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RESEARCH ON THE PUEBLO CULTURE SETTLEMENT SYSTEM FROM THE NORTH AMERICAN SOUTHWEST: RESULTS OF THE SAND CANYON-CASTLE ROCK COMMUNITY ARCHAEOLOGICAL PROJECT

Investigating ancient Pueblo culture from the North American Southwest is a challenging task involving cooperation of scientists from different disciplines, mainly archaeology, history, anthropology, and linguistics. There is also a large body of information in native oral tradition that has enormous potential for enriching our knowledge of the past and our understanding of how Pueblo societies functioned. The paper focuses on one of the most intriguing periods of Pueblo Indians culture, the thirteenth century A.D., in the central Mesa Verde region on present Utah-Colorado border. It was the time of great development of Pueblo societies and close to the century fall of the settlement system and total migration from the area to what is present-day Arizona and New Mexico. One of the projects in the area is Sand Canyon-Castle Rock Community Archaeological Project. The project focuses on analysis and reconstruction of the settlement structure and socio-cultural changes that took place in Pueblo culture during the thirteenth century A.D. in Sand Canyon, Rock Creek Canyon and several other small canyons located in one subarea within the Mesa Verde region, Colorado.

Keywords: Pueblo culture, Mesa Verde region, Sand Canyon, Castle Rock Pueblo, defensive architecture, settlement structure

INTRODUCTION

The North American Southwest is characterized by a large number of pre-Columbian settlements scattered across the area and is generally one of the most archaeologically examined regions in the United States. This region is still inhabited by many groups of descendants of the Ancestral Pueblo people and by other American Indian cultures. Reconstructing Native American cultures from the North American Southwest owes much of its successful progress to the collaboration of researchers from different disciplines, mainly archaeology, ethnohistory, cultural anthropology, sociology, linguistics, and dendrochronology, as well as other sciences, and even hydrology, mathematics and computer sciences. Ethnohistoric and ethnographic data, as well as oral traditions of contemporary American Indians, are vital in the

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archaeological reconstruction of past societies; using tribal oral traditions, and ethnographic and ethnohistoric records to supplement archaeological data can lead to more comprehensive archaeological views and theories.

The Sand Canyon-Castle Rock Community Archaeological Project focuses on analysis and reconstruction of the settlement structure and socio-cultural changes that took place in the Pueblo culture during the thirteenth century A.D. (Late Pueblo III period) in the Mesa Verde region, southwestern Colorado¹. The research project is conducted mainly in three canyons that are part of Canyons of the Ancients National Monument, a legally protected area. These canyons contain the remains of around forty small sites and one large community center, Castle Rock Pueblo, which probably functioned as the community of allied sites all dating to the thirteenth century A.D.

PUEBLO CULTURE IN THE AMERICAN SOUTHWEST AND THE MESA VERDE REGION. METHODOLOGY OF RESEARCH

The origin of the Pueblo culture dates from about 1000/500 B.C. (Cordell 1997). The two main periods of Pueblo culture are as follows: Basketmaker II-III (1000/500 B.C.–750 A.D.) and Pueblo I-V (750 A.D.-present). In the past, the widest territory inhabited by Pueblo Indians (Fig. 1) was the vast area that today encompasses the southern parts of Utah and Colorado, and the northern and central parts of Arizona and New Mexico (Cordell 1997; Plog 1997). Today, there are 20 contemporary Pueblo communities in the reservations in Arizona and New Mexico. Consequently, Pueblo culture exemplifies cultural continuity from ancient times to the present day.

The economy of the Pueblo people was based on farming, dominated by growing maize as well as squash and later beans (Matson 1991). During later time periods (from ca. Pueblo I period-700/750 A.D.), cotton was also cultivated (Cordell 1997; Lipe, Varien and Wilshusen 1999). To supplement crop foods, ancient Pueblo Indians gathered and consumed wild plant foods and procured meat by hunting local animals such as mule deer, rabbits, and turkeys. Wild turkeys were at least semi-domesticated as early as the Basketmaker II period (ca. 500 B.C.-450 A.D.), and domesticated turkeys became the principal source of animal protein for Pueblo Indians by the late Pueblo II period (A.D. 900–1150) (Van West and Dean 2000: 22).

During the Basketmaker period, the ancient Pueblo Indians lived in hamlets or villages of a few or as many as several dozen pithouses (Plog 1997; Lipe, Varien and Wilshusen 1999). Most pithouses were subrectangular or circular in plan, and were dug 0.2 m to 1 m into the ground; the structures became progressively deeper with time. Superstructures and roofs were

¹ This is an interdisciplinary project and consultants and partners of the project include archaeologists, cultural anthropologists, historians and historians of the architecture. The project director is dr. Radosław Palonka, Department of New World Archaeology, Institute of Archaeology, Jagiellonian University in Krakow. The project is conducted with the cooperation with American institutions, Crow Canyon Archaeological Center and the Bureau of Land Management, Colorado.

built of beams and brush or juniper bark, all covered by a thick layer of soil. Entry was by way of a sloping ramp through an antechamber, which was a small room off the south wall of the pithouse.

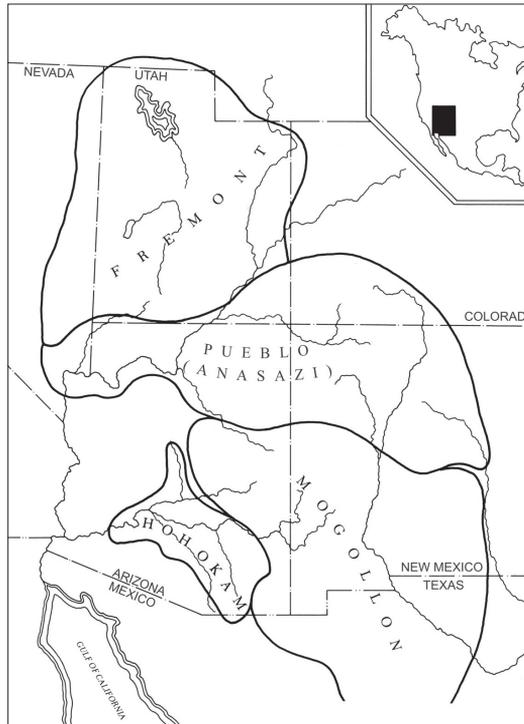


Figure 1. The location of the North American Southwest (after Cordell 1997; modified by M. & M. Przybyła)

During the Pueblo period, architecture underwent a series of significant changes, and buildings two or more stories tall were eventually constructed. The walls of these buildings were built of shaped sandstone rocks or clay adobe bricks, and the roofs were of wooden beams, poles, and brush, topped with a layer of soil. The settlements in the Pueblo I period generally consisted of above-ground masonry rooms usually located in the northern part of the site and pit structures south of the roomblock, and the midden further south. Prudden (1903) classified the sites he examined and recognized a “unit-type pueblo”, that is, a kiva with associated rooms and a trash midden, and that the unit pueblo was the basic building block for large villages. In the Pueblo II period, the site layout usually included one or more habitation units (roomblocks and kivas) (Lipe, Varien and Wilshusen 1999: 200–201, 244, 253). Underground ordinary-size kivas (especially from the Pueblo II or Pueblo III periods) were the

primary domiciles also used for household rituals, although great kivas were nonresidential structures used for ceremonies and other large gatherings (Lipe and Hegmon 1989)².

