment, farming, warfare, and migration are essential to understanding how they would have perceived the circumstances that prompted the depopulation of the Mesa Verde region. I will also explore Puebloan philosophy as it is expressed in writing by contemporary Pueblo authors. While Puebloan worldview has obviously changed over the past 700 years, contemporary Puebloan worldview is the most similar modern worldview to the worldview of ancestral Pueblos. The insights of modern Puebloan philosophers may also be informed by events in their culture's past. In this chapter I will attempt to determine what aspects of Puebloan philosophy may have been influenced by the thirteenth century and other significant events in Puebloan history, versus aspects that are more likely to have remained stable over time. Taking the possible discrepancies between modern Puebloan philosophy and the belief system of their ancestors into account, the insights of Puebloan worldview add another layer of complexity to the thirteenth century migration.

I will include several sources from modern Puebloan cultural leaders including Dr. Rina Swentzell, Tito Naranjo, Dr. Tessie Naranjo, Simon Ortiz, Dr. Alfonso Ortiz, and Roxanne Swentzell. Rina Swentzell is a community member of Santa Clara Pueblo as well as a doctor in American Studies. Tito Naranjo earned his masters in social work, was a Santa Clara Pueblo

community member, and served on the Native American Advisory Group for Crow Canyon Archaeological Center. Tessie Naranjo is also a community member of the Santa Clara Pueblo. She holds her masters in health education and a doctorate in sociology. Simon Ortiz, a community member of the San Juan Pueblo, is a writer and poet who utilizes traditional Native American storytelling styles in his works. Dr. Alfonso Ortiz is both a cultural anthropologist and a community member of the San Juan Pueblo. Roxanne Swentzell, daughter of Rina Swentzell, is an artist and traditional Puebloan permaculture expert. In this thesis I use many works by these authors to show how the worldview of ancestral Puebloans may have affected how they reacted to the drought.

Origin Story

Perhaps one of the most important stories in Puebloan philosophy is that of the origin of the Pueblo people. While most Puebloan myths are specific to one or a handful of communities, origin stories are reiterated throughout the Pueblo world today. In one version, Pueblo ancestors originally lived under the surface of a lake until one day they sent two warriors to explore the world above. Eventually, the rest of the community that had remained in the lake followed their leaders out of the lake and into the region they have inhabited ever since. Since the exact details vary from community to community, it is perhaps more important to explore the meanings and impressions of the story rather than the exact details. The essence of this story is perhaps best illustrated by the following poem:

The Creation, According to Coyote

“First of all, it’s all true.”
Coyote, he says this, this way,
humble yourself, motioning and meaning
what he says.

You were born when you came
from that body, the earth;
your black head burst from granite,
the ashes cooling,

until it began to rain.
It turned muddy then,
and then green and brown things
came without legs.

They looked strange.
Everything was strange.
There was nothing to know then,

until later, Coyote told me this,
and he was b.s.-ing probably,
two sons were born
Uyuyayeh and Masaweh.
They were young then,
and then later on they were older.

And then the people were wondering
what was above.
They had heard rumors.

But, you know, Coyote,
he was mainly bragging
when he said (I think),
“My brothers, the Twins then said,
‘Let’s lead these poor creatures
and save them.’ ”

And later on, they came to light
After many exciting and colorful and tragic things of adventure;
And this is the life, all these, all these.

My uncle told me all this, that time.
Coyote told me too, but you know
how he is, always talking to the gods,
the mountains, all the stone all around.

And you know, I believe him.

(S. Ortiz 1992: 41-42)

Understanding the origin myth of the Puebloan people is extremely important because it is, in many ways, the foundation to understanding all of the Puebloan philosophy. As seen from S. Ortiz's poem, Puebloan philosophy emphasizes the belief that Puebloan people are extremely attached to their homeland. Furthermore, the belief that the Puebloan people are made of the earth resonates deeply throughout the Puebloan world. Ideas in the Puebloan origin story affect many other areas of Puebloan philosophy as well including a strong connection to the earth, ideas about farming practices, and sense of place which related heavily to migration.

