ARCHEOLOGICAL ASSESSMENT

NAVAJO NATIONAL MONUMENT

By

J. Richard Ambler

Southwest Cultural Resources Center
Professional Papers No. 9
NAVAJO NATIONAL MONUMENT:
AN ARCHAEOLOGICAL ASSESSMENT

by

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submitted to
National Park Service
Southwest Region

in fulfillment of
Purchase Order no. PX7029-4-0629

June 15, 1985
Archaeological Series 1 - Navajo National Monument

ERRATA

My prolonged stay in the hospital directly or indirectly resulted in the perpetuation of several errors. Some had been corrected in earlier drafts, but somehow found their way to the final. Again, the assistance of Helen Fairley is gratefully acknowledged. The most glaring are noted below by page. There are a few other errors and inconsistencies that have been noted, (and made in the copy for the second printing), but they should not prove distracting nor detract from the meaning. JRA

ACKNOWLEDGMENTS (13): read Nordby instead of Norby, read the National Park Service instead of National Park Service; (15): read occasions instead of occassions.
1(3): read northeastern, instead of northeasterm
2(17): read topographic instead of topograhic
2(25) [also 36(27), 46(32), 53(21), 85(9)]: read Geib and Callahan 1985, not Geib and Callahan n.d.
35(10): read contemporaneous, rather than contemporaneous
35(23): read paralelling, instead of parelling
36(3): read Effland, not Efland, read Creamer 1985, not Haas 1985
36(11): read 3-year study, instead of 4-year study (due to Reaganomics)
47(17): read site density, instead of population density
58(13): read than, instead of that
64(8): read chronological, rather than chronolocal
64(20): read precipitated, not precipited
68(4): read Ward (1975), instead of Ward (1972)
69(11): read midden, not middle; (30) read Schaafsma (1974), not Schaafsma (1974?)
71(5): read walls, rather than walks

Several inconsistencies appear in the REFERENCES CITED - none should cause confusion, although the major ones are noted:
p. 92 add Amsden, Charles A. 1939 - The Ancient Basketmakers. Southwest Museum, Leaflet 11, Los Angeles
p. 96 Dean et. al. 1985 has been published, pp 537-554
p. 99 Geib and Callahan should read 1985, not 1983. This was a paper presented at the Society For American Archaeology meeting in Denver.
p. 113 read West (1927), not West (1925)
p. 114 read picked, not piched
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ACKNOWLEDGMENTS

This particular report was first started in late 1984 as the result of receiving a National Park Service purchase order for the completion thereof. Norm Ritchie and Gary Matlock, both formerly of the National Park Service, spent considerable time attempting earlier overviews. Both of their reports helped fill in several gaps, even though neither has seen the light of day. Although essentially finished by the end of 1984, several things have delayed the completion of this report. Primary of these has been my prolonged (4 months) stay in the hospital as the result of a serious accident -- I would like to thank the doctors, nurses, therapists, et al. there for my reasonably rapid "recovery." Thanks also go to my family and friends for their visits, good wishes, and hopes. Thanks especially to Jeff Dean for his careful perusal of an earlier draft, to Don Fowler for looking at the same draft, and to Ronald Ice, Bruce Anderson and Larry Nordby of the National Park Service for their reading of the same draft. Helen C. Fairley of the Northern Arizona University Archaeology Lab visited Navajo National Monument on two occasions and gathered much of the unpublished information referenced herein. I hope everyone at Navajo National Monument finds this report useful. Steve Miller, the Superintendent, has been particularly helpful.

Anyone seriously interested in the prehistory of Navajo National Monument should also consult the references, particularly the most pertinent, which deal with sites included within the Monument boundaries. Also at the Northern Arizona University Archaeology Laboratory, many people have helped my thoughts about the Kayenta -- Phil R. Geib, Martha M. Callahan, Laura A. Heacock, and Alan R. Dulaney should be singled out in this regard. The report was painstakingly typed by Teresa Redmon, Kimberly Poole, Shellie Campbell, Linda Fager, and Evelyn Wong, edited by me and Helen Fairley, with line drawings prepared by Tom Dougi, and produced by Kwik Copy.
INTRODUCTION

Navajo National Monument consists of 360 acres in three separate parcels surrounding the 13th century Kayenta Anasazi cliff villages of Kiet Siel, Betatakin, and Inscription House in northeastern Arizona. Located in deep sandstone canyons, these ruins were among the last large Southwestern cliff dwellings to be discovered by early indefatigable Anglo explorers, but since the early 1900's they have been the focus of a considerable amount of archaeological investigation and increasing numbers of visitors. The size of these villages is an indication of their prehistoric importance and has been a prime attraction for tourists; their sheltered locations present both interpretive potential and stabilization problems; and their geographic distance from one another provides opportunity for study of regional variation among the Kayenta Anasazi as well as managerial dilemmas. The parameters of this study were designed by the National Park Service in order to summarize, in one document, information on all three tracts of land and the cultural resources contained therein. In order to put this information into perspective, the NPS also requested that summary information be provided on the surrounding areas, site evaluations be made, and that recommendations for further study be set forth.

In order to meet these goals, it is first necessary to understand the natural environment. The builders of these villages, today known as the Kayenta Anasazi, had to be well aware of their natural surroundings; farming is a precarious business in a land with limited soils, unpredictable rainfall, and a variable growing season. In addition, many wild plants and animals supplemented their agricultural diet. The history of the area is also vital to an understanding of the Monument, for it has been the complex interactions between Paiutes, Navajos, explorers, settlers, traders, archaeologists, tourists, politicians, and bureaucrats that have shaped the Monument as we know it today. This history in turn will be followed by a summary of past archaeological investigations in the Monument and the Kayenta region, which will serve as an introduction to the succeeding summary of Kayenta Anasazi prehistory. The specific known sites within the Monument will then be discussed, followed by a summary of the stabilization program to date and some observations on ethnographic studies that bear on the prehistoric sites. A
concluding section will set forth recommendations and research problems for various potential levels of future archaeological investigations.

The most pertinent references, especially primary ones, are cited in the text and listed in the bibliography. Other works of direct relevance are also listed therein, but no attempt is made to locate or list all secondary (e.g., general textbooks or popular works) or tertiary (e.g., magazine and newspaper articles or photos) sources.

The spelling of place names presents somewhat of a problem in what is now Navajo country. Many names are derived from Navajo, with an anglicized orthography. However, different authors and agencies have employed different spellings, sometimes to the point where it is difficult to see if any standard exists. For instance, the name of the largest site in the monument has appeared as Kit Zeel, Kit Siel, Kit-siel, Kitsiel, Keet Zeel, Keit Seel, Keetseel, Kitsil, Kietsiel, and Kiet Siel. The US Geological Survey and often the National Park Service prefer Keet Seel; most archaeologists prefer Kiet Siel, so that spelling will be used here. Different names for the same topographic feature also are occasionally found. Spellings and terminology will generally follow the most common or USGS usages, with variances noted if deemed necessary to avoid confusion.

NATURAL ENVIRONMENT

The region formerly occupied by the Kayenta Anasazi has been defined somewhat differently by different archaeologists, depending upon their perceptions, research orientations, and temporal focus (e.g., Kidder 1924; Colton 1939; Lindsay and Ambler 1963; Ambler 1977; Lindsay and Dean 1983; Geib and Callahan 1985). As a general starting point, it can be considered to be roughly bounded by the Glen Canyon of the Colorado River and the lower San Juan River on the north, Chinle Wash on the east, Cottonwood Wash and the Little Colorado River on the south, and Marble and Grand Canyons on the west (Fig. 1). Some workers (e.g., Colton 1939; Lindsay and Dean 1983) have preferred to designate the southern part of this broad region as the Tusayan area; others (e.g., Klesert and Layhe 1980) have spoken of the "Black Mesa Anasazi" as a distinct cultural entity. General cultural similarities over the entire area lead me to include it all within the general rubric of
Figure 1. Map of portion of northeastern Arizona, showing location of Inscription House, Betatakin, and Kiet Siel units of Navajo National Monument.
Kayenta. Yet, most of the focus of this paper will be on the northern part of the area, where geographic and cultural relationships with the Navajo National Monument area are most evident.

This is a land of contrasts: harsh yet beautiful; dry and wet; hot and cold; barren and lush; level and vertical; high and low elevations. It is not an easy land, but presents a variety of resources and subsistence opportunities. It is not only the archaeological remains, but also the spectacular geology and the diversity of biotic communities that have drawn scientists into the region. Among the more useful geological works are those by Gregory (1916, 1917), Hack (1945), Hunt (1956), Harshbarger et al. (1957), and Cooley et al. (1969). Kearney and Peebles (1960), A. Woodbury (1963, 1965), McDougall (1973), and Brotherson et al. (1978) provide information on the flora of the Monument and vicinity. Climatological information can be found in Green and Sellers (1964) as well as US Department of Commerce and National Oceanic and Atmospheric Administration climatological summaries; a weather-monitoring station has been maintained near Betatakin since 1939.

Archaeologists have long recognized the close relationships between human populations and their natural surroundings, so almost every archaeological report contains at least a summary of the local or regional environment. One of the best of these for the region, and certainly the most pertinent for Navajo National Monument specifically, is that by Dean (1969:11-16). The spectacular vistas and climatic extremes have also impressed many visitors to the area, some of whom have recorded their impressions in more popular works (e.g., Gillmor and Wetherill 1934; Grey 1922; Kluckhohn 1927; see also Viele 1980 for a concise general summary of Navajo National Monument).