Many archaeological projects conducted in the Southwest and the Mesa Verde region are now designed around “conservation archaeology” that focuses on gaining the maximum amount of information with the least amount of physical invasion and destruction of the site (Lipe, Varien and Wilshusen 1999). Also, new themes have been introduced to archaeological studies and interpretations, such as the study of ancient migrations and conflicts. More collaboration with other disciplines (especially with ethnohistory, anthropology, linguistics, sociology, and other social sciences) and interdisciplinarity of research, as well as the application of new technologies, have widely become the new standard of archaeological investigations. This includes, for example, better developed dendrochronological methods, paleoenvironmental and settlement studies and computer simulations. Examples of computer simulation include studies by Linda Cordell in the 1970s and 1980s (Lipe, Varien and Wilshusen 1999: 91) and more recent computer modelling (especially Agent-based modelling—ABM) by the Village Ecodynamics Project, a new interdisciplinary project that focuses on examining settlement patterns of sites from the Mesa Verde region in the period A.D. 600–1300 (e.g., Kohler, Gumerman and Reynolds 2005; Varien, Ortman and Kohler et al. 2007; <http://village.anth.wsu.edu/>). Recent years have also seen new anthropological and biological studies of ancient DNA from the northern Southwest (e.g., Kemp 2006).

The Sand Canyon-Castle Rock Community Archaeological Project focuses on analyzing the settlement system and detailed documentation of around forty sites located in three canyons. Documentation is made by drawing and picturing the standing architecture (also using photogrammetry), and electronic maps and plans of the sites are also prepared. Geophysics methods (electrical resistivity and magnetometry) were used in several sites on flat areas and on the canyon slopes. A GIS map has also been partly prepared, showing the distribution of forty sites located in three canyons near Castle Rock Pueblo, the community center (Palonka 2010, 2012). In upcoming seasons the excavations of selected sites are planned, as well as developing cooperation with several contemporary Pueblo groups with the aim of analyzing native oral traditions connected to the area and even particular sites.

ANTHROPOLOGY, ARCHAEOLOGY AND NATIVE AMERICAN VIEWS ON MESA VERDE PREHISTORY

The southwestern region of the U.S. is rich in archaeological sites and is still inhabited by many groups of descendants of ancestral Pueblo people and by other American Indian cultures. Pueblo Indians in the Southwest have successfully preserved many traditions, beliefs, and customs despite hundreds of years of contact with Euro-American culture and active suppression of their native culture. Even under the strong influence of the modern American way of life

² The first Europeans in the Southwest used the term “pueblo” for these settlements, a Spanish term meaning “village”. The capitalized term “Pueblo” is used to denote Indian culture from the North American Southwest, a stage in the development of this culture, and a proper name for a given archaeological site or a current settlement of the Pueblo Indians. Lowercase, “pueblo” refers in general to the traditional settlements of the Pueblo Indians, usually built of stone.

Pueblo people still maintain much of their tradition and practice their traditional beliefs and a partly correlated model of living based primarily on traditional farming (e.g., Plog 1997).

When more systematic and scientific studies of the prehistory of the Southwest and particularly of the Mesa Verde region began at the turn of the nineteenth century, archaeologists and ethnographers (who were often one and the same) worked very closely with different Pueblo societies. However, through time the positive regard of the Indians for the researchers deteriorated – archaeologists concentrated on reconstructing the material culture and on its scientific analysis. Sometimes researchers revealed details of secret ceremonies and profited personally from their research without, of course, sharing these profits with the “objects” of their research. Another area of dispute between archaeologists/anthropologists and American Indians is the archaeological excavation of human remains (e.g., Deloria 1992; Downer 1997; Watkins 2003). Disputes between scientists and tribes have occurred not only in the Southwest but also in other places in North America where American Indians have resented interference from researchers.

The most important legislation regulating many controversial issues is the Native American Graves Protection and Repatriation Act (NAGPRA), passed by the U.S. Congress in 1990 (Lipe, Varien and Wilshusen 1999; <http://www.nps.gov/nagpra/>). NAGPRA, federal legislation that regulates both the excavation of skeletal remains of American Indians and dictates ownership of such remains, specifies that remains and associated funerary objects, sacred objects, and objects of cultural patrimony that are removed from the ground will be returned to the most closely related descendant group (Renfrew and Bahn 2002). Cooperation between archaeologists and American Indians improved after the passage of NAGPRA, partly because of an increased awareness and respect among researchers of the rights of Indians regarding their past and partly because disputes could then be resolved by relevant law. Also, scientists increasingly respect the oral traditions of American Indians; not only do songs and accounts confirm evidence discovered by archaeologists (e.g., Echo-Hawk 1997; Ferguson and Colwell-Chanthaphonh 2006), but they also provide important additional avenues of learning about the past.

In the Mesa Verde region, a climate of cooperation between archaeologists and American Indians is being realized, for example, at Mesa Verde National Park, where Native Americans are involved in consultations and in the park’s public interpretive programs (Lipe, Varien and Wilshusen 1999: 393). Another institution, the Crow Canyon Archaeological Center (CCAC), a leader in conducting archaeological research and collaborating with Indian tribes in reconstructing the past of the Mesa Verde region, has initiated many programs of such cooperation (Lipe, Varien and Wilshusen 1999; <http://www.crowcanyon.org>). In 1994 the CCAC invited Pueblo people from Hopi villages in Arizona, as well as from Taos, San Juan, Santa Clara, Zia, Acoma, and Zuni pueblos in New Mexico to consult and visit archaeological sites such as Sand Canyon Pueblo (located in the northern part of the area where the Sand Canyon-Castle Rock Community Archaeological Project is conducted), and to learn traditional knowledge of these sites from contemporary Pueblo people (Thompson 2002). All of these pueblos are within five days’ walking distance south or southeast of Sand Canyon Pueblo and the Mesa Verde region and could have been places where thirteenth-century emigrants from Mesa Verde settled (Thompson 2002: 257).

In 1995, the CCAC established a Native American Advisory Group comprised of several members from various Indian tribes. The members of this group serve as consultants and provide feedback on research designs and publications, as well as archaeological research, especially the CCAC's policy on the treatment of human remains found during excavations (Thompson 2002; Varien and Wilshusen 2002). American Indians are also participating in consultations with CCAC archaeologists on the issues of traditional Pueblo agriculture, the use of water resources by contemporary Pueblo Indians, and the use and significance of roads and other routes that connected major settlements during ancient Pueblo times (<http://www.crowcanyon.org>). This traditional knowledge will be a valuable addition to the information obtained through archaeological excavations.