Connection to the Earth

One of the core beliefs of Puebloan philosophy is the idea that people are connected to the earth. This belief is manifested in the traditional Puebloan pottery making process. As described by Puebloan cultural leader and traditional style potter Tessie Naranjo, "working with clay, which is of the earth, of the mother, is necessarily approached with care, respect and reverence. Praying, or talking to the clay, then, is part of the traditional process of pottery making, potters talk to the clay during the entire process of digging coiling, smoothing, burnishing, polishing, and firing" (Naranjo 1996: 187). Based on this description, it is clear that traditional Puebloan philosophy views the earth as a living entity that is a central aspect of everyday life. Naranjo goes on to explain that while making pottery, Potters pray to Nung-quijo, or "the Old Clay Lady", who "connects the people to the earth" (Naranjo 1996: 188). This suggests that ancestral Pueblos, who likely viewed the world in a similar way to the traditional viewpoint described by Naranjo, saw themselves as deeply-connected to the earth. If so, drought may have caused ancestral Pueblos to question this connection or to question how the earth felt about them.

The importance of connection to the earth is reiterated by Tito Naranjo and Rina Swentzell. In their article “Healing Spaces in the Tewa Pueblo World” they discuss the Puebloan idea of dichotomies and harmony. In Pueblo ideology unity between humans and nature is achieved through opposites, such as summer and winter or life and death (Naranjo and Swentzell 1989). The idea of opposites is manifested in the layout of many ancestral Puebloan villages including Sand Canyon Pueblo. The pervasiveness of this ideology in the architecture of entire villages shows that this belief was important to ancestral Pueblos as well. According to Puebloan philosophy, balance is created by opposites. Dichotomies are meant to create harmony between individuals, society, and nature. The drought and warfare that marked the 1270s in the Mesa Verde region may have called the balance of the world into question for ancestral Pueblos, and this may have prompted members of the society to call for change.

Puebloan connection to the earth also may also have affected how ancestral Pueblos viewed their physical communities. In the Western worldview of most modern Americans, a person’s physical house ideally represents a place of belonging and comfort. When a person moves to a different building they are leaving not just a house but their home as well. However, ancestral Pueblos “did not settle in one place for a long time, but rather emulated the movement of the seasons, wind, clouds, and life cycles by moving frequently. They responded to the movement of floods, drought, and social tensions... Their sense of ‘home’ was in the space between the earth and the sky” rather than a physical structure (Swentzell 1993: 145). This would account for the relatively short occupation periods of most of the villages in this study. It explains the patterns of movement within the Mesa Verde region before the 1270 drought. The 1280 migration was on a much larger scale than previous movements of ancestral Puebloan people in that the entire population depopulated their homes and left the Mesa Verde region.

Earlier movement patterns consisted of communities within ancestral Puebloan society moving to different areas within the Mesa Verde region. Despite the differences between the 1280 migration and pre-1270 movement, this mentality may explain what was going through the minds of the individuals migrating out of the Mesa Verde region. Assuming this mentality was in the minds of ancestral Pueblos during the 1280 migration, they may not have perceived their migration as an immensely significant event. From a Western perspective, the migration represented the movement of a society from their home but from a traditional Puebloan perspective the migration may simply have been the movement of people from one area of their home to another.

People and Farming

As an agrarian society, farming was extremely important to ancestral Pueblos. As previously discussed, opposites are central to Puebloan philosophy. In traditional Puebloan farming there are 2 fundamental sets of opposites that contribute to the success of farming practices. “The Sun for warmth and life-giving force, the Earth for nutrients, Water to sustain life, and Humans to properly appease the spirits. Without this quadrangle there will be no crops” are these sets of opposites (Ford and Swentzell 2015: 332). Decreased crop outputs caused by drought may have called into question how well humans were appeasing the spirits because humans are opposite water in the Puebloan worldview. In Puebloan philosophy “the most fundamental questions for agriculture and life are: What is water, and where does it come from?” (Ford and Swentzell 2015: 333). As the ancestral Pueblos were desert agriculturalists, the importance of these questions is understandable. According the Puebloan belief system, the answer to these questions is that water is a blessing from Cloud beings who can “make it

precipitate in response to prayers and propitiations. They can determine the location and the amount of following ceremonial exultations. Clouds are representations of deceased ancestors” (Ford and Swentzell 2015: 333). Ancestral Puebloans in the Mesa Verde region would have seen their prayers unanswered as the drought wore on. Social tensions, which would have already existed due to food shortages, could have been worse considering this worldview because it places blame for the drought on humans. The drought may have been blamed on individuals or communities, and this could have led to warfare. The significance of water to the ancestral Puebloan’s agrarian way of life may have resulted in increased social tensions during times of drought.