**Geology and Topography**

About 225 million years ago, during the geological Triassic period, much of northeastern Arizona was frequently slightly below sea level and covered by shallow waters. Into this shallow ocean poured rivers bringing heavy loads of silt, clay, and other debris from the adjoining land areas to the northeast and south; frequent volcanic eruptions contributed to the rapid buildup of deposits. In the Navajo National Monument vicinity, these Triassic deposits are the earliest formations exposed, and can be seen in the bottoms of some of
the canyons and at the base of mesas in Monument Valley. Collectively known as the Chinle Formation, these deposits are poorly consolidated and hence weather into rounded slopes and humps, often of a gray or purple color. Brighter colors and larger expanses of the Chinle are found in some areas, notably the Painted Desert 100 km to the southwest.

The Chinle Formation forms a veritable natural storehouse of raw materials. Clays suitable for pottery manufacture are found in many localized deposits. Petrified wood, formerly logs that floated out to sea and sank, is common; some is highly fragmented, some is useful only for hammerstones, and some is so silicified that fine chipped stone tools can be made from it. Within the Owl Rock Member of the Chinle Formation, diagenic processes have resulted in an often mottled green and purple siliceous chert-like material well suited for large flaked implements. Occasional localized deposits of manganese, uranium, lignite, limonite, shark teeth, and remnants of land dwelling reptiles were of interest to prehistoric peoples as well as modern paleontologists and miners.

By perhaps 210 million years ago, what is now southern California and western Arizona started to rise, bringing northeastern Arizona with it. Extensive windblown sands were deposited, which eventually became consolidated into the Wingate Sandstone. The lower portion of the Wingate Sandstone, the Rock Point Member, fragments easily into large blocks that dot the underlying Chinle Formation, and leaves irregular benches and ledges in the sandstone itself. The upper Lukachukai Member is more clearly of aeolian origin; it often forms cliffs several hundred feet high, and occasionally forms shallow caves. Wingate sandstone is not easily visible within Navajo National Monument, but within a few miles south and north, it is exposed for a vertical depth of up to 250 feet. Wingate sandstone is normally not considered an excellent aquifer, but does produce some springs and seeps at the contact with the relatively impermeable Owl Rock member of the Chinle Formation. In the upper reaches of Paiute Canyon a short distance to the north of the Monument, the dip of the geologic strata and the topography of the mesas to the east produce strongly flowing springs.

A brief return to oceanic conditions resulted in the leveling of the Wingate and deposition of the late Triassic and early Jurassic Moenave and
Kayenta red sandstones. The Moenave, being durable, now protects and caps the Wingate, and the Kayenta has often eroded back into a series of stepped benches because of alternating layers of fine sandstones, mudstones, and some layers of clay. The laminated Kayenta Sandstone often fragments into uniform slabs 1-3 cm thick that prehistoric people found useful when they needed large thin slabs. The occasional red clays found within the Kayenta formation do not appear to be suitable for ceramic manufacture.

Topping the Kayenta Formation is the massive Navajo Sandstone, also of Jurassic age. The Navajo Sandstone presently forms the upper and most spectacular geologic unit in the Navajo National Monument area. It was formed during a protracted dry period and is composed largely of fossilized cross-bedded sand dunes. In some localities, particularly to the north of the Monument, ponds and lakes developed as the Navajo sands were accumulating. These fresh water pools were subsequently transformed into discontinuous limestone layers which resist erosion and hence help form mesas. Elsewhere Navajo Sandstone is rather poorly cemented, often erodes into convoluted expanses of baldrock, and forms the vertical cliffs characteristic of the Navajo National Monument canyons. The porous nature of the Navajo Sandstone results in seeps and springs at the contact with the relatively impermeable Kayenta Sandstone below. The friability means that every foothand every raindrop loosens a few sand grains, which find their way down the canyons, sometimes to be picked up by the wind. The process is generally slow, however, as attested to by numerous prehistoric pecked steps still usable 700 years after they were cut. Vertical and horizontal variation in friability and direction and slope of exposed bedding planes within Navajo Sandstone mean that no two surfaces have the same stability. This differential stability of the Navajo Sandstone, combined with water seeping through it, frost action, and wind erosion, has resulted in a large number of caves and shelters in the vertical Navajo Sandstone cliffs. Only a few of these are true caves in the sense of being deeper than they are wide; most are quite broad for their depth and have steeply sloping floors, often with the merest ledge at the back that could be utilized as a living surface.

Navajo Sandstone is too friable to be useful for most kinds of tools, although it was occasionally used for grinding slabs. Much more frequently, it provided basic constructional stone. Occasional veins within the Navajo
sandstone contain a chert-like material that when found in large enough pieces is suitable for flaking.

Later Jurassic deposits have largely eroded away. The Carmel Formation does form the surficial geologic unit on part of the western Shonto Plateau southeast of Inscription House. The sandy and silty Carmel Formation has a considerably higher clay content than the Navajo Sandstone, and yields some secondary clay deposits useful for architectural construction. Some of these clays may also have been used for ceramic manufacture. The Cow Springs Formation is prominent on White Mesa and a few spots in the lower Klethla Valley, and the Entrada and Morrison Formations are exposed around Navajo Mountain and on Cummings Mesa. The Entrada Formation was particularly useful for the Kayenta Anasazi as a source of coarse but well cemented conglomeritic sandstone useful for the manufacture of grinding implements and mauls.

During succeeding millennia, changing orogenic and climatic conditions resulted in the formation of a Cretaceous sea that covered much of west-central North America about 100 million years ago. Deposited within this sea were hundreds of feet of alternating layers of sands, silts, clays, and organic material, later lithified into various textures of sandstones, claystones, coal, and clays. Subsequent erosion has entirely removed this Cretaceous mantle from the immediate vicinity of the three units of Navajo National Monument, but these deposits remain a short distance to the south, where they are exposed along the north side of Black Mesa. These deposits were important to the Kayenta Anasazi, for they contain good ceramic clays, various grades of sandstones for tools, and materials for ornaments. They are also important to the modern economy for their extensive coal deposits.

Gradual rising of the land forced the Cretaceous sea eastward, and folding and faulting created structural basins and elevated areas. The elevated areas started to erode, whereas the basins, such as Black Mesa, retained their Cretaceous deposits. Continued uplift eventually created the Continental Divide and caused the formation of the Colorado River system by the mid-Miocene, about 20 million years ago. This uplift was accompanied by igneous intrusions through the overlying sandstones. One of these intrusions never broke the surface, but simply formed a huge bubble of lava that pushed the overlying strata up into the lacolithic dome now called Navajo Mountain.
Others, such as the San Francisco Peaks, broke through to form large volcanoes, and others formed volcanic dikes and plugs from which the surrounding material eventually eroded, such as Agathla Peak and Church Rock on the southern edge of Monument Valley. These volcanic materials provided the Kayenta Anasazi with additional variety for stone tool manufacture, as did occasional gravel remnants of earlier river systems. Sharp folding and faulting has resulted in interesting juxtapositions of various geologic strata. For instance, at Marsh Pass 9 km southeast of Betatakin, the Triassic and Jurassic sandstones of the Shonto Plateau are within only 1 km of the later Cretaceous rocks of Black Mesa, yet at the same elevation.

One of the upwarps, combined with subsequent erosion, created what is now the Shonto Plateau, one of the major land masses in northeastern Arizona. The Shonto Plateau reaches a maximum elevation over 7600 ft (2315 m) and averages nearly 7000 ft; it thus receives considerable precipitation. Some of this sinks into the permeable sandstones, but much of it over the past several million years has run off, cutting deep canyons into the underlying rocks.

The major system draining the east part of the Shonto Plateau, and separating the Shonto Plateau from Skeleton Mesa to the east, is Tsegi Canyon, composed of three major branches and numerous side branches, all deeply and nearly vertically incised into the Navajo sandstone. Betatakin, Kiet Siel, and numerous smaller cliff and open sites are located within the Tsegi Canyon system. The Tsegi is drained by Laguna Creek, which meets Black Mesa on the south, turns northeastward and eventually flows into Chinle Wash and thence to the San Juan River.

Separated from the Tsegi Canyon system by only a short distance, Nakai and Paiute canyons drain northward directly into the San Juan. The northwest portion of the Shonto Plateau, as well as parts of the adjoining Rainbow and Kaibito Plateaus, is drained by the labyrinthine Navajo Canyon, which flows generally northwesterly into the Colorado River below its confluence with the San Juan. Navajo Canyon is also deeply incised into Navajo Sandstone; one of the side canyons, Nitsin Canyon, contains a small branch at the mouth of which Inscription House is located. Draining the southwest side of the Shonto Plateau are the less incised Shonto and Begashibito Washes. These flow southwestward along the edge of Black Mesa into Moenkopi Wash, which ultimately debouches into the Little Colorado River.
Once the principal drainage systems became established, subsequent geologic history has largely consisted of surficial alterations of the landscape: gradual breaking down of canyon walls into caves and talus, alternating deposition and cutting of alluvium in canyons and valleys, and the formation and movement of aeolian sand deposits. Although the process of canyon formation has presumably slowed down considerably in post-Pleistocene times, the canyon walls by no means can be considered stable. Rockfall on top of prehistoric sites attests to continued enlargement of caves, and upon at least two occasions in this area archaeologists have narrowly missed being flattened by rockfalls in caves they were working in at the time (Kidder and Guernsey 1919:74; Guernsey 1931:40). A recent (1978) tragedy occurred near Kiet Siel when a large rock crushed a sleeping visitor, and the new (1964) trail to Betatakin had a major segment obliterated by rockfalls in 1982. Broken canyon walls often end up as talus on the slopes below, and gradually weather and get carried downstream. Colluvial deposits and landslides have also been noted in the area. These, if one excludes talus slopes from the colluvial category, are infrequent in the sandstone canyons, and more frequently occur in conjunction with softer rocks such as those making up Black Mesa.