Cooperation between archaeologists at the CCAC (and other institutions) with modern Pueblo people and other American Indian societies to reconstruct the Mesa Verde past is also focusing on examining such issues as the native view of the landscape, ancient sites, migrations, and changes in past societies. Information surviving in oral tradition sometimes concerns specific events in prehistory, such as an account of a battle between ancient Puebloans and Ute ancestors that might have been fought at Castle Rock Pueblo (Battle Rock) in McElmo Canyon (e.g., Lightfoot and Kuckelman 2001; Kuckelman 2002; Palonka 2009, 2011).

Euro-Americans and Indians perceive the ancient Pueblo habitations, migrations, and depopulations of settlements of the region differently. According to contemporary Pueblo Indians, these places were not abandoned (e.g., Naranjo 1995). Instead, they are still inhabited by spirits of their ancestors. These ancient sites are respected by modern Native Americans and some are still mentioned in oral traditions (Bernardini 2005, Duff 2002; Ferguson and Colwell-Chanthaphonh 2006; Ortman 2008). Incorporating these oral traditions into archaeological interpretations is one of the goals of the cooperation between modern archaeology of the Mesa Verde region and American Indians and will undoubtedly greatly enrich our understanding of the Pueblo past.

LATE PUEBLO III PERIOD SETTLEMENT SYSTEM IN THE MESA VERDE REGION

The thirteenth century A.D. (Late Pueblo III period) was a time of many significant changes and disturbances across the entire Mesa Verde region affecting the Puebloan societies living there. The changes and transformations in the area during this period are visible in archaeological data and include changes in the architecture and layout of sites, such as a shift in site location. In the thirteenth century A.D., and especially in the second half of that century, most habitations in the area were canyon-oriented settlements located on canyon rims and on talus slopes below the rims (canyon-head settlements), as well as in cliff alcoves (cliff dwellings) and other places very difficult to access (Fig. 2) (e.g., Varien 1999; Lipe, Varien and Wilshusen 1999; Kuckelman 2002; Palonka 2009, 2011). Many pueblos were located near water sources such as springs (Lipe 2011: 265–267). That shift – from upland and mesa-top locations that characterized the Puebloan settlement pattern before the thirteenth century A.D., to canyon rims and cliff alcoves during the A.D. 1200s – probably also increased the distance to the crop fields, at least in the case of the cliff dwellings.

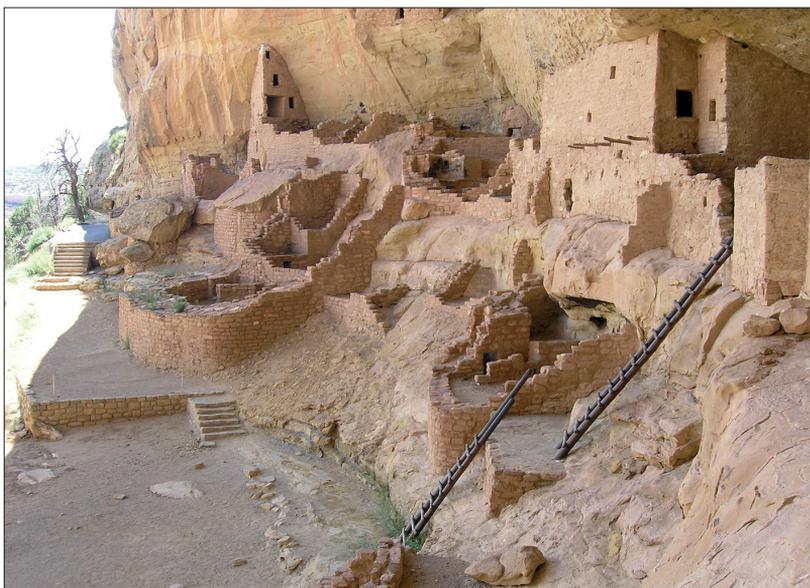


Figure 2. Part of the Long House, cliff dwelling dated to the thirteenth century A.D., with ladders for communication between lower and upper levels. Mesa Verde National Park, Colorado. Photo by R. Palonka.

In addition to this change in settlement location, there was also a change in the settlement pattern, for example, aggregation (Varien, Lipe, Adler, Thompson *et al.* 1996: 100–101; Lipe, Varien and Wilshusen 1999: 303). The settlements became larger, from fifty to five-seven hundred rooms (Lipe 2002), more populated, and some were well-planned in terms of layout and architecture.

The settlement pattern or model that existed during the thirteenth century A.D. in the central Mesa Verde region included communities or clusters of habitations consisting of a community center and about 15–40 small settlements near the community center (Varien 1999). A community center in the central Mesa Verde region was a settlement with more than 50 structures or nine or more households in total that included rooms for living and storage, kivas, and other buildings, including the public architecture (Varien, Lipe, Adler, Thompson *et al.* 1996: 86; Lipe 2002: 211). About 60 (or a little more) community centers existed in the central Mesa Verde region in the late Pueblo III period (Lipe, Varien and Wilshusen 1999: 303–310; Varien 1999; Lipe 2002) these were the longest occupied sites in the region and served as centers for social, political, religious, and economic activities for smaller sites.

I use the term “community” to refer to “social organization that defines access to necessary natural resources, provides a level of social identity for its constituent households, and serves as a significant decision-making entity above the level of the primary household unit” that can play “several roles, including the definition of both land use territories and associated resource access rights for local populations within the broader regional system” (Varien,

Lipe, Adler, Thompson *et al.* 1996: 100; see also Varien 1999: 19–23; Adler 2002; Varien and Ortman 2005). From the neoevolutionary point of view, the community may be perceived as an “important social element in formative agricultural societies, particularly in terms of suprafamily economic and social integration”, where integration is perceived “as important for reasons that include defense, risk aversion, capital investment in technology, and trade” (Kolb and Snead 1997: 610, after Johnson and Earle 1984: 131).

During the thirteenth century A.D. many types of defensive architecture – including circular, rectangular, or D-shaped towers, underground tunnels connecting two or more structures in a settlement, loopholes in towers or in enclosing or protecting walls, and massive stone walls that partly or fully enclosed villages – were constructed in the Mesa Verde region (Varien, Lipe, Adler, Thompson *et al.* 1996; Kenzle 1997; Lipe, Varien and Wilshusen 1999; Kuckelman 2002; Palonka 2009, 2011). Some such architectural features were built in the twelfth century A.D. as well, although far more were constructed during the thirteenth century. These architectural changes were associated with population aggregation and relocation: during the thirteenth century, most people lived in large settlements situated so that they were difficult to access and easy to defend. In many villages, water sources were secured within the boundary of the settlement or were at least nearby (Lipe 2011; Palonka 2011).