The importance of water in Puebloan culture is further evident in ancestral Puebloan petroglyphs. Of the two petroglyphs that represent water, as seen in Figure 5.1, both “capture movement, an important metaphor in the [Puebloan] worldview that is inherent in rainfall and flowing water, both horizontal and vertical... Clouds, wind, and rain are expressions of movement and are one” (Ford and Swentzell 2015: 333). The relationship described here between water and movement shows how important Puebloan worldview is when deciphering the events of the 1270s. Perhaps the migration was in response not just to the conditions created by the drought, but to the imbalance in nature implied by the drought. The ancestral Puebloans may have thought the world had become static due to the lack of rain. In order to create movement again, and thus end the drought, the ancestral Puebloans may have created movement in the form of migration.

Traditional Puebloan farming practices relied on prayer as much as it did on rainfall and sunlight. Many communities in the region would have struggled to produce enough food to survive. The ancestral Puebloans living in these communities may have felt that their world was



Figure 5.1: left: spiral petroglyph from Northern New Mexico right: clouds, rain, and corn petroglyph from Three Rivers, New Mexico

unbalanced. Particularly the communities of Castle Rock, Woods Canyon, and Cowboy Wash would have noticed a distinct change in their environment and farming efforts between 1270 and 1275. As discussed in Chapter Three, the time span between 1260 and 1270 was a time of plentiful rainfall and population growth. The stark difference between this environmental situation and the drought of the 1270s may have called the effectiveness of traditional Puebloan farming practices into question. This may have contributed to increased social tensions.

Warfare and Death

Since several of the sites in this study experienced instances of warfare at the end of their occupation, it is necessary to explore traditional Puebloan views on warfare and death. These instances of warfare were likely a contributing factor to the migration. Furthermore, since these instances of warfare were more dangerous, because of the recurved bow, many ancestral Puebloans may have felt more fear than they did in previous time periods. Their chances of dying or being seriously injured in battle were higher than before the introduction of the recurved

bow. The significance of these battles in the minds of ancestral Puebloans may have played a part in their decision to migrate out of the Mesa Verde region.

How traditional Puebloan philosophy views life says a lot about how warfare fits into their perspective. Human life “is based on philosophical premises that promote consideration, compassion, and gentleness towards both humans and nonhuman beings” in modern Puebloan philosophy (Swentzell 1993: 141). Based on this information, warfare was not taken lightly by ancestral Puebloans. In order to go against societal philosophical views and kill not just humans but other members of their society, there would have had to have been social or environmental pressures (or a combination of the two) that would have driven them to warfare. Of course, the communities on the outskirts of the Mesa Verde region were experiencing moderate to severe drought conditions. The environmental conditions likely created social tensions therefore it is entirely possible that, despite the Puebloan belief in peace and kindness, as described by Swentzell, ancestral Puebloan communities were responsible for the warfare in the 1270s. However, this anti-warfare ideology in Puebloan philosophy may support the idea that the warfare was not initiated within ancestral Puebloan society. The warfare could have been a result of attacks from nearby societies who were also feeling the effects of the drought. As there are multiple instances of warfare in the Mesa Verde region it is entirely possible that each instance had a unique cause. The battle at Sand Canyon may have been the result of attacks from other ancestral Puebloan communities living in nearby more severely-affected areas. While the battle at Castle Rock may have been the result of attacks from non-Puebloan communities. Both scenarios are entirely possible given the environmental and societal pressures on both ancestral Puebloan society and nearby non-Puebloan societies.

Death is also an important window into understanding the Puebloan worldview. In order to understand the Puebloan rituals surrounding death, it is important to remember the significance of dualities present in Puebloan philosophy. As exhibited by the appearance of separation of Sand Canyon Pueblo into two halves, the significance of dualities may not be a new concept in Puebloan philosophy. Traditionally, the summer and winter sides in a village dictated much of Pueblo life but there are two important rites of passage in Puebloan life that are not dictated by these sides. Four days after the birth of a child there is a naming ceremony that emphasizes the “passage of the child into the society as a whole” (A. Ortiz 1969: 122). At death the Puebloan “soul passes, not from his moiety, but from the whole society... [This] emphasizes the unity of the society at the beginning and the end” of life (A. Ortiz 1969: 124). These two instances of the community coming together as a whole show the importance of birth and death within the Puebloan worldview. This suggests that, in the aftermath of the warfare present in the thirteenth century Mesa Verde region, communities may have become more united. The death of so many community members in villages such as Castle Rock and Sand Canyon may have been significant enough to cause the remaining community members to come together to find a solution to the social tensions within Puebloan society and between Pueblos and other nearby groups. Puebloan philosophical views on death show that the warfare of the thirteenth century had the potential to be a unifying force as well as a destructive one.