Recent alluvial processes in the area were first studied in detail by Hack (1945), who defined two major periods of alluviation in Tsegi Canyon with periods of erosion before, between and since. Hack determined that sometime during the period of 5000-2000 BC the climate was very dry, and the canyon was essentially bare rock with some large falling dunes coming down the southwest canyon walls. Gradual aggradation then occurred, until by AD 900 the alluvium had reached a depth of 80 ft (Tsegi Formation). Another erosional cycle then set in, culminating about AD 1300 with the removal of much of the Tsegi Formation down to bedrock. This then filled in again to within 20 ft of the top of the Tsegi terrace, and started eroding again in the past century.

Early explorers found small lakes within the Tsegi below every small dropoff and even downstream below Marsh Pass; hence the name Laguna Creek. Louisa Wade crossed a green meadow at Kayenta in 1880, but by 1906, when John Wetherill and Louisa came to establish the trading post at Oljato, Laguna Creek had cut a large arroyo (Gillmor and Wetherill 1934:14-15, 79, passim). Subsequent erosion was documented by Kidder (in Guernsey 1931: 56-57), who
noted that within the span of only 11 years the lateral erosion had reached the point to make travel considerably more difficult than it had been upon the occasion of his first visit. The Navajos of the early part of this century attributed the arroyo cutting to the actions of a local witch (Gillmor and Wetherill 1934); the more commonly accepted explanation is that increased desiccation, combined with the sudden introduction of livestock, triggered the latest erosional cycle. Certainly the Tsegi, as well as many other canyons in the Kayenta area, does not have the same appearance as it did 700 years ago when Kiet Siel and Betatakin were occupied. Betatakin Canyon, however, is above the alluviated floor of the Tsegi and contains only small alluvial deposits. The use of aspens as structural members in Betatakin is a strong indication that the effective environment at that locality has not changed appreciably (Dean 1969:55, 81).

The immediately noticeable effect of arroyo cutting as far as agriculturalists are concerned is a drastic reduction in the ability to grow crops. Not only is actual farmland physically removed, but the water table in the remaining alluvium is drastically lowered, often to the point of rendering farming on the canyon bottom impossible. Even minor changes in the alluvial cycle may therefore have had profound effects on the prehistoric inhabitants.

The dry period of several thousand years BC noted by Hack is now generally known as the Altithermal and can be viewed as the extreme end of the drying and warming cycle that followed the last Pleistocene glaciation. It was during this time, if not before, that active sand dunes formed in various areas across the Shonto Plateau. Every wet cycle since has tended to stabilize these dunes, every dry cycle to accentuate their formation and movement. Dunes, active or stabilized, form a prominent landscape feature today in many localities and a thin mantle of sand covers much of the plateau to provide footings for the roots of plants; actual soil development in the sand is generally slight.

**Climate and water**

Few casual visitors gain a full impression of the year-round vicissitudes of the weather in northern Arizona. Neil Judd (1930: 1-2) put it well concerning the spring of 1917:
We broke trail through snow 2 feet deep to establish camp at Betatakin, March 27; once there, each night brought freezing temperatures until May 1 and occasionally thereafter; rain, hail, and snow fell with annoying frequency. All this, so our irregular Navajo boarder insisted, was owing to the fact that our work in the ruin disturbed the spirits of the ancient people. But I am reminded that our last snowstorm occurred May 31; that ice covered our water pails on the morning of June 2.

Everyone today who has spent some time in northern Arizona remembers the big snow of December 1967, when Flagstaff received 7 feet in 7 days; Betatakin received 5 feet in the same period. The total snowfall at Betatakin in the 1973-74 winter was 117 inches; 2 years before, it was only 22 in. The winter of 1983-84 was one of the driest on record, but the following summer and fall among the wettest. The mean annual precipitation at Betatakin between the years 1951-73 (NOAA Climatological Summary) was 11.40 inches; during that period it ranged from less than 7 inches to almost 19 inches. Temperatures range from below zero to over 100, and there is a 50% probability of having a spring frost after the middle of May, or a fall frost before mid-October. January temperatures may reach 60°F, but only July and August do not see freezing temperatures.

Judd and his crew frequently holed up in Betatakin to escape the spring storms of 1917; many others have also headed for a cave to sleep in when a major storm moves in. It is easy to see why large caves were favorite places for the Kayenta to live and also why, even in caves, they built sturdy windproof houses with sundecks. It is evident that it is not only the climatic means that are important, but the extremes. These high frequency processes (Dean 1984) undoubtedly influenced both horticultural and wild resource productivity. Such yearly fluctuations would have been readily perceived by the Kayenta Anasazi, who apparently devised behavioral and technological strategies to cope with the year-to-year variations in temperature and precipitation.

For the Kayenta Anasazi, water may have come in three categories: domestic, agricultural, and too much. Domestic water does not seem to have been of great concern; certainly for the inhabitants of the canyons, it was commonly available in the form of springs and seeps. Many of the occupied caves, being originally formed by spring action, still contain springs therein; that at Kiet Siel had been developed by the Anasazi. Outside the
canyons, many sites, even large ones, are located several km away from the nearest known water source; site location appears to have been based on factors other than the immediate availability of water for drinking and cooking. Water use among the Anasazi was obviously considerably less than among most contemporary people of Arizona. However, even in the local absence of springs, water is often available in plunge pools and weathering pits, and can be collected off rocks or roofs and stored. Although no evidence of wells has been noted, it would be no surprise to learn that the Kayenta used them, since in many alluvial areas the water table is (or was) not very far below the surface.

Moisture for agricultural endeavors can come from several sources: irrigation from permanent springs and creeks, high water tables, direct rainfall, seepage into dune deposits, slope runoff, and floodwaters (Beaglehole 1937; Hack 1942). From the rather skimpy and often indirect evidence available, it would seem that the Kayenta utilized all of these sources, and probably diversified the location of their agricultural plots to maximize the potential yield should one field fail to produce crops (e.g., Lindsay 1961; Lindsay et al. 1968; Geib, Ambler, and Callahan 1985).

In an area classified as arid, it would seem an anomaly that there could be such a thing as too much water. In the Southwest, however, about half of the annual precipitation comes in the form of summer showers. Often these are violent thunderstorms, dumping an inch or more in a brief period. In such cases, the potential for arroyo cutting is increased, young plants can be washed out, pithouses flooded, and walls and roofs severely damaged. John Wetherill (1955b) notes that Fewkes built a road up the Tsegi so he could show Kiet Siel to his wife, and that the road was washed out within 2 weeks, rebuilt a decade later, and washed out again within a few months. Southwesterners are accustomed to waiting for flood waters to recede and observing the drastic alterations in the landscape afterwards.

Winter snows and gentle rains, however, provide subsurface moisture for both domestic crops and wild plants, recharge springs, and cause little damage. It has been suggested that many of the physically observable climatic changes in the Southwest are not due so much to changes in the mean annual moisture, but to changes in winter-summer precipitation ratios and the
relative violence of summer storms. Other paleoclimatic reconstructions based on alluvial stratigraphy, palynology, tree-ring data, faunal remains, or combinations of these (e.g., Euler et al. 1979; Dean et al. 1985) are becoming increasing sophisticated.

Biota

The northern Southwest is often characterized as "Upper Sonoran," a vast oversimplification. True, the dominant vegetative overstory on the Shonto Plateau, and extending down into the canyons, is a mixed pinyon-juniper "pygmy" forest, with sage common on poorly drained alluvial areas. However, a large number of microhabitats provide ecotones suitable for a wide variety of plant species. Rocky canyon slopes, depending upon their exposure, slope, substrate, and moisture, may support groves of Gambel's oak, Douglas-fir, or brushy species such as manzanita, buffaloberry, cliff rose, serviceberry and Mormon tea. Uneroded canyon bottoms, such as in front of Betatakin, and areas around springs and seeps support aspens, horsetail, reeds, and other hydrophytic plants. Broad and narrow leaf yuccas are a common sight, as are various cacti, particularly prickly pear and hedgehog. Judging from the palynological, flotation, and fecal evidence (e.g. Fry and Hall 1973; Weber and Doerr 1985; Geib and Casto 1985), the woody plants frequently utilized by the Kayenta as food sources include pinyon, yucca, and cacti.