However, the Pueblo culture occupation of the Mesa Verde region on the border of Utah and Colorado ended in the end of the thirteenth century A.D. At that time, surviving Pueblo groups migrated south and southeast into present-day Arizona and New Mexico. Several possible explanations of the migration and depopulation of the Mesa Verde region have been proposed. Causes cited by many researchers include environmental changes like the Great Drought that occurred between A.D. 1276 and 1299, the beginning of the Little Ice Age in the northern hemisphere in the thirteenth century A.D., precipitation unpredictability in the Mesa Verde region, and a decrease in the number of permanent water sources that was probably at least partly coincident with deforestation and the depletion of natural resources (Adams and Petersen 1999; Lipe, Varien and Wilshusen 1999: 253, 265; Dean and Van West 2002; Kohler, Gumerman and Reynolds 2005). Environmental disturbances such as those mentioned above might have also been associated with social and demographic changes and the reorganization of Pueblo societies across the entire Mesa Verde region.

However, it is difficult to determine the scale of these environmental disturbances, including the Great Drought, because recent paleoenvironmental data (Van West and Dean 2000: 26–27) show that, although the climatic and environmental conditions were deteriorating, there were probably still enough good farming fields and water sources to support at least part of the population of the Mesa Verde during most of the thirteenth century A.D. These data are also supported by archaeological and environmental studies in areas such Long House Valley in the Kayenta region and by computer simulations of agent-based modelling (Kohler, Gumerman and Reynolds 2005). Moreover, analyzes of climatic and environmental factors led to the conclusion that “fairly productive farming could have continued in the area after A.D. 1300” (Dean and Van West 2002: 95).

Other theories focus on social change and attraction of new cults or ideologies from the south such as the katchina cult (e.g., Cameron 1995, 2006; Lipe 1995). Conflict and violence

also evidently increased in the Mesa Verde region during the A.D. 1200s (Lipe 1995; Varien, Lipe, Adler, Thompson *et al.* 1996; LeBlanc 1999; Lipe, Varien and Wilshusen 1999; Lightfoot and Kuckelman 2001; Kuckelman 2002; Kohler, Gumerman and Reynolds 2005); however, it is difficult to determine whether this increase was entirely a response to changes in climate and environment or if it was caused by different factors. Hostile relationships with different native groups in the area have been proposed (most often cited are ancestors of the present Ute, Navajo, and Apache) or among different Puebloan societies in the Mesa Verde region.

SETTLEMENT MODEL IN MICRO-SCALE: CASTLE ROCK PUEBLO COMMUNITY

One of the sixty communities in the Mesa Verde region in the Late Pueblo III period that included a community center and clusters of small sites, the so-called Castle Rock Pueblo Community (Adler and Metcalf 1992; Gleichman and Gleichman 1989; Ortman 2008). The Castle Rock Pueblo Community probably consisted of Castle Rock Pueblo (Site 5MT1825) – a community center and around 40 sites, including habitations as well as limited activity sites in the same vicinity in the Lower Sand Canyon area (Palonka 2010, 2011; Ortman 2008: 129).

The history of research for most of the sites in the Castle Rock Pueblo Community includes several archaeological surveys and test pit excavations, although limited excavations were conducted by the Crow Canyon Archaeological Center at only three sites of this community. Since 2011 detailed documentation and study of the functioning of Castle Rock Pueblo Community in the thirteenth century A.D. has been conducted by the Sand Canyon-Castle Rock Community Archaeological Project, a Polish archaeological project. The project focuses on analysis and reconstruction of the settlement structure and socio-cultural changes that took place in Pueblo culture during the thirteenth century A.D. in the central Mesa Verde region, southwestern Colorado, USA (Palonka 2011, 2012).

The sites in the Lower Sand Canyon locality are divided geographically into several groups that include sites located mainly in three canyons (Sand Canyon, Rock Creek Canyon, and Graveyard Canyon) (Fig. 3). Of the 40 sites examined (Palonka 2009, 2011, 2012), 28 are located in difficult-to-access cliff alcoves and associated talus slopes; five lie on talus slopes; three sit atop a knoll, hill, or ridge; three that consist of towers and associated structures rest on relatively flat areas and gentle talus slopes; one site is on the edge of the mesa; and one is perched on a difficult-to-access bench against a cliff face. Most of these sites are difficult to access, although the sites with the most restricted access, and which require the use of a ladder several meters long to reach, are located in cliff alcoves. Most face south, southeast, and southwest and most of the sites are located between 1650–1800 m above sea level.

The chronological data (based on a few tree-ring dates, pottery typology [see Fig. 6], and architectural styles) indicate that all of the small sites examined in Castle Rock Community and the community center were used in the thirteenth century A.D., although it is difficult to determine whether all the sites were inhabited contemporaneously or if some were abandoned when others were established. Particular sites might have been inhabited during the late A.D. 1100s or in the A.D. 1200s. (Adler and Metcalf 1992; Gleichman and Gleichman 1992; Ortman 2008; Palonka 2011)

the site is A.D. 1274 (Kuckelman 2000), and after this date the occupation of the site ended. Excavations conducted in the 1990s by the Crow Canyon Archaeological Center revealed that the settlement was attacked, as indicated by human remains representing at least 41 unburied individuals, some showing signs of violent death, as well as burned structures. These data correspond with the oral tradition of Hopi people recorded in the 1870s about an ancient battle that could have taken place at Castle Rock (Kuckelman 2002; Lightfoot and Kuckelman 2001).

Small sites at the Castle Rock Pueblo Community consist of several rooms or buildings, and usually from 3–4 rooms to more than ten rooms (Fig. 4). The exact number of the rooms is difficult to establish because only part of the architecture has been preserved and is still visible on the surface, especially in the cliff alcoves. However, initial geophysical research in several sites in the community done by the Sand Canyon-Castle Rock Community Archaeological Project, the Polish archaeological project in the Lower Sand Canyon area, show that even more structures might have existed, located on the slopes below the alcoves (e.g., Palonka 2011, 2012). This can shed more light on how many people lived in particular sites, and on the potential demography of the entire Castle Rock Pueblo Community.



Figure 4. Site 5MT135 (Sunny Alcove), small cliff dwelling located on west side of Sand Canyon. Part of the site is located on the slope below the alcove. Photo by R. Palonka

Buildings and features that might have functioned as defensive structures in villages in the central Mesa Verde region during the thirteenth century A.D., and particularly in the Lower Sand canyon area, include mainly towers, protective walls, village-enclosing walls, underground tunnels, loopholes, and presumably other constructions such as D-shaped buildings and other tall structures. The data suggest that the small sites in cliff alcoves were

situated more defensively than the large cliff, in that the use of ladders was required to enter many of them. Hand-and-toe holds are associated with a few sites in Sand Canyon and Rock Creek Canyon, where walls extend the entire length of the alcove and constitute the only entryway into at least four sites. At two cliff dwellings, sites 5MT1826 and 5MT1831, there is not much evidence of permanent habitation within the alcove, although there is evidence of structures below the shelters. These alcoves might have functioned as refuges for inhabitants living below the alcoves and also for people at other nearby small habitations.