Death in Puebloan philosophy can also be understood through katchinas (see fig. 5.2). Much of the traditions surrounding katchinas is based on the idea that the “masks are representations of the dead, and, indeed, the very substance of death” (Bunzel 1973: 845). In the origin story of katchinas, the katchinas used to come to the dances however, they would always take someone with them when they left, meaning that person died. Because of this, the katchinas



Figure 5.2: Kachina dances are ceremonial events involving elaborate costumes

decided not to come to the dances anymore. Instead, during a kachina dance the kachinas appear in the form of rain in order to prevent any more death (Bunzel 1973: 844). Kachinas further emphasize the importance of both death and connection to the earth in Puebloan philosophy. They show the intricate ways in which the Puebloan worldview emphasizes the connections between the dead, the living, and the earth. Kachinas reiterate the idea that the death present in the thirteenth century due to warfare and drought may have united communities rather than driven a wedge between them.

Migration and Movement

Migration is another important part of life according to Puebloan philosophy. Unlike many other agrarian societies, for whom migration is uncommon, ancestral Pueblos have a history of frequent movement. This may be largely attributed to their desert environment, leaving them susceptible to drought, but it also has roots within Puebloan philosophy. According to Naranjo, “movement is one of the big ideological concepts of Pueblo though because it is necessary for the perpetuation of life. Movement, clouds, wind, and rain are one. Movement

must be emulated by the people” in the form of relatively frequent migration (Naranjo 1995: 248). The importance of migration to ancestral Puebloans is evident in the relatively short occupation periods of many of the sites in the Mesa Verde region. With the exception of Woods Canyon Pueblo, all the other sites in this study were occupied for less than 50 years. This means that it was not uncommon for people to migrate to new areas within the Mesa Verde region. According to both archaeological data and traditional Puebloan philosophical views, migration was an important part of ancestral Puebloan life. Migration may have been the obvious choice for the ancestral Puebloans in the face of drought and the warfare that followed. This ideology could have prompted the entire society to leave although most of people did not live in areas that were severely affected by the drought. It is also possible that modern Puebloan philosophy’s view on migration is informed by the thirteenth century depopulation of the Mesa Verde region. This ideology may have arisen as a resource for survival during times of drought after the events of the thirteenth century.

Why ancestral Puebloans moved is less important than the idea that they moved and that movement is an essential part of Puebloan life (Naranjo 1995). This thesis largely addresses why ancestral Puebloans migrated out of the Mesa Verde region. As discussed, there are many factors that may have contributed to the migration of ancestral Puebloans from the Mesa Verde region. Drought, resource imbalances, social tensions, warfare all may have contributed to the migration. But in Puebloan philosophy these issues are much less significant than the continuous theme of migration. In the ideology of Naranjo’s ancestors, passed down to her through many generations, people migrated because they are Puebloan and migration is an important part of being connected to the earth.

Continuity and Change in Pueblo Philosophy

The thirteenth century drought was a major event in Puebloan history. It most likely caused some shifts in Puebloan culture to allow future Puebloans to weather drought conditions more effectively than their ancestors. Unlike modern Puebloan communities thirteenth century Mesa Verde region communities had some degree of interdependency between families but they also relied heavily on family self-sufficiency (Adler et al. 1996). Before the drought, there may have been much less reliance on neighboring communities because there were enough resources for families to support themselves. Trade was likely less common between communities because, while there were some social ties, families were expected to be able to survive by themselves without much help from others in their community. As a result, the events caused by the thirteenth century drought may have caused Puebloan culture to change from one where families farmed only enough food to provide for themselves to one where the community comes together to support all community members.

Evidence in support of a self-reliance economic system rather than a community-reliance economic system in ancestral Puebloan society can also be found in the archaeological record. The archaeology of pre-drought villages reveals that plazas are much smaller than in later time periods. This shows that community gatherings were possibly less significant to pre-drought Puebloan communities than post-drought communities. Pueblo III kivas were, on average, smaller than those in other time periods (Lipe 1989). This may be a result of overcrowding but it may also suggest that kivas were used by family units rather than by the community as a whole. This emphasizes the importance of family over community in ancestral Puebloan society that may have caused a failure to create efficient trade routes. Another line of evidence that suggests a lack of community reliance is a change in corn grinding practices. Prior to 1300 A.D., Pueblo

communities appear to have relied on unit pueblo households, rather than communities, for organization (Ortman 1998). A system where communities living in profitable areas, like Sand Canyon and Goodman Point, produced surplus maize and traded this surplus with other communities on less profitable land for goods such as clothing and tools may have weathered the drought more successfully.