A host of grasses and herbaceous plants are also found in the vicinity, although the frequencies and distributions of these plants has been severely altered during the past 100 years by domestic grazing animals. The availability and output of any one species varies tremendously from year to year, largely depending on the weather. Most of the more common plant species found in the area today have been noted ethnographically (e.g., Whiting 1939; Elmore 1944) to have been used by modern residents of the region; many have also been recovered in archaeological contexts. Wild edible species commonly found at archaeological sites include Indian ricegrass and sand dropseed. Purslane, lambsquarter, pigweed, and beeweed are also common in archaeological contexts. These are weedy species, favoring cultivated areas. It appears that these were not only tolerated in active and recently abandoned fields by the Kayenta, but encouraged; certainly they formed a significant part of the food supply (Geib and Ambler 1985).
Deer are still occasionally seen on the Shonto Plateau, and mountain sheep appear to have been common in prehistoric times. Mountain sheep in particular seem to have formed an important part of the Kayenta diet. Lagomorphs include both cottontails and jackrabbits, and a host of rodents enjoy the varied environment. Preying on the herbivores are (or were) several carnivores; although rarely sighted today, wolves, coyotes, bobcats, foxes and mountain lions have been reported from the area. Bird life is varied, with a good deal of seasonal variation due to migrants; pinyon jays and ravens are the most visible permanent habitants. Lizards abound on the rocky slopes, some snakes are present, and amphibians center around the well watered areas.

Insect and arachnid life, in response to the varied habitat, is also varied, but only a few species are so obnoxious as to become particularly noticeable. Some mosquitoes appear, but never in the epidemic proportions as found in many other places, and biting flies are rare. Ticks, scorpions, and some venomous spiders exist, but they present little hazard to the watchful. By far the most troublesome insect is the juniper gnat. In many years, from the time of the last spring freeze to the time of the first summer rain, gnats appear in such numbers and ferocity as to severely modify human behavior patterns; long-term residents find them almost as discomfiting as do field school students. Grasshoppers and other herbivorous insects probably caused the prehistoric farmers no little grief. Many insect populations vary greatly from one year to the next, presumably in response to climatic conditions. A. Woodbury (1965) has pointed out several disease vectors present in the region; perhaps the potentially most troublesome of these was (and is) bubonic plague. Human endoparasites were also present, particularly during the crowded conditions of the late 1200s (Fry and Hall 1973; Reinhard, Ambler, and McGuffie 1985).

**Historical Setting**

By 1300, the Kayenta Anasazi had abandoned the Shonto Plateau; indeed all of the area north of the southern fringes of Black Mesa. It is commonly assumed that most of them ended up at the Hopi Villages, but well-documented migrations at this time from northern Arizona as far south as the White Mountains (Haury 1958) provide an indication that the abandonment may have been more of a dispersal than a population concentration. Paiutes seem to
have been close on the heels of the departing Anasazi in areas to the north and west of the Colorado River, and the same pattern may have held for the area formerly occupied by the Kayenta. It does appear that by the time Anglos and Navajos started entering the area, the San Juan band of Southern Paiutes occupied, albeit sparsely, the area between Marble Canyon on the west, Monument Valley on the east, the San Juan River to the north, and Klethla Valley on the south. Powell and Ingalls (Fowler and Fowler 1971:104, 107) listed a total of 62 individuals in this "Kwai-anti'-kwot-ets" band in 1873; this number is probably much too low. Many Paiutes still live in the Navajo Mountain, Red Lake, and Gap areas, in a lifestyle closely resembling that of the Navajo.

Navajos appear to have sporadically occupied parts of Black Mesa as early as the 1600s, perhaps largely to stage raids against the Hopi villages, but they did not seriously settle on Black Mesa until the 1800s (Kemrer 1974). The first mention of Navajos in the Shonto Plateau vicinity is November of 1860, when George A. Smith, a member of a Mormon party en route to Hopi, was killed by Navajos in Navajo Canyon (Ward 1975). This band of Navajos had just fled from the east after an encounter with US troops, and were still in Navajo Canyon the following February when another Mormon expedition came to retrieve the remnants of Smith's body. It is likely that this band remained in Navajo Canyon to form the core of the group characterized by Adams (1963:38) as the oldest group of Navajos in the vicinity. This group still forms the nucleus of the Inscription House Community.

Shortly thereafter, Hoskininni hid his band of Navajos from the relentless Kit Carson campaign in the rugged canyon country near Navajo Mountain. Over the years, this band has also expanded, and spread southward into the Tsegi region. After the Navajo imprisonment at Fort Sumner (1863-68), many Navajos returned to Black Mesa, even though this was outside the 1866 treaty area reservation. Many of these maintained an autumn - winter home on Black Mesa and a spring - summer home in the Klethla Valley or elsewhere near agricultural areas off the Mesa. By about 1900, however, population increase restricted this mobility, and year-round residences were established in both areas (Powell 1983:65). At about the same time, the Black Mesa band began gradually moving northward onto the Shonto Plateau (Adams 1963:38). The Navajo Reservation had been expanded at frequent intervals by
the early 1900s. The 1868 Reservation extended about 35 miles into Arizona. In 1878 it was extended farther west to the edge of Black Mesa. In 1882 a rectangular area of 1° of latitude and longitude, with the northern boundary about 13 miles south of Betatakin was set aside for the Hopis and "such other Indians as the Secretary of Interior may see fit to settle thereon," and 2 years later a strip north of that Hopi Reservation extending to the Arizona-Utah State line was added to the Navajo Reservation. This last area includes all 3 units of Navajo National Monument. The 1882 Hopi Reservation was reduced in size in 1962, with the remainder of the area designated as a joint use area. This proved unsatisfactory, and a few years ago the present boundaries of the Navajo and Hopi Reservation became established; the northern boundary lies about 20 miles south of Betatakin. Relocation of Navajos presently on Hopi land is progressing slowly, with considerable antagonism.

Throughout the historic period, the Paiutes, who may have occupied the area for hundreds of years, have been almost forgotten. After the flu epidemic of 1918, the Navajo were able to make serious inroads into Paiute territory. The "Paiute Strip", that portion of Utah lying south of the San Juan and Colorado Rivers, extending from Glen Canyon to Monument Valley, is shown as a Paiute Reservation on early maps, but was granted to the Navajos in 1933. Part of the deal between the State of Utah and the Navajos was that a Navajo Park be established in the area, to be administered by the National Park Service along the lines of Canyon de Chelly National Monument, which had been established a few years before. This park concept was not, however, approved by the Navajo Tribal Council. Paiutes are now often treated as second-class citizens; they were not included or apparently even considered in the negotiations for the Paiute Strip; "their" mountain is now known as Navajo Mountain, many of their farmlands have been taken over by Navajos, and they are rarely mentioned in any interpretive programs.

Neither Spaniards, Mormons, early Anglo explorers, miners, nor soldiers had much interest in prehistoric ruins. Ward (1975) concludes that the famed date (and name?) that gives Inscription House its name was incised by the 1861 Mormon expedition, and several members of Capt. Walker's 1859 exploratory group commemorated their visit by inscribing their names or initials in the stones of Long House, about 5 miles southeast of Betatakin (Bailey 1964). However, it was not until the activities of the Wetherill family (McNitt 1966)
that the potential of Anasazi ruins for both yielding artifacts and elucidating prehistory began to be fully recognized.

Several Wetherills were closely associated with Navajo National Monument. Richard and Alfred, accompanied by their brother-in-law C. C. Mason and 5 other men, worked their way up Laguna Creek in 1895 (McNitt 1966:76-84; c.f. Wetherill 1955b, who states it was December of 1894) exploring and digging, and discovered Kiet Siel. Richard again visited Kiet Siel in 1896, while escorting the Whitman-Bowles Expedition, and excavated there in 1897. In 1906 John Wetherill and Clyde Colville founded the first trading post in the region, at Oljato, and John continued the family tradition of exploring the country, with a particular eye for ruins. Wetherill's trading post, which was moved to Kayenta during the winter of 1910-11, became the jumping off point for the ever-increasing numbers of explorers and archaeologists visiting the region.

The history of Navajo National Monument is closely tied to the story of Rainbow Bridge, for many of the same people were involved, and the "discoveries" of Inscription House, Betatakin, and Rainbow Bridge all occurred within a short time of one another. However, the various accounts, many penned long after the event, differ somewhat. Early in 1909, John and Louisa Wade Wetherill, Byron Cummings, Stewart Young, Ida and Ben Wetherill, and Malcolm Cummings set out to look at Inscription House, which was apparently known but not officially "discovered." On their return to Oljato they stopped at Nedi Cloey's camp. Mrs. Cloey told Louisa Wetherill of a large ruin nearby up a side canyon, but since both people and horses were tired, they decided not to try to find it that day (Wetherill 1955a). Cummings' (1942) claims to have been first told of the ruin later in the year while camped in the Tsegi. Judd (1950) similarly states that Cummings et al. learned of Betatakin during the summer, and implies that it was then visited; Wetherill (1955a) and Cummings (1942) both note that Cummings did not go far enough up the canyon to discover the ruin.

Meanwhile, largely on the strength of tales of Kiet Siel and other ruins in the vicinity, W. B. Douglass, Examiner of Surveys, recommended in early March of 1909 that an area 16 miles north-south by 10 miles east-west lying between 36° 30' and 37° 00' N latitude and 110° 15' and 110° 45' W longitude
be set aside for the protection of the ruins in the area. The paucity of Douglass' direct knowledge of the area is exemplified by his characterization of the area he recommended to be set aside as uninhabited, unsuitable for agriculture, and generally worthless (Douglass 1909). Within days, President Taft, on the authority of the 1906 Antiquities Act, proclaimed Navajo National Monument. Taft's 1909 proclamation is of interest in extending the boundaries even 15' farther east than recommended by Douglass, and to include 40 acres around each and all cliff dwellings, pueblos, and ruins within that area. Had this proclamation not been superceded three years later (Taft 1912), Navajo National Monument today would include several thousands of sites rather than the few now represented.