At least eight sites in the proposed Castle Rock community contained towers, or towers were located in proximity to the sites. Some free-standing towers in the lower portion of the Sand Canyon locality are very near habitation sites; the distances range from several to 30 or 40 meters to as much as 100–350 meters (Fig. 5). I consider all of these towers to have been associated with the nearest habitation. I propose that the primary function of these towers was communication, because most are intervisible with nearby sites, and that the secondary function was defense. Among the sites in the Castle Rock Community I examined, six groups or clusters of sites within the community consist of four or more sites that were near each other or within visual contact. The use of towers for communication is proposed for some of the small sites in the Castle Rock Community, because nearly all of these recorded towers were located either within or near sites that were intervisible with sites nearby.



Figure 5. Tower at the Site 5MT181 (Mad Dog Tower) during the documentation by Sand Canyon-Castle Rock Community Archaeological Project in 2011. Photo by R. Palonka



Figure 6. Thirteenth century A.D. pottery from the Mesa Verde region and Sand Canyon area

Many towers constructed in the central Mesa Verde region were probably used for purposes such as ceremonies and for monitoring (Schulman 1950; Rohn 1977; Johnson 2003; Thompson 2004: 29). Some towers are inferred to have been used for defense or communication, or as lookout structures (Varien, Lipe, Adler, Thompson *et al.* 1996; Kenzle 1997; Lipe, Varien and Wilshusen 1999; Thompson 2004). Many towers were constructed and incorporated stones that were more carefully pecked than those found in other buildings at these same sites, and the careful construction probably resulted in the superior preservation of these buildings compared to other buildings at the sites. At least some of the towers in large villages were probably used for defense, as indicated by their strategic positions and some could have served as lookouts or for communication and signaling.

Ethnohistoric records contain information about confederacies and alliances among Pueblo groups (Wilcox 1991; Upham, Crown and Plog 1994) that has been supported in some cases by archaeological data (Minge 1976: 49–51; Spielmann 1994; LeBlanc 1999: 287, 318). Such pacts might have provided better protection for villages and lands from both Pueblo and non-Pueblo intruders; alliances between pueblos might have become more common after the mid-1600s, when Athapascan raids and attacks became more frequent (LeBlanc 1999: 45). Proponents of neoevolutionary theory such as Johnson and Earle (1987) have proposed that competition and defense are the primary factors in the development of intervillage alliances. B. Trigger (Spielmann 1994: 52) proposes a “model for the evolution of multiple clusters of sites in which once one settlement system had developed into a cluster, [and] others would quickly follow suit for defensive purposes.” Also, archaeological data confirm that confederacies might have been developed in conjunction with aggregation and

“increasingly intense warfare, evidenced by settlement location shift from lowland areas to defensible hilltops and the palisading villages” (Spielmann 1994: 51). The examples described by Spielmann are fifteenth-century Huron villages in the Northeast and Pueblo settlements from the same time in the Rio Grande Valley.

Several sites from the Castle Rock Pueblo Community have preserved murals on the room walls and rock art (Figs. 7, 8). Most of the rock art is associated with the sites and is placed within the sites’ boundaries, although it is necessary to remember that some paintings and petroglyphs are not contemporaneous with the thirteenth-century A.D. settlements. The murals still preserved and visible include plasters and paintings in Site 5MT264 (the Gallery) (Fig. 6). The plasters are mostly in yellow, brown/red, and creamy/white colours. The paintings include a zigzag line depicting a snake, birds (probably turkeys or parrots), and dots (there are 44 dots still preserved on the plaster). On both walls modern graffiti including names, initials and other symbols is also present.

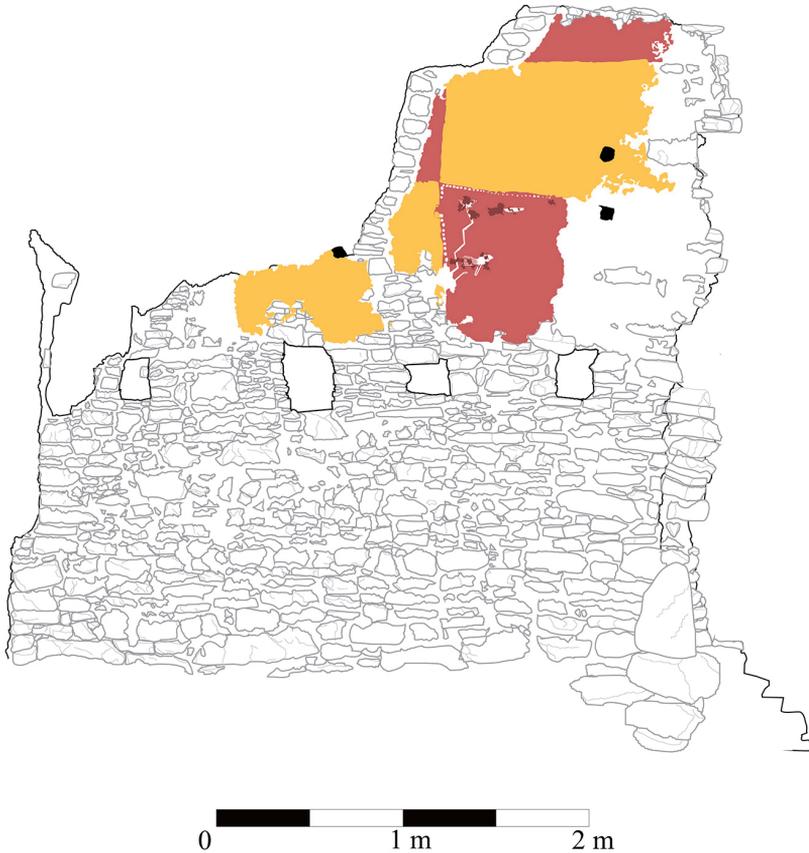


Figure 7. Mural in Room B at the Site 5MT264 (The Gallery) in the context of the preserved part of the architecture (drawing by A. Kucia)



Figure 8. Drawing of the petroglyph panel at the Castle Rock Pueblo showing fighting warriors (after Kuckelman 2002)

Rock art in the Castle Rock Pueblo Community is represented both by ancient petroglyphs and paintings. The petroglyphs include mostly geometric designs (lines, zigzags, and spirals), fighting warriors, and anthropomorphic figures. The rock art represented at the Gallery Site includes mostly human figures with triangular bodies painted with red and white colours. A similar depiction of an anthropomorphic figure is also present at Site 5MT127 (Vision House), although there it is a petroglyph. The anthropomorphic figure has an analogy in similar motifs in rock art in Utah and Colorado (e.g., Schaafsma 1980, Schaafsma 1994; Cole 2009) and is dated much earlier than the Late Pueblo III period occupation of these sites, in the Basketmaker period (roughly 500 B.C.-700 A.D.), although some geometric designs like spirals were also common in the Pueblo period, and may be interpreted as associated with Late Pueblo III sites. One anthropomorphic figure with a possibly crown-like headdress and raised hands is very rare in southwestern rock art. However, there are also some analogies in Utah, as well as the northern part of Arizona and New Mexico of similar motifs. This style might be interpreted as Fremont or San Juan Basketmaker-style rock art (Cole 2009: Figures 96, 98b, 109g; Schaafsma 1994: 45–49, Figure 47).