From my experience in modern Puebloan communities in Northern New Mexico, Ohkay Owingeh, and Pojoaque, modern Puebloan culture emphasizes the importance of community reliance. One of the primary examples of this reliance is feast days, an annual event where the entire community gathers and shares food. Feast days clearly exhibit an encouragement within Puebloan culture to grow a surplus rather than to provide only enough for one family. On feast days there are also traditional dances performed. Some of these dances were given to the community by non-Puebloan tribes. This shows that not only did Puebloan culture change to encourage interdependency within a community but also to create positive relations with their non-Puebloan neighbors. Pueblo philosophy today is in many ways informed by past events.

Despite these assumed changes within Puebloan philosophy caused by the thirteenth century drought, there is much in their history that supports the idea that modern Puebloan philosophy is similar in many aspects to that of their ancestors. Unlike the vast majority of North American Native Americans, “after more than four centuries of European exploration and colonization, most of the Pueblo people still live in places of their own choosing. The importance of this for cultural survival cannot be overemphasized” (A. Ortiz 1994: 297-298). As discussed in the connection to the Earth section of this chapter, the idea of belonging to a place or a landscape is extremely important in Puebloan philosophy. The fact that they have remained in this geographic area through centuries of extreme change brought on by the arrival of European

colonists signifies that Puebloan philosophy may have maintained certain aspects through all of this change. Logically, these aspects would include a strong connection to the earth as it had already existed in Puebloan philosophy before the arrival of the Spanish. Farming is another aspect that was likely to have remained somewhat constant through the arrival of the Spanish. While new crops, such as cotton, were introduced into Puebloan farming practices, the philosophy behind Puebloan farming practices had the opportunity to stay more constant because of the constant landscape in which these farming practices took place. The fact that Pueblos have occupied the same general geographic location, and that place is extremely important in Puebloan philosophy, suggests that aspects of Puebloan worldview that relate to place may be fairly constant throughout history.

The endurance of some aspects of Puebloan philosophy is also seen in the face of the arrival of the Spanish in the late sixteenth century. A brief history of the colonization of the Southwest by the Spanish includes significant hardship for Puebloan and other Native American communities (Simmons 1979). The Spanish could not grow enough food to support themselves and therefore forced Puebloan communities to produce enough food to feed them as well. Despite being excellent desert farmers, Puebloan communities often struggled to keep up with the demands of the Spanish. Missions also marked the colonization of the Southwest which increased the already high tensions between the Spanish and Pueblos. Physical conflict between the Pueblos and the Spanish was common and often brutal (Sando 1979). In some cases it resulted in the destruction of entire Puebloan villages. However, the arrival of the Spanish did not result in the disappearance of Puebloan culture. "Rather, the Tewa and the other eastern Pueblos with dual organization have been among the most enduring primitive societies in the world, considering the serious and sustained pressures toward change to which they have

been subjected” including Spanish colonialism and missionization (A. Ortiz 1969: 132). These serious and sustained pressures are no doubt a reference to the arrival of the Spanish. Despite the pressures put on Puebloan cultural survival by the Spanish, Puebloan philosophy has persisted to present day.

Another explanation for this cultural survival (other than the significance of place), can be found within the organization of Puebloan tribal law. Unlike most Native American tribes in North America, Puebloan communities were successful in evading legislation meant to confine and control Native American communities. Starting in the late sixteenth century,

“Pueblo communities of the Southwest developed very effective tribal organizations in response to Spanish and Mexican hegemony. They continued that policy under the regime of the United States. By evading legal status as Indian for almost a century, they mitigated pressures from federal Indian law toward assimilative standardization of Indian institutions on an Anglo-American model. There were also pressures toward assimilative ethnogenesis (i.e., pan-Indianism), which were mitigated by a parochial exclusionary policy discouraging intertribal marriage and extruding native cultural entrepreneurs” (MacLachlan 1994: 343-344).

While other Native American tribes’ cultures were decimated by colonization, American westward expansionism, and expansionist legislation, Puebloan communities were able to preserve much of their cultural heritage. This makes Puebloan philosophy somewhat unique among Native American philosophies in that it can be assumed that there are aspects of it that have survived the drastic environmental and inter-societal changes experienced by Puebloan communities over the last 700 years. None of this is to say that Puebloan philosophy and culture

are static. Like any other modern culture, Puebloan culture has changed to accommodate the modern world in which it now exists. It is to say that there is good reason to believe that modern Puebloan philosophy is important in understanding the worldview of their ancestors.