When "Dean" Cummings and a few students from the University of Utah started working in the Tsegi in the summer of 1909, he and Wetherill decided to try to find the ruin reported by Mrs. Nedi Cloey. Wetherill had to make trips to Gallup and Bluff first, and while at Bluff met Douglass, who was organizing an expedition to find Rainbow Bridge. It does not appear that Douglass and Cummings had yet met, but they were already at odds. In his letters urging the preservation of the ruins, Douglass refers to a "pseudo-scientific expedition....using only untrained students....chiefly concerned with getting a priceless collection of pottery," and was actively trying to get Cummings' Antiquities Act permit revoked (Douglass 1909; Wetherill 1955a; Cummings 1952). This message seems to have gotten through to Washington, for Taft's proclamation also warns unauthorized persons not to appropriate, excavate, injure or destroy any of the ruins. Nevertheless, Wetherill convinced Douglass to make it a joint expedition to Rainbow Bridge, and returned to the Tsegi and arranged for Clatsozen Benally to guide him and Cummings on a quick trip to Betatakin before setting out for Rainbow Bridge. Wetherill gives the credit to Cummings for the discovery of Betatakin on August 9, 1909, since the Dean supplied the five dollars for the guide. However, it is clear that had it not been for the rapport that the Wetherills had developed with the Navajos, it is unlikely that Cummings would have even heard of the site.

Expecting Douglass momentarily at Oljato, Cummings spent only about an hour at Betatakin. He then returned to Oljato to await Douglass' arrival. After waiting there for 2 days, Cummings decided to set out for Rainbow
Bridge; Douglass finally caught up with the Cummings party along the trail. This trip generated considerable controversy between Douglass and Cummings over who was the "discoverer" of Rainbow Bridge; Cummings (1952) to his credit, names their Paiute guide Nasja Begay and his father as the discoverers. Rarely mentioned are the other Paiute, Anasazi, and Archaic folks that had doubtless seen it in the past. (See Fairley 1985 for more detail on early visits to Rainbow Bridge.)

Most of the Rainbow Bridge group returned directly to Oljato, but Neil Judd escorted Douglass to the ruins in the Tsegi. Impressed, Douglass wrote J. W. Fewkes, who came out later that year to visit Betatakin and Kiet Siel (Fewkes 1911). During the winter of 1909-10, Fewkes claimed discovery of Betatakin in lectures back east, but became silent on the subject after T. M. Prudden visited the ruins in 1910 and got the true story (Wetherill 1955a). It was not long after this that the aspiring students A. V. Kidder and S. J. Guernsey were advised that the Southwest was akin to a squeezed citrus (Klesert 1983).

As the result of Fewkes' report and Douglass' later surveys, in 1912 the large territory set aside in 1909 was reduced to its present size by another proclamation by Taft: 160 acres surrounding Betatakin, 160 acres around Kiet Siel, and another 40 acres for Inscription House. One wonders what the previous president, Teddy Roosevelt, might have done. He passed through the Tsegi in 1913 on his way to Rainbow Bridge, but did not visit the ruins. According to John Wetherill (1955a), he said he was not interested in the past; the future was what he was trying to keep in touch with.

In effect, the size of the Monument has since increased somewhat. In 1962, 240 acres were leased from the Navajo Tribe for the visitor center, new campground, and other facilities adjacent to the Betatakin section. An additional 4.6 acres was added in the 1970s to accommodate the construction of new sewage lagoons. An attempt to lease a small plot for a ranger station near Inscription House has been unsuccessful because of local resident's concern; bereft of adequate protection, it has become necessary to close Inscription House to the public. The ranger station near Kiet Siel was established on monument grounds.
In the early part of this century, creation of a National Monument did not necessarily entail any funds for development or protection. John Wetherill was hired as Custodian in 1909, but the magnificent sum of $12 per year hardly compensated him for the time he expended on his trips to the Monument, nor did his visits deter pothunters and vandals. Guided tours and individual trips became increasingly common; not content with looking, visitors followed the lead of early explorers, incising their names on walls and digging in likely places in the ruins. By the early 1930s, the situation had become acute; John noticed new vandalism and pothunting on almost every visit. The Depression brought on a number of make-work projects, among which was additional excavation and stabilization at Kiet Siel. Also involved was the CCC construction of a road from Shonto to the rim of Tsegi Canyon above its junction with Betatakin Canyon (Tsegi Point) and the still-used trail from there into Betatakin. This route also provided easy access to Kiet Siel and the rest of the Tsegi, thus encouraging even greater numbers of visitors. Fortunately by this time, Frank Pinkley, Superintendent of Southwestern Monuments for the NPS, and Ansel Hall, Chief of the Field Division of Education of the NPS, were developing a strong interest in the region. Neither of these men were inclined to sit around and let things go from bad to worse, and after a flurry of letters, were able by the end of June, 1934, to secure from Washington enough funds ($60 per month) to employ "two Indians or...one white man" (letter from Pinkley to J. Wetherill, June 30, 1934) to guard the area for a few months. Milton Wetherill, with the recommendation of Hall, took the job, and apparently reduced the vandalism considerably while actively pursuing his zoological interests.

Within a month after this munificent largesse, then Acting Assistant Southwestern Monuments Superintendent Robert H. Rose submitted a 5-page detailed budget to Washington for adequate protection of the ruins. The grand total for this budget was $19,370, which included $3,720 in salaries (a full-time ranger and full-time custodian), $1,650 in operations (including a truck, 2 horses and a mule, feed, and gasoline), and $14,000 for construction of residences, sanitary facilities, and corrals. Four years later, Hosteen John, then 72, declined Pinkley's offer of the finally created position, saying "Turn my position over to someone who can draw a salary. There are plenty of men who need the work....Hoping you can get a good man in here for your best
monument." Previously, in early 1934, during the CWA work at Kiet Siel, John, in a letter to Pinkley, voiced the classic complaint against bureaucracy, as true today as it was then: "In regard to economizing on Office material. If you did not return our Vouchers, and ask for so many reports, we would save a lot."

Succeeding Custodians, Rangers, and Superintendents have fought long and hard to preserve the ruins and the atmosphere, encourage scholars, and help visitors feel welcome. Perhaps the greatest change occurred in the early 1960s when, as the culmination of the National Park Service's 10-year plan dubbed "Mission 66," construction was completed on the 9-mile entrance road from US 160, a new visitor center, a new campground, new residences, new utilities, and a new trail to Betatakin. The total cost of this project--1.5 million dollars--reflects both 30 years of inflation and the increased magnitude of the endeavor since Rose's proposal in 1934.

Visitation has accordingly jumped considerably. The world outside Navajo National Monument has not stood still either. US 160, connecting Flagstaff, Las Vegas, and Los Angeles with southwestern Colorado, was paved in the early 1960s; what was for Neil Judd in 1917 a 3 day trip from Tuba City to Kayenta is now about an hour and a half. "Energy" exploration and development, unthought of in 1909, has brought many people to the 4-corners country in search of oil, gas, coal, and uranium; immediately opposite the start of the entrance road to Navajo National Monument is the road that leads southward to the Peabody Coal Company's Black Mesa mines.

Jobs, well-paying jobs, are more plentiful and available for Navajos today than ever before, but there are also more Navajos today than ever before. The intensive grazing of the late 1800s that is usually considered to have contributed to a major erosional cycle has become more regulated, but has abated only slightly. Stock reduction on the Navajo Reservation as a whole and within the former JUA has been beset by numerous difficulties and traumas (Wood, Vannette, and Andrews 1982). Kayenta has grown from an isolated outpost manned by John and Louisa Wetherill and Clyde Colville and later a few hardy teachers to a town complete with burger joints and a Holiday Inn. As befitting the location and name, Navajo National Monument has in recent years attempted to portray not only the lives of the prehistoric people but of the
historic Navajo as well. Perhaps this interpretation should not only include a portrayal of Navajo life as it was at the turn of the century, with a traditional hogan and sweat house, but also point out, for the benefit of Navajos and Anglos alike, that the traditional lifeway is an ideal; that more Navajos are now supported by wage jobs and welfare than by herding and farming; that in 1909 there were Navajos who had never seen an Anglo but that today there are many Navajos who, through their command of written and spoken English, have a much wider awareness of the world around them and their place in it than at any time in the past; and that changes in recent decades have been more pronounced than during the last few centuries.

The history of Navajo National Monument has ranged the gamut from a fine place to live in the 1200s through total neglect for centuries to a fine place to live, work, and do research in the 1980s. National Park Service administrative hierarchies have changed, research orientations have changed, and economics and attitudes have changed. More people than ever are now interested in the past, and contemporary archaeologists are now more clearly seeing the patterns of that past, on both a large and small scale. Since the formation of Navajo National Monument, the NPS has been faced with the delicate task of trying to balance interpretive needs, preservation, and research goals within the scope of a limited budget. As the only unit of the National Park system dealing solely and directly with the Kayenta Anasazi (although as we shall see, Wupatki National Monument, Glen Canyon National Recreation Area, and Grand Canyon National Park also provide important information on the Kayenta), there is an obvious obligation in the NPS tradition to not only preserve ruins and present information to the public, but to encourage new avenues of research. As a background for potential research orientations and management considerations, a brief summary of the history of archaeological work in the area follows.