CONCLUSIONS

The Sand Canyon-Castle Rock Community Archaeological Project focuses on analysis and reconstruction of the settlement structure and socio-cultural changes that took place in Pueblo culture during the thirteenth century A.D. in the central Mesa Verde region of southwestern Colorado. Reconstructing Pueblo culture from the project area is based mainly on archaeological sources but also on data from different disciplines, mainly anthropology, ethnohistory, sociology, linguistics, and dendrochronology, and high technologies, like geophysics studies and computer modelling.

Pueblo societies in the Mesa Verde region in the thirteenth century A.D. were faced with many changes, among them environmental, demographic, and social. At the same time, the locations of their settlements shifted from the mesa tops and uplands to canyon rims, cliff

alcoves, and overhangs (e.g., Varien, Lipe, Adler, Thompson *et al.* 1996; Varien 1999). There was also a change in the settlement pattern, for example, aggregation – the settlements became larger, from fifty to seven hundred rooms (Lipe 2002), and more populated, and some were well-planned. Also many types of public and defensive architecture – including plazas, great kivas, D-shaped buildings, towers, and massive stone walls that partly or fully enclosed villages – were constructed in the Mesa Verde region (Varien, Lipe, Adler, Thompson *et al.* 1996; Kenzle 1997; Lipe, Varien and Wilshusen 1999; Palonka 2011).

The characteristic settlement pattern that existed during the thirteenth century A.D. in the area also included communities or clusters of habitations consisting of a community center and clusters of small settlements near the community center (Varien 1999). One of the areas within the central Mesa Verde region where we can find examples of such a community is the Lower Sand Canyon locality. The sites in this area include one large site, Castle Rock Pueblo (Site 5MT1825), that might have functioned as a community center, and around 40 other small sites. All of these sites might have formed a community of allied sites, the so-called Castle Rock Pueblo Community.

The settlement organization of sites in the Castle Rock community, including sites in locations both difficult to access and intervisible may suggest a cluster of allied sites that was integrated into one closely cooperating community. The exact location of particular settlements and their positions in relation to one another has great significance for understanding their intervisibility and possibilities of communicating between settlements and stone towers, and thus for warning of an enemy's approach. This community might have been created, and might have functioned, as a response to a threat from neighboring communities or from non-Pueblo invaders in an attempt to better defend the inhabitants of particular settlements and the entire community. It is difficult to determine if Castle Rock Pueblo was a place of refuge for the entire community in times of attack, or if particular settlements were defending themselves. Specific sites in the community, which contain a wall that extends the length of the alcove and exhibit little evidence of habitation, might have been refuges. Spielmann (1994: 51) also points out that alliances among pueblos in one cluster may have developed in part for mutual defense, whereas confederacies “may have been equally important in suppressing hostilities within local areas.” Also, to defend against intruders, the ability to build alliances and take control over land is probably as important as, and in some cases even more important than, building defensive architecture and constructing sites in defensible locations (Spielmann 1994; LeBlanc 1999: 287, 318). Intervisibility between “sets” of sites and the absence of intervisibility with another “set” of sites within, for example, the Kayenta region (Haas and Creamer 1993) may be inferred as evidence of the presence or absence of political alliances, respectively (Wilcox and Haas 1994: 217).

Individual communities were probably independent and autonomous, although inter-community alliances might have been needed because of increasing conflicts (Lipe, Varien and Wilshusen 1999: 331–335). Conflicts could have erupted between Pueblo and non-Pueblo groups (Wilcox and Haas 1994; Lipe, Varien and Wilshusen 1999: 340–341; Kuckelman 2002). If, within the Mesa Verde region, conflicts occurred between different Pueblo groups (or with non-Pueblo), whether due to environmental and climatic perturbations, competition

for reduced resources or water supplies, or any other cause, these conflicts probably would have occurred between communities rather than within communities.

Whatever the reasons for depopulation and migration, which probably occurred in stages during the late A.D. 1270s and early 1280s, the end of the thirteenth century A.D. witnessed the final stage of Puebloan occupation of the entire Mesa Verde region. The most likely destinations of the emigrants (that is, the survivors of conflict and possible famine) include the northern and central parts of present-day Arizona and New Mexico (Lipe 1995; Cameron 2006; Ortman 2008).

REFERENCES

- Adams, Karen R. and Petersen Kenneth L. 1999. *Environment*, in: William D. Lipe, Mark D. Varien, and Richard H. Wilshusen (eds.), *Colorado Prehistory: A Context for the Southern Colorado River Basin*. Denver: Colorado Council of Professional Archaeologists, pp. 14–50.
- Adler, Michael A. 2002. *The Ancestral Pueblo Community as Structure and Strategy*, in: Mark D. Varien and Richard H. Wilshusen (eds.), *Seeking the Center Place: Archaeology and Ancient Communities in Mesa Verde Region*. Salt Lake City: The University of Utah Press, pp. 25–39.
- Adler, Michael A. and Maripat Metcalf 1992. *Archaeological Survey of Lower East Rock and Sand Canyons, Montezuma County, Colorado*. Unpublished manuscript. Cortez: Crow Canyon Archaeological Center.
- Bernardini, Wesley 2005. *Hopi Oral Tradition and the Archaeology of Identity*. Tucson: University of Arizona Press.
- Cameron, Catherine M. 1995. *Tracing Migration Pathways from the Receiving End*. “Journal of Anthropological Archaeology” 14: 203–211.
- Cameron, Catherine M. 2006. *Leaving Mesa Verde*, in: D.G. Noble (ed.), *The Mesa Verde World: Explorations in Ancestral Pueblo Archaeology*. Santa Fe: School of American Research Press, pp. 139–147.
- Cole, Sally J. 2009. *Legacy on Stone. Rock Art of the Colorado Plateau and Four Corners Region*. Boulder: Johnson Books.
- Cordell, Linda 1997. *Archaeology of the Southwest*. San Diego, London, Boston, New York, Sydney, Tokyo, Toronto: Academic Press.
- Dean, Jeffrey and Van West C. 2002. *Environment-Behavior Relationships in Southwestern Colorado*, in: Mark D. Varien and Richard H. Wilshusen (eds.), *Seeking the Center Place: Archaeology and Ancient Communities in the Mesa Verde Region*. Salt Lake City: The University of Utah Press, pp. 81–99.
- Deloria, Vine 1992. *Indians, Archaeologists, and the Future*. “American Antiquity” 57: 595–598.
- Downer, Alan S. 1997. *Archaeologists–Native American Relations*, in: N. Swidler, K. Dongoske, R. Anyon, and A.S. Downer (eds.), *Native Americans and Archaeologists. Stepping Stones to Common Ground*. Walnut Creek, London, New Delhi: Altamira Press, pp. 23–34.