Summary

An examination of modern Puebloan philosophy shows that the events of the thirteenth century may have been highly influenced by Puebloan worldviews. The drought, and its immediate effects, would have almost certainly been interpreted in terms of Pueblo philosophical concepts. Puebloan beliefs on their origin and their strong connection to the world around them stress this significance. Farming beliefs also stress the significance of the thirteenth century drought. Based on modern Puebloan worldview, the drought caused an imbalance in the world that led to agricultural failure in many communities. Warfare and violence, common in the thirteenth century, are not promoted in modern Puebloan philosophy but the high tensions and desperate conditions felt by communities in the thirteenth century in severely-affected and even moderately affected areas could have caused an increase of warfare within Puebloan society. Several aspects of modern Puebloan philosophy suggest that the death experienced in the thirteenth century may have unified a community or possibly the society rather than pulling it further apart. Like many other aspects of Puebloan philosophy, death is also tied to the Pueblos belief in connection to the Earth. While Puebloan philosophy is obviously quite intricate, connection to the Earth is clearly one of the main pillars of their worldview. Puebloan worldview surely played a part in the events of the thirteenth century. In order to understand the past, it is important to contextualize the events in terms of the worldviews of the people who

experienced them. In this way it is possible to have a deeper understanding of the individual circumstances faced by each community in this study.

VI. Conclusion

The migration of the ancestral Puebloan society out of the Mesa Verde has been believed to have been the result of drought conditions that affected the entire population. Recent work has shown that the effects of the 1270s drought varied across the region, and that the region overall could have still produced enough food to feed the population that was present. Furthermore, it showed that the majority of the population did not live in areas affected severely enough to force mass migration. The reactions of ancestral Puebloan communities varied because of the variety of drought conditions they experienced. The excavation of Cowboy Wash provided information about an ancestral Puebloan community living in a severely-affected area at the end of the thirteenth century. This data, combined with information from previous excavations at Goodman Point, Castle Rock, Sand Canyon, and Woods Canyon pueblos, provided information on a variety of drought conditions and reactions that demonstrate the complexity of ancestral Puebloan society. Across these five communities, the drought impact on agricultural production ranged from low to severe. There is also evidence of a diverse set of reactions across communities, including warfare, ritual abandonment, and seemingly unintentional abandonment (as seen at Cowboy Wash). Because the entire society collapsed despite this variation, I suggest it is important to understand how the people of this society would have perceived the situation they faced. I therefore took a closer look at Puebloan worldviews in an effort to understand Puebloan perspectives on drought, death, and migration. This research led to a number of possible explanations for the 1270s depopulation of the region. It is also important to remember that individuals within communities had their own perspectives that may have differed from the general perspective of their community. While it is necessary to discuss and understand a

community's reaction and perspective, it is also necessary to remember that individuals lived in this society and within these communities.

Variation in Drought Experiences

Drought conditions in the Mesa Verde region in the thirteenth century were highly variable. Some communities, such as Sand Canyon and Goodman Point, experienced only mild drought conditions. They would likely have been able to produce maize in the majority of years in the 1270s. Other communities, such as Woods Canyon and Castle Rock, suffered more acute drought conditions. It would have been more difficult for these communities to survive but it may have been possible. Still other communities, like Cowboy Wash, suffered severe drought conditions and had no hope of surviving on maize based agriculture through the 1270s. As Sand Canyon and Goodman Point had much higher populations than all of the other communities in this study combined, drought conditions alone could not have been the sole factor that led to the migration of the ancestral Puebloans.

Although both warfare and drought were seen in ancestral Puebloan society and other societies across the Southwest before the 1270s, mass migration between regions was not as common. Small scale migrations of communities within the Mesa Verde region were much more common. As populations grew because of profitable growing seasons in the 1260s, families dispersed across the region. The areas they dispersed into were profitable during the 1260s but fell into various levels of decline during the 1270s drought. These drought conditions may have created extreme social tensions that led to the other events of the thirteenth century. The drought was not the only cause of the depopulation of the Mesa Verde region, but it is unlikely that the region would have been depopulated without the drought. The drought was a catalyst for tension

both within ancestral Puebloan society and between the ancestral Pueblos and their non-Puebloan neighbors. The thirteenth century drought was one of many causes that prompted the migration of the ancestral Pueblos.