**KAYENTA ARCHAEOLOGY, 1895-1985**

With a few notable exceptions, our knowledge of the prehistory of the Kayenta Anasazi region comes not from within the narrow confines of Navajo National Monument itself, but from studies in the surrounding area. Our present understanding is the culmination of the work of a large number of archaeologists, and indeed is strongly influenced by not only the data
gathered by earlier workers, but also the interpretations and syntheses presented by workers of the past. Hence, to understand the archaeology of the Monument and region we must understand something of the nature of past work, biases and approaches of the individuals involved, and the prevailing intellectual climate of previous decades. This synopsis is divided into 3 major time periods, separated at what I consider to be quantum leaps in the quantity and quality of data and levels of interpretation. The early years, 1894 to 1933, could be classified as the exploratory era, and take us from the discovery of Kiet Siel to the inception of the Rainbow Bridge-Monument Valley Expedition. The RB-MV Expedition initiated a new era, with an emphasis on systematics and classification, chronology building, and basic elucidation of regional culture history. This phase lasted until 1959, when a new era of archaeological work in the Kayenta area based on salvage archaeology began. In the succeeding 25 years, the name has changed to "cultural resource management" or "contract archaeology", but one of the main goals is still paramount: to salvage information ("recover data") from sites ("cultural resources") before they are destroyed by modern activities. The past 25 years have seen many times more work conducted as in the previous 65, with a correspondingly tremendous increase in the amount of information. Concomitant with the information explosion, the archaeological goals of the previous period have been augmented by increased interest in such topics as human adaptation to and alterations of the environment, reconstruction of past social, technological, economic, and ideological systems, and culture change. These topics are often subsumed under the general rubrics of processural, behavioral, or contextual archaeology.

The changes in the approaches to understanding Kayenta Anasazi prehistory do not stand alone; in many ways they are a mirror of changes in the archaeological discipline in the entire Southwest, North America, and the world as a whole. Archaeologists, with their interest in the past, have often evidenced an interest in the history of their own discipline. Almost every excavation or survey report carries at least some mention of previous work, and some works have been more specifically aimed at tracing the increase in knowledge and development of theory. For more detail or a different orientation than given here, the interested reader may wish to consult Dean (1969, 1980) for Betatakin; Dean (1969) and Hayden (1980) for Kiet Siel; Adams
(1960), Lindsay and Ambler (1963), Lindsay et al. (1968), Dean (1969), Powell et al. (1983) and Fowler (1985) for the Kayenta area; Taylor (1954b) Olson (1962), Gaede (1980), Martin and Plog (1973), Lister and Lister (1984), or Cordell (1984) for the Southwest; or Willey and Phillips (1958) and Willey and Sabloff (1980) for North American archaeology as a whole. The emphasis herein will be on those archaeological events with particular relevance to the Navajo National Monument area.

THE EARLY YEARS

Archaeological work in the Kayenta region can in some senses be said to have started with the 1895 trip by Richard Wetherill and party. Although Kiet Siel was discovered during this trip, little work was done there, "as the other men had been left at Ruin Point, near Kayenta Spring, to work out the mounds" (Wetherill 1955b). The location of the collection of over 400 pots from this expedition, characterized by Richard as the finest he had ever seen (McNitt 1966:83) is unknown, and essentially no notes have survived from this trip (if any were made). Wetherill returned in 1896 with the Whitman-Bowles Expedition; again, by the time the party got to Kiet Siel, the expedition had all the material it wanted and did little work at that site. The following year, however, indirectly working for the American Museum of Natural History, Wetherill did considerable digging at Kiet Siel. Although none of the results of R. Wetherill's work in the Kayenta region received much notice, his 1892 work in Grand Gulch demonstrated the stratigraphically early position of the preceramic Basketmakers and helped set the framework for the later development of Anasazi chronology and cultural development (Prudden 1897, 1903). Prudden appears to have been the first archaeologist to systematically investigate the area north of Black Mesa and to record his findings.

Soon after John Wetherill and Clyde Colville opened their store at Oljato, Byron Cummings commenced his annual treks to the Kayenta country, first working out of the University of Utah, and after 1915, from the University of Arizona (Judd 1950; Turner 1962; Tanner 1954). Almost every year for more than 2 decades Cummings led a group of students into the Kayenta country, but it seems that Douglass may have been correct in characterizing Cummings' work as pseudo-scientific: Cummings has left us with only a few publications, essentially worthless notes, and collections with only the
vaguest provenience designations. His greatest contribution would seem to lie in the students associated with him throughout the years, such as Neil Judd, Emil Haury, Clara Lee Tanner, Dale King, and Erik Reed. Cummings did present some information on one of his favorite objects of excavation, kivas (1915, 1945), as well as a brief summary of the area (1910), and a few other general works (1952).

Fewkes' report (1911) on his visit to Navajo National Monument, although brief, did serve to draw more attention to the area, and contained Douglass' site maps. More useful today, however, are Fewkes' ethnographic observations among the Hopi.

It was not until the 1914-15 Peabody Museum expeditions of Kidder and Guernsey (1919) to the vicinity of Kayenta that much in the way of serious work was done, in the sense of attention to detail and prompt reporting of results. The first two seasons of work sufficed to clearly demonstrate the stratigraphic and material culture differences between "Basket-maker" and "Cliff-house" assemblages, and to postulate a "Slab-house culture" temporally situated between the two. Indeed, in large measure it was Kidder's association with the first years of the Harvard expedition that laid the ground work for his classic synthesis of Southwestern archaeology (1924) and the formulation of the still widely-used Pecos classification (1927). In his 1924 discussion of the San Juan territory, Kidder defines the Kayenta, Mesa Verde, and Chaco subcultures, and sets forth 4 temporal classes: Basket Maker, post-Basket Maker, pre-Pueblo, and Pueblo. A fifth tentative stage in the Kayenta region Kidder terms proto-Kayenta, in essence thus defining the stages subsequently used in the Pecos classification. It is of interest that Kidder notes that proto-Kayenta (what we would now call Pueblo II and early Pueblo III) polychrome pottery had been found at Pueblo Bonito and Cliff Palace. He therefore infers contemporaneity of Kayenta Pueblo II with the large communities of Chaco and Mesa Verde. For Chaco, this still holds, but the Kayenta ceramics that reached late Mesa Verden sites are later types.

It would seem that the Pecos Classification is so widely known that it requires little mention. However, it is evident that it is used today by different investigators in somewhat different ways. The original series, Basketmaker I (hypothetical), Basketmaker II, Basketmaker III, and Pueblo I-V,
was defined as a series of developmental stages, with technological, stylistic, and settlement criteria utilized as distinguishing characteristics. Many Anasazi archaeologists still use the Pecos Classification in this fashion. Henceforth in this volume, these stages frequently will be abbreviated to BMII, PIII, etc for the sake of simplicity. With the development of a tree-ring chronology for the northern Southwest (Douglass 1929), it became common practice to equate the Pecos stages with generalized 200-year intervals, and some archaeologists today use the Pecos Classification divisions as temporal periods rather than developmental stages, resulting in confusion concerning temporal placement and problems in interpretation.

The Peabody Museum continued to send expeditions to the area. In 1916 and 1917, Guernsey concentrated on the early materials, and the resulting report (Guernsey and Kidder 1921) still stands as a major reference on Basketmaker II material culture. The 1920-1923 expeditions further amplified the cultural sequence of the area and provided more architectural and artifactual detail. Guernsey's report on those seasons of work was delayed until 1931, in part because he contracted a debilitating respiratory disease from the dust of Poncho House, a large ruin on lower Chinle Wash.

In 1917, Judd carried out the first stabilization efforts at Betatakin. His report (1930) is not only of considerable importance archaeologically for the architectural and artifactual information presented, but the authorizing legislation of the previous year also set the precedent for what is by now an established NPS policy: the "preservation and repair of prehistoric pueblo ruins and cliff-dwellings." Fortunately for later interpretations, Judd also set the tone for later stabilization efforts by detailing the repair work that he had done.

A. B. Reagan (1922, 1929) visited the area in the late teens. He recorded a number of sites, but added little of substance to the archaeological knowledge of the area; his work was largely overshadowed by that of some of his contemporaries. The Bernheimer expeditions, although having the services of Earl Morris as an archaeologist, also added little to our knowledge of the area. Morris dug a little (Lister and Lister 1984) but recovered only a small amount of material from the Kayenta area.
The 1925 Peabody Museum work, which was more of an extensive reconnaissance, was under the direction of Noel Morss. Although his report (1931) is brief, it is particularly noteworthy for his observations on the spatial distribution of sites of various stages within the Kayenta region. Morss interpreted the distributional patterns of Pueblo I and Pueblo II sites as indicative that these two stages were not entirely sequential, but instead partly contemporaneous and occupying different areas. This interpretation now does not seem to be the case, but has not been critically examined.