- Duff, Andrew I. 2002. *Western Pueblo Identities: Regional Interaction, Migration, and Transformation*. University of Arizona Press, Tucson.
- Echo-Hawk, Roger. 1997. *Forging a New Ancient History for Native America*, in: N. Swidler, K. Dongoske, R. Anyon and A.S. Downer (eds), *Native Americans and Archaeologists. Stepping Stones to Common Ground*. Walnut Creek, London, New Delhi, pp. 88–102.
- Ferguson, T.J. and Colwell-Chanthaphonh Chip. 2006. *History is in the Land: Multivocal Tribal Traditions in Arizona's San Pedro Valley*. Tucson: University of Arizona Press.
- Gleichman, Carol L. and Peter J. Gleichman 1989. *An Archaeological Inventory of Lower Sand Canyon, Montezuma County, Colorado*. Unpublished manuscript. Durango: Bureau of Land Management.
- Gleichman, Carol L. and Gleichman Peter J. 1992. *The Lower Sand Canyon Survey*, in: William D. Lipe (ed.), *The Sand Canyon Archaeological Project: A Progress Report*. Occasional Papers, No. 2. Cortez: Crow Canyon Archaeological Center, pp. 25–31.
- Haas, Jonathan and Creamer W. 1993. *Stress and Warfare Among the Kayenta Anasazi of the Thirteenth Century A.D.* „Fieldiana Anthropology”, New Series, No. 21, Publication 1450. Chicago: Field Museum of Natural History.
- Johnson, C. David 2003. *Mesa Verde Region Towers: A View from Above*. *Kiva* 68(4), pp. 323–340.
- Johnson, W. Allen and Timothy Earle 1984. *The Evolution of Human Societies: From Foraging Group to Agrarian State*. Stanford: Stanford University Press.
- Kemp, Brian M. 2006. *Mesoamerica and Southwest prehistory, and the Entrance of Humans Into the Americas: Mitochondrial DNA Evidence*. Unpublished Ph.D. Dissertation, University of California, Davis.
- Kenzle, S.C. 1997. *Enclosing Walls in the Northern San Juan: Sociophysical Boundaries and Defensive Fortifications in the American Southwest*. “Journal of Field Archaeology” 24(2): 195–210.
- Kohler, Timothy A., G.J. Gumerman, and Richard G. Reynolds 2005. Simulating Ancient Societies. “Scientific American” 1(293), 76–84.
- Kolb, Michael J. and J.E. Snead 1997. *It's a Small World After All: Comparative Analyses of Community Organization in Archaeology*. “American Antiquity” 62(4): 609–628.
- Kuckelman, Kristin A. 2002. *Thirteenth-Century Warfare in the Central Mesa Verde Region*, in: Mark D. Varien and Richard H. Wilshusen (eds), *Seeking the Center Place: Archaeology and Ancient Communities in the Mesa Verde Region*. Salt Lake City: The University of Utah Press, pp. 233–253.
- Kuckelman, Kristin A. (ed.). 2000. *The Archaeology of Castle Rock Pueblo: A Thirteenth-Century Village in Southwestern Colorado*, http://www.crowcanyon.org/ResearchReports/CastleRock/Text/crpw_contentsvoume.asp [05.05.2011].
- LeBlanc, Steven A. 1999. *Prehistoric Warfare in the American Southwest*. Salt Lake City: University of Utah Press.
- Lightfoot, Ricky R. and Kristin A. Kuckelman 2001. *A Case of Warfare in the Mesa Verde Region*, in: G.E. Rice and S.A. LeBlanc (eds.), *Deadly Landscapes: Case Studies in Prehistoric Southwestern Warfare*. Salt Lake City: University of Utah Press, pp. 51–64.

- Lipe, William D. 1995. *The Depopulation of the Northern San Juan: Conditions in the Turbulent 1200s*. "Journal of Anthropological Archaeology" 14: 143–169.
- Lipe, William D. 2002. *Social Power in the Central Mesa Verde Region, A.D. 1150–1290*, in: Mark D. Varien and Richard H. Wilshusen (eds), *Seeking the Center Place: Archaeology and Ancient Communities in Mesa Verde Region*. Salt Lake City: The University of Utah Press, pp. 203–232.
- Lipe, William D. 2011. *Lost in Transit: The Central Mesa Verde Archaeological Complex*, in: Timothy A. Kohler, Mark D. Varien, and A.M. Wright (eds), *Leaving the Mesa Verde. Peril and Change in the Thirteenth-Century Southwest*. Tucson: The University of Arizona Press, pp. 262–284.
- Lipe, William D., M. Hegmon (eds). 1989. *The Architecture of Social Integration in Prehistoric Pueblos*. Occasional Papers of Crow Canyon Archaeological Center No. 1.
- Lipe, William D., Mark D. Varien and Richard H. Wilshusen (eds.). 1999. *Colorado Prehistory: A Context for the Southern Colorado River Basin*. Denver: Colorado Council of Professional Archaeologists.
- Matson, Richard G. 1991. *The Origins of Southwestern Agriculture*. Tucson: The University of Arizona Press.
- Minge, Ward Alan 1976. *Acoma: Pueblo in the Sky*. Albuquerque: University of New Mexico Press.
- Naranjo, Tessie 1995. *Thoughts on Migration by Santa Clara Pueblo*. "Journal of Anthropological Archaeology" 14:247–250.
- Ortiz, Alfonso 1969. *The Tewa World. Space, Time & Becoming in a Pueblo Society*. Chicago: University of Chicago Press.
- Ortman, Scott G. 2008. *Action, Place, and Space in the Castle Rock Community*, in: Mark D. Varien and J.M. Porter (eds), *The Social Construction of Communities: Agency, Structure, and Identity in the Prehispanic Southwest*. Lanham, Boulder, New York, Toronto, Plymouth: Altamira Press, pp. 125–154.
- Palonka, Radosław 2009. *Defensive Architecture and the Depopulation of the Mesa Verde Region, Utah-Colorado, USA in the XIII Century A.D.* Unpublished Ph.D. dissertation, Jagiellonian University, Kraków, Poland.
- Palonka, Radosław 2010. *Late Pueblo III Sites in Lower Sand Canyon Locality, Montezuma County, Colorado – Preliminary Report of the Archeological Survey of 2009*, in: J.K. Kozłowski and J. Żrałka (eds), *Polish Contributions in New World Archaeology*, New Series, fasc. 2, pp. 113–144.
- Palonka, Radosław 2011. *Defensive Architecture and the Depopulation of the Mesa Verde Region, Utah-Colorado, USA in the XIII Century A.D.* Kraków: Jagiellonian University Press.
- Palonka, Radosław 2012. *Report of the Research of Sand Canyon-Castle Rock Community Archaeological Project. Season 2012*. Unpublished report for Bureau of Land Management, Colorado.
- Plog, Stephen 1997. *Ancient Peoples of the American Southwest*. London: Thames & Hudson.
- Prudden, T.M. 1903. *The Prehistoric Ruins of the San Juan Watershed in Utah, Arizona, Colorado, and New Mexico*. "American Anthropologist", New Series 5(2): 224–288.