Drought and Conflict

The thirteenth century saw a rise in warfare in the Mesa Verde region. While instances of warfare were not infrequent within ancestral Puebloan society in earlier time periods, the late thirteenth century was a time of increased warfare. New technology resulted in a more fatal kind of warfare than that of earlier time periods. Furthermore, drought conditions created extreme differences between communities within ancestral Puebloan society. While some communities struggled to produce enough maize to survive, others saw only mild effects of the drought. There were also tensions that existed between ancestral Puebloan society and their non-Puebloan neighbors. Increased warfare in the thirteenth century Mesa Verde region may have been the result of new technology, social tensions within ancestral Puebloan society, or strains between ancestral Puebloan society and other nearby societies.

Warfare in the thirteenth century Mesa Verde region may have been more deadly than previous warfare. The recurved bow was introduced into the region in the twelfth century and likely grew in popularity because of its superiority to earlier self-bows. This new bow technology may have contributed to the rise in warfare evident in the late thirteenth century. Or it may have exacerbated the existing social tensions that arose because of drought conditions. Either way, recurved bow technology likely contributed to social tensions within ancestral Puebloan society and between ancestral Puebloan society and their non-Puebloan neighbors.

Evidence of warfare in Castle Rock and Sand Canyon could have come from Pueblo-on-Pueblo aggression or from outside aggressors. There is evidence to support both scenarios. The wide range of drought conditions in the Mesa Verde region may have led to extreme social tensions within ancestral Puebloan society. These tensions could have caused communities living in more severely affected areas to attack communities in less affected areas in search for food and resources. The villages that were affected by warfare before their depopulation were on the more profitable side of local drought conditions. One explanation for this is that nearby Puebloan communities, who likely would have been aware that their neighbors were not experiencing as severe conditions as they were, attacked in order to survive. This may be true in the case of Cowboy Wash because it was on the border of a huge severely affected area. It may also be true of Sand Canyon because it was one of the largest villages in the area. Goodman Point was the largest community but it was further away from more severely affected areas. Sand Canyon was a large community in a low drought-affected area on the border between low and moderately drought-affected areas. This could have made it a target for nearby Puebloan communities. These conditions would have also made these communities a target for non-Puebloan aggressors.

Drought conditions would have affected non-Puebloan communities and could have driven these communities to attack their ancestral Puebloan neighbors. There was evidence of non-Puebloan individuals found in the human remains at Castle Rock that supports non-Puebloan aggression. There was also evidence of non-Puebloan aggression at Sand Canyon in the form of projectile points. This evidence suggests that at least some of the warfare in the Mesa Verde region was the result of non-Puebloan aggression.

The location of the attacked villages supports Pueblo-on-Pueblo aggression more than it supports non-Puebloan aggression. Castle Rock and Sand Canyon are both near the center of the

region and for outside aggressors to reach these villages, they would have had to pass other communities. In the case of Castle Rock, non-Puebloan aggressors could have come from the west or the south. They would have passed other communities, but these would have been in severely drought-affected areas and may not have been sensible targets. In order to get to Sand Canyon, from any direction, attackers would have had to pass either moderately or low drought-affected communities. Based on human remains and drought condition maps I suggest that Castle Rock was most likely attacked by non-Puebloan aggressors whereas Sand Canyon was more likely attacked by other Puebloan communities.

Drought conditions created social tensions which lead to an increase in warfare in ancestral Puebloan society. The recurved bow may also have contributed to the increase in social tensions and instances of warfare. It has long been assumed that warfare in the thirteenth century Mesa Verde region was the result of either Pueblo-on-Pueblo aggression or outside aggression. However, there is nothing that prevents both options from being true. By using all the information currently available, the most rational scenario includes both Pueblo-on-Pueblo aggression and outside aggression. This scenario takes all the evidence into account and it implies a more complex situation than either Pueblo-on-Pueblo or outside aggression in isolation.

Drought and Migration

The migration of the ancestral Puebloan society out of the Mesa Verde region was likely much more complex than previously assumed. Ancestral Puebloan society did not suffer from one single set of drought conditions and therefore individual communities most likely did not perceive their situations in the same ways. The two largest communities in the Mesa Verde

region, Sand Canyon and Goodman Point, experienced low drought conditions. Based only on drought conditions, the majority of ancestral Puebloan society would not have been forced to migrate out of the region for survival. However, when other factors besides drought are introduced to the picture, migration becomes a much more logical outcome. Increased warfare, drought, and Puebloan philosophical views combined may have been enough to create a mass migration.