Other institutions also started sending expeditions to the area, sometimes admittedly for the main purpose of obtaining collections. In 1925, Barrett, working for the Milwaukee Public Museum, explored Navajo Canyon, and the publication of this work by West (1927) includes a description of Inscription House as well as other sites in the canyon. In 1930, the Los Angeles County Museum excavated two Basketmaker II cave sites northeast of Navajo Mountain (Hayden 1930; Schilz 1979), and also excavated some open sites near Navajo Mountain (Lindsay et al. 1968). In the same year Monroe Amsden conducted a quick survey of Paiute Canyon for Gila Pueblo, and also noted some sites enroute to Paiute Canyon (Gila Pueblo site files at Arizona State Museum). Deric Nusbaum of the Museum of New Mexico conducted some reconnaissance of the Begashibito Wash area in 1932, and briefly recorded 48 sites (Laboratory of Anthropology site files).

THE MIDDLE YEARS

In the depths of the Depression, Ansel Hall conceived and executed one of the more grandiose scientific expeditions to the Southwest. His position in the National Park Service had brought him into contact with John Wetherill and the region, and he aimed the expedition at the heart of the Kayenta country, naming it the Rainbow Bridge-Monument Valley Expedition (chronicled and described by Christenson 1983). For 6 summer field seasons, an average of 50 people participated in this expedition, investigating the geology, biology, and archaeology of the region; the archaeology came to be of ever-increasing importance through the years. Hargrave (1935) published a brief summary of the RB-MV findings up to that time, but by far the most important contribution was the monograph by Beals, Brainerd, and Smith. The publication of this work was delayed until 1945 by World War II, and immediately set a standard for
analytic perspicacity that has only too rarely been approached in succeeding decades of work in the area. In their work we see approaches that only recently have come to be seriously investigated: paleoenvironmental correlations, design attribute analysis, a concern with chronology and seriation, and considerations of craft specialization and social organization. Not all of the RB-MV data have been published, and the surface and excavated collections at the Museum of Northern Arizona and UCLA provide an untapped source for additional studies. Some of this potential has been realized by Crotty (1983), who studied the burial material from RB 568.

Lyndon Hargrave's direct association with the RB-MV Expedition and the curation of some of the materials at the Museum of Northern Arizona (MNA) helped Colton and Hargrave (1937) revise Hargrave's earlier (1932) ceramic typology. Colton (1953, 1955, 1956) continued to revise and expand the ceramic classification and chronology to the form still widely used today. Utilizing these data and the information gained from his own studies in the Flagstaff area, Colton (1939; see also 1935, 1953) then devised a culture classification system for the Kayenta region. Somewhat earlier, Gladwin and Gladwin (1934), also concerned with spatial and temporal systematics, had proposed a more all-encompassing classification scheme for the entire Southwest; Colton followed Gladwin's dendritic system in part. Gladwin's Basketmaker Root was termed Anasazi by Colton and the San Juan Stem and Kayenta Branch were retained, but Colton preferred McKern's (1939) term "focus" rather than Gladwin's "phase." Gladwin had lumped what Colton perceived as separate cultural entities - the Kayenta Anasazi, the Sinagua, and the Cohonina - into the same root and stem, so Colton also separated these. Except for later reversions back to the term "phase," Colton's system and/or the Pecos Classification has served as the basic temporal-spatial ordering device for the majority of the Kayenta Anasazi region in the years since, despite some inconsistencies and problems. Of particular importance to the Navajo National Monument ruins is the late PIII Tsegi Phase, generally dated about 1250 to 1300.

No single classificatory system was totally embraced by all archaeologists working the Southwest. For instance, Roberts (1935) essentially lumped Pueblo I and Pueblo II together into "Developmental Pueblo," and he and others (e.g., Amsden 1939) had a conceptual problem at
starting the known sequence with Basketmaker II, so preferred "Basketmaker" for that stage and "Modified Basketmaker" for BMIII. Despite immense popularization by Wormington (1947 and succeeding editions), the "Roberts Classification" never really caught on with Southwestern archaeologists, although it is still used occasionally (e.g., Rouse 1962). McGregor's (1941 and succeeding editions) generalizing scheme has been even less widely accepted.

In 1934 the NPS sponsored a stabilization/excavation effort at Kiet Siel, under the direction of Irwin Hayden and John Wetherill. The stabilization work was so well done that Kiet Siel has since gained the reputation of one of the best-preserved cliff dwellings in the Southwest. No report was published, but Anderson (1969b) included the perishable artifacts recovered from this work and ceramics recovered from a test in the trash in his later study.

Harvard University maintained its interest in the region by sponsoring a series of field endeavors in the Hopi area from 1935 to 1939, dubbed the Awatovi Expedition. Although a considerable amount of this effort was directed toward the site of Awatovi in an attempt to bridge the knowledge gap between the prehistoric and historic periods, other sites were investigated as well, increasing our knowledge of the culture history of the southern Kayenta (sometimes known as Tusayan) area. Most of the reports produced as a result of the work in the Awatovi area were written many years later, and reflect increasing archaeological sophistication in analytic methods and goals. R. Woodbury's (1954) study of stone artifacts still stands as the basic framework for most succeeding lithic classifications. Daifuku (1961), in addition to providing valuable data on BMIII, attempted yet another conceptual scheme for organizing Southwestern prehistory, one that has been largely ignored, in spite of his more processual approach. Smith's (1972) description and discussion of the kivas excavated by the Awatovi Expedition, combined with his earlier study (Smith 1952) in the Wupatki area, will long stand as a basic reference for Kayenta kivas. Much of the Awatovi analysis to reach print so far has been directed with considerable detail toward the ceramics (Smith 1971; Gifford and Smith 1978), and has resulted in not only new insights into Kayenta ceramic design, technology, and chronology but has also yielded new ways of thinking about and classifying prehistoric ceramics (Wheat, Gifford and Wasley 1958; Smith 1962).
Another notable contribution during these years was the study of Anasazi basketry by Morris and Burgh (1941). This work still stands as one of the basic references for textiles of the region. Another, later, basic work on textiles (Kent 1957) also remains a classic, and has been somewhat updated more recently (Kent 1983).

World War II essentially halted all field work and publishing. The post-war resumption of archaeology elsewhere was not paralleled in the Kayenta area, except for the preparation or publication of reports on work previously done (as noted above; also Taylor 1954a; Lockett and Hargrave 1953), further refinements on the ceramics by Colton (as noted), and refinement of tree-ring chronologies (e.g., Schulman 1948; Smiley 1951). For all intents and purposes, the Kayenta area seems to have been forgotten for almost 2 decades. One notable exception was an extensive reconnaissance conducted by Adams (1951). Unfortunately, this was never published, and Adams' data, interpretations, and his chiding of Anasazi archaeologists for their preoccupation with chronological variation at the expense of spatial differences have largely been ignored. Adams' survey was prompted by W.W. Taylor, who wanted to find a pristine cliff dwelling in order to study cultural-ecological problems along the lines he suggested in 1948; failing to locate "the perfect ruin," he dismissed the whole project (Taylor 1958).

Archaeologists elsewhere were not so idle, however. In particular, political efforts were becoming stronger to try to save some information from sites before they were destroyed by modern "progress". In the late 1940s and 1950s salvage archaeology was born, thus setting the stage for the information explosion in Kayenta archaeology of the past two and a half decades.

THE RECENT YEARS

Two of the first archaeological salvage excavation projects in the Kayenta area were in the Klethla Valley only a few kilometers south of Navajo National Monument. Unfortunately, the pipeline salvage effort was published in only a summary form (Bliss 1960), and the report of work along US 160 was delayed for a number of years (Ambler and Olson 1977). However, the two projects demonstrated clearly that Kayenta Anasazi architectural development did not follow the standard pithouse-to-pueblo sequence defined elsewhere, and
that pithouses persisted as a common architectural form into late PIII. Highway salvage excavations later in the 1960s (Anderson 1969a, 1980) added considerably to our data base concerning small sites, a class frequently ignored until the realities of immediate destruction forced their investigation. As part of the establishment of Monument Valley Tribal Park, Neely and Olson (1977) conducted an intensive reconnaissance of Monument Valley; as expectable given the aridity of the territory, site density was found to be low.

The construction of Glen Canyon Dam in the 1950's initiated one of the largest archaeological salvage operations to be conducted in the Southwest, and has considerable bearing on Kayenta Anasazi prehistory. The Glen Canyon area is generally (e.g., Jennings 1966) viewed as a meeting ground for several distinct cultural entities: the Kayenta Anasazi to the south and southeast, the Mesa Verde Anasazi in the triangle formed between the San Juan and Colorado Rivers, the Fremont to the north, and the Virgin Anasazi to the west. Although some Kayenta occupation is inferred on the northwest side of the Colorado River (e.g., F. Lister 1964), reexamination of this evidence makes this interpretation suspect; the first year of a projected 4-year restudy of the Glen Canyon area is currently in progress by Northern Arizona University.

The first few years of work in the Glen Canyon area concentrated within the area to be flooded, but much of the focus soon turned to the adjacent highland areas, with the rationale that the archaeology of the canyons could only be understood in the context of what was going on nearby. The archaeological effort outside the canyon proper may also have been prompted by the subconscious urge to discover archaeological treasures comparable to those found in the Tsegi. This is perhaps best exemplified by the MNA concentration on late Pueblo III sites, despite the earlier studies (Adams, Lindsay, and Turner 1961; Long 1966) which had indicated that the principal utilization of Glen Canyon itself was from late PII into middle PIII.