- Renfrew, Colin and Paul Bahn 2002. *Archeologia. Teoria, metody, praktyka*. Warszawa: Prószyński i S-ka.
- Rohn, Arthur H. 1977. *Cultural Change and Continuity on Chapin Mesa*. Lawrence: Regents Press of Kansas.
- Schaafsma, Polly 1980. *Indian Rock Art of the Southwest*. Albuquerque: School of American Research, Santa Fe, and University of New Mexico Press.
- Schaafsma, Polly 1994. *The Rock Art of Utah. A Study from the Donald Scott Collection*. Salt Lake City: University of Utah Press.
- Schulman, Albert 1950. *Pre-Columbian Towers in the Southwest*. "American Antiquity" 15(4): 288–297.
- Spielmann, Katherine A. 1994. *Clustered Confederacies: Sociopolitical Organization in the Protohistoric Rio Grande*, in: H. Wills and R. Leonard (eds), *Ancient Southwest Community: Models and Methods for the Study of Prehistoric Social Organization*. Albuquerque, University of New Mexico Press, pp. 45–54.
- Thompson, Ian M. 2002. *Native American Perspectives on Sand Canyon Pueblo and Other Ancestral Sites*, in: Mark D. Varien and Richard H. Wilshusen (eds), *Seeking the Center Place: Archaeology and Ancient Communities in the Mesa Verde Region*. Salt Lake City: The University of Utah Press, pp. 257–262.
- Thompson, Ian M. 2004. *The Towers of Hovenweep*. Moab: Canyonlands Natural History Association.
- Upham, Steadman, Patricia L. Crown and Fred Plog 1994. *Alliance Formation and Cultural Identity in the American Southwest*, in: G.J. Gumerman (ed.), *Themes in Southwest Prehistory*. Santa Fe: School of American Research Press, pp. 183–210.
- Van West, Carla R. and Dean Jeffrey S. 2000. *Environmental Characteristics of the A.D. 900–1300 Period in the Central Mesa Verde Region*. "Kiva" 66(1): 19–44.
- Varien, Mark D. 1999. *Sedentism and Mobility in a Social Landscape. Mesa Verde & Beyond*. Tucson: The University of Arizona Press.
- Varien, Mark D. and Scott Ortman 2005. *Accumulations Research in the Southwest United States: Middle-Range Theory for Big-Picture Problems*. "World Archaeology" 37(1): 132–155.
- Varien, Mark D. and Richard H. Wilshusen 2002. *A Partnership for Understanding the Past: Crow Canyon Research in the Central Mesa Verde Region*, in: Mark D. Varien and Richard H. Wilshusen (eds), *Seeking the Center Place: Archaeology and Ancient Communities in the Mesa Verde Region*. Salt Lake City: The University of Utah Press, pp. 3–23.
- Varien, Mark D., William D. Lipe, Michael A. Adler, Ian M. Thompson, and Bruce A. Bradley 1996. *Southwestern Colorado and Southeastern Utah Settlement Patterns: AD 1100 to 1300*, in: Michael A. Adler (ed.), *The Prehistoric Pueblo World, A.D. 1150–1350*. Tucson: The University of Arizona Press, pp. 86–113.
- Varien, Mark D., Scott G. Ortman, Timothy A. Kohler, Donna M. Glowacki, and David C. Johnson 2007. *Historical Ecology in the Mesa Verde Region: Results from the Village Ecodynamics Project*. "American Antiquity" 72(2): 273–299.
- Watkins, Joe E. 2003. *Beyond the Margin: American Indians, First Nations, and Archaeology in North America*. "American Antiquity" 68 (2): 273–285.

- Wilcox, David R. 1991. *Changing Contexts of Pueblo Adaptation*, in: K. Spielmann (ed.), *Farmers, Hunters, and Colonists: Interactions between the Southwest and the Southern Plains*. Tucson: University of Arizona Press, pp. 128–154.
- Wilcox, David R. and Haas Jonathan 1994. *The Scream of the Butterfly. Competition and Conflict in the Prehistoric Southwest*, in: G.J. Gumerman (ed.), *Themes in Southwest Prehistory*. Santa Fe: School of American Research Press, pp. 211–238.

BADANIA SIEDLISK SYSTEMU KULTURY PUEBLO
NA POŁUDNIOWYM ZACHODZIE AMERYKI PÓŁNOCNEJ:
WYNIKI BADAŃ ARCHEOLOGICZNYCH
W SPOŁECZNOŚCI SAND CANYON-CASTLE ROCK

Badanie starożytnej kultury Pueblo z południowego zachodu Ameryki Północnej jest działaniem wymagającym podejścia interdyscyplinarnego i współpracy naukowców z różnych dziedzin, głównie archeologii, historii, antropologii i lingwistyki. Niezwykle ważna jest także rola indiańskiej tradycji ustnej, dzięki której można pozyskać ogromną ilość informacji pomagających nam zrozumieć, jak w przeszłości funkcjonowały społeczności Indian Pueblo. Artykuł skupia się na jednym z najbardziej intrygujących okresów w rozwoju tej kultury, wieku XIII n.e. i centralnym regionie Mesa Verde znajdującym się na terenie dzisiejszego pogranicza amerykańskich stanów Utah i Kolorado. Z jednej strony był to czas wielkiego rozwoju demograficznego tego regionu, z drugiej strony, pod koniec stulecia, nastąpił upadek osadnictwa i późniejsza całkowita migracja społeczności Pueblo na południe, na teren dzisiejszej Arizony i Nowego Meksyku. Jednym z projektów, w ramach którego prowadzi się badania zmian społeczno-kulturowych w XIII wieku n.e. w regionie Mesa Verde, jest polski projekt archeologiczny (projekt Sand Canyon-Castle Rock). Badania prowadzone są w mikroregionie osadniczym składającym się z czterdziestu małych osad położonych w kilku kanionach południowo-zachodniej części Kolorado, głównie w Sand Canyon i Rock Creek Canyon.

Słowa kluczowe: kultura Pueblo, region Mesa Verde, Sand Canyon, Castle Rock Pueblo, architektura obronna, struktura osadnicza