Even though movement is common in ancestral Puebloan society, new communities were regularly created as a result of population growth, especially in the time period right before the drought. Ancestral Puebloan society in the thirteenth century must have experienced a more complex situation than just drought in order for the society to feel pushed out of the region. This society had thrived in the Mesa Verde region for hundreds of years. They had also previously weathered droughts comparable to that of the thirteenth century, albeit with a smaller population. The degree to which each individual factor—drought, warfare, and philosophy—played a part in the depopulation of the Mesa Verde region may never be known in detail but it seems likely that without the combination of these elements, the depopulation of the Mesa Verde region would never have happened. Without drought the tensions between communities and societies would not have been as high. Without warfare, these tensions may not have been as evident. And without the Puebloan worldview, the drought may not have been perceived as a need for movement.

Importance of Worldview

Puebloan philosophy shows that the worldview of ancestral Pueblos may have been an important factor in the depopulation of the Mesa Verde region. One of the fundamental elements

of Puebloan philosophy is an emphasis on connection to the earth. This belief informs many other aspects of Puebloan philosophy. One such aspect is how Puebloan philosophy views farming. Puebloan philosophy asserts that humans and prayer have a significant effect on the success of a crop. The drought may have called human actions into question because of the lack of rainfall. Farming also relates to the concept of movement. Movement is an extremely important part of the Puebloan worldview. The natural cycles of the earth are seen as a constant state of movement in the world. Drought conditions in the thirteenth century may have been interpreted as the earth becoming static. This may have called the Puebloan worldview into question because of the lack of movement and a possible previewed failure of prayer.

Puebloan views on warfare and death may also have had an effect on the events of the thirteenth century. Like many aspects of Puebloan philosophy, death is viewed as a connection to the earth. Modern Puebloan philosophy emphasizes the importance of community involvement and reliance. This view may be informed by events of the past because, in the thirteenth century, families were successful if they could produce enough food to feed themselves without having to rely on their community. This shows how important the drought, warfare, and migration in the thirteenth century could have been to Puebloan culture.

When discussing Puebloan philosophy, it is important to remember that the views of modern Pueblos likely differ from their ancestors. But there is also good reason to believe that many aspects of Puebloan philosophy have remained constant over the centuries because of a consistency of place and survival though colonialism. However, there are also some instances where Puebloan philosophy has changed as a result of events of the past. Puebloan worldview would have informed the decisions of ancestral Pueblos in the thirteenth century.

Implications for Modern Climate Change

The reactions of ancestral Puebloans to natural climate change have broader implications beyond this particular episode of history. The varied responses seen throughout ancestral Puebloan communities shows that the concept of ‘societal response’ may not be valid in many cases. Communities in the Mesa Verde region experienced a wide range of environmental conditions that led to a wide range of responses. There was no single ancestral Puebloan response drought in the 1270s partially because there was no single set of drought conditions that was equal across ancestral Puebloan society and partially because individuals and communities are not the sum of their society. Instead of searching for one response common to an entire society it may be more beneficial to investigate the diverse set of reactions that represent individuals and communities within a society. In this way, the complexity of a society can be investigated rather than just one broad description that simplifies a group of people.

Just as ancestral Puebloans responded to environmental conditions in a variety of ways so do people living in the modern world. Ancestral Puebloan society was less diverse than most modern day societies because modern day societies have more complex economies and are more connected on a global scale. American society, for example, is comprised of numerous races, languages, religions, environmental conditions, and political views. Therefore, American society has many worldviews that create a variety of reactions to any situation. Neighbors may see modern climate change completely differently even though they are part of the same society. They may share many of the same beliefs but perceive environmental changes completely differently.

The diversity of reaction in the seemingly homogenous ancestral Puebloan society shows that other societies may be more diverse than previously believed as well. This study suggests that conclusions about homogenous societies may need to be rethought. If ancestral Puebloan society in the relatively isolated Mesa Verde region is heterogeneous than maybe other societies that have been assumed to have a homogenous perspective are more complex as well. In order to truly understand other societies, it is necessary to understand that all societies are made up of a complex web of perspectives created by each individual in that society. By attempting to reduce all these perspectives to one single, societal wide reaction the complexity of the society is lost. Rather than simplifying cultures down to one truth one should seek the many truths that make up a society.

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