Of particular relevance to the Navajo National Monument area because of the late PIII materials are the MNA studies on Cummings Mesa (Ambler, Lindsay, and Stein 1964), near the northeast side of Navajo Mountain (Lindsay et al. 1968), and on Paiute Mesa. Unfortunately, the last remains largely
unpublished except for the site report on Neskaahi Village by Hobler (1974),
which also summarizes the knowledge to that time on PIII pithouses, and a
recently completed dissertation on Pottery Pueblo by Stein (1984). Lindsay et
al. (1968) note that although BMII is well represented to the north, BMIII and
PI are essentially lacking. They posit a survival to at least AD 700 for BMII
and then an occupational hiatus. The PII and early PIII occupations of the
Navajo Mountain locality were not intensively studied, but the architectural
and artifactual information from the late PIII sites provides ample
opportunities for discussions of intraregional similarities and differences
between the Navajo National Monument sites and sites elsewhere within the
Kayenta region. The MNA excavations near Navajo Mountain are also noteworthy
for providing the first good evidence of pre-Anasazi utilization of the
southern Colorado Plateau, with the discovery of early Archaic (Desha Complex)
materials at Sand Dune and Dust Devil Caves. Turner's (1963) study of rock
art in the Glen Canyon area focused attention upon a phenomenon hitherto only
cursorily or romantically examined. MNA and University of Utah studies within
and near the main canyons (e.g. Adams and Adams 1959; Adams, Lindsay and
Turner 1961; Lindsay 1961; Lindsay, Turner, and Long 1964; Lipe 1960; Lipe et
al. 1960; Sharrock et al. 1961; Sharrock, Day, and Dibble 1963; see also
Jennings 1966) added a considerable body of data relevant to the Anasazi
utilization of the lowland environments.

After a research hiatus of 30 years, the NPS renewed archaeological
interest within Navajo National Monument in the 1960s. Although these studies
were funded at what could be considered Depression levels, a considerable
amount of insightful work resulted. Breternitz (1969) tested Turkey Cave in
order to verify and amplify the stratigraphic sequence as found by Gladwin
(never reported) and Kidder (Guernsey 1931:57-60). The brief nature of this
test makes conclusions difficult, but Breternitz was able to define natural
and cultural stratification, with secure documentation of PI and PII
utilization of the site.

Anderson's (1969b; 1971) tests at Kiet Siel in 1964, in addition to
salvaging information before ever-increasing visitor traffic could seriously
affect the deposits, were also designed to obtain data complementary to those
derived from the 1934 excavations. As at Turkey Cave, a substantial PI-PII
occupation was found, and the traditional interpretation of Kiet Siel as a
Pueblo III site began to be tempered by the realization that the existing structures only represent the last occupation. Anderson also tested at Betatakin, primarily in preparation for trail maintenance and construction. Here, only a PIII occupation was apparent.

Also in the early 1960s, Dean (1969) commenced his dendrochronological studies of Tsegi Canyon, resulting in the most detailed and insightful work on late PIII in the Navajo National Monument area. Although not espousing any particular theoretical position, Dean adroitly integrates social, cultural, and environmental factors to provide a view of the Tsegi Phase reflecting approaches that only recently have been explored by others. Dean originally presented his analysis as a dissertation (1967), one of a small flurry of academic passports dealing with the Kayenta produced during the late 1960s. Anderson (1969b), combining the trail salvage work at Betatakin and Kiet Siel with a look at some of Cummings' materials, presented a summary of Tsegi Phase technology. Lindsay (1969), drawing largely on Glen Canyon data, offered an overall view of the Tsegi Phase, with the most noteworthy emphasis on architectural patterns. Also using information derived from the Glen Canyon project, Lipe (1967) explored the environmental relationships of the Kayenta and Mesa Verde Anasazi of the Red Rock Plateau, north of the San Juan River. Breternitz (1966) reexamined the tree-ring associations for ceramic types in the northern Southwest and revised the ceramic type dates as given by Colton and others, generally lengthening them. In the same vein, the University of Arizona Laboratory of Tree-Ring Research commenced a reevaluation of all dendrochronological data for the Southwest in the 1960s, producing 3 reports of particular relevance to the Kayenta area (Bannister, Dean, and Robinson 1968, 1969; Bannister, Robinson, and Warren 1967). Stein (1966) surveyed part of Dzil Nez Mesa and the southern part of Paiute Mesa, and notes that PI materials are essentially absent on Paiute Mesa although present on Dzil Nez Mesa. (A later CRM survey somewhat to the east of the southern part of Stein's area recorded a number of sites, but in contrast to Stein's work, fails to report the findings in usable fashion [Baker 1979]). Far to the south, Gumerman (1969; Gumerman and Skinner 1968) worked in the Hopi Buttes area and noted that this area is essentially Kayentan in cultural character from BMII through early PII, changing to the Little Colorado ceramic tradition in PIII.
In the 1960s, Douglas Schwartz of the School of American Research initiated a long range research program in the Grand Canyon area that has helped define the western adaptations of the Kayenta (Schwartz, Marshall and Kepp 1979; Schwartz, Chapman and Kepp 1980; Schwartz, Kepp and Chapman 1981; see also Haury 1931; Wheat and Wheat 1954; Euler and Chandler 1978; and Effland, Jones, and Euler 1981).

In 1968, the Peabody Coal Company began sponsoring archaeological work on the north part of Black Mesa in preparation for strip mining. Originally funded through Prescott College and later Southern Illinois University, the Black Mesa Archaeological Project (BMAP) is by far the most massive archaeological undertaking ever conducted in the Kayenta region. (See Powell and others 1983 and Plog and Powell 1984 for reviews of this project.) The prehistoric remains in the Peabody Coal Lease area of Black Mesa have only an indirect relation to the most prominent sites within Navajo National Monument, since Black Mesa had been abandoned for a century at the time the existing configurations at Kiet Siel, Betatakin, and Inscription House were constructed. However, investigations of the intensive PI and PII occupations on Black Mesa have resulted in a great deal of information that will prove useful in interpreting the early occupations of Kiet Siel, Turkey Cave, and Inscription House.

Also in conjunction with the coal mining activities, the Museum of Northern Arizona conducted salvage operations along the Black Mesa-Lake Powell Railroad and associated facilities (Swarthout et al. n.d.). Sites of various phases were excavated, with considerable effort at a PIII burial area.

With the passage, amendments, and implementation of the National Historic Preservation Act of 1966, the National Environmental Policy Act of 1969, and the Archeological and Historic Preservation Act of 1974, along with increasing development of Navajo Tribal lands, the past decade has seen increasing amounts of archaeological work in the Kayenta region. Hundreds of clearance surveys have been conducted, ranging from coverage of small isolated plots to lineal projects many miles long, as well as a few block surveys. As a result, many more sites have been recorded, and the potential exists for spatially based studies that would have been impossible a few years ago. However, most of these data are unpublished, areal coverage is largely determined by modern
development needs rather than archaeological concerns, and recording techniques, collection strategies, and the quality of reporting vary considerably, making syntheses difficult.

Some of these cultural resource management projects, particularly those involving excavation, have been of large enough scope to result in valuable information relevant to Navajo National Monument. Near Navajo Mountain, excavations were conducted by Northern Arizona University at 8 small sites at the location of a new BIA Boarding School (Geib, Ambler, and Callahan 1985). Two of the small late PIII hamlets provided a good deal of technological, subsistence, and settlement data useful for comparisons with contemporaneous larger sites (Geib and Ambler 1983; 1985). N-16, the road from US 160 to Navajo Mountain, which passes between Inscription House and the other two Navajo National Monument units, is slated for paving in the near future; surveys recorded fifty-four prehistoric sites between State Highway 98 and Navajo mountain Trading Post (Popelish 1984), and thirty-three more sites between the trading post and the new school (Rayl 1985). Fourteen Anasazi sites in the southern 13 miles of highway are planned for data recovery in 1985. Farther south, new highways have also been planned to link the Hopi villages with northern Black Mesa. N-41, from Pinyon to Forest Lake, saw NNCRMP excavations at twenty-seven prehistoric sites, and the report on that project (Linford 1982), provides essentially the only archaeological information from that area, albeit somewhat difficult to use (Ambler 1984a). A paralleling route from Hopi to Northern Black Mesa, the Turquoise Trail, was first surveyed as early as the 1960s, with the start of excavations by the University of New Mexico in 1984 (Hogan 1984). In the Klethla Valley, data recovery at the late PIII pithouse community of Dogtown have further substantiated the contemporaneity of pithouse villages with the large pueblos, and added to the data base for this period (e.g., Ambler and Andrews 1981; Callahan n.d.)

Meanwhile, "pure" research has not languished. Several of the individuals associated with the Kayenta archaeology of the 1960s have continued, expanded, and amplified their interests, with the aid of additional workers. For example, a long-term research investigation of Long House Valley, immediately south of the Tsegi, was started by Dean, Lindsay and others as an outgrowth of an interest in the Tsegi Phase (Lindsay and Dean
1983); the entire valley has been intensively surveyed and several interpretive articles prepared (Lindsay and Dean 1971; Dean and Lindsay 1978; Dean, Lindsay and Robinson 1978; see also Effland 1979). Haas (Creamer 1985) has recently initiated a study aimed primarily at eliciting information on the physical locations of Tsegi Phase sites in relation to potential factors of tribalization, competition, and war. Lipe and Lindsay (1983) have explored the cultural-ecological relationships in the Glen Canyon area. Dean (e.g., Robinson and Dean 1969; Euler et al. 1979; Dean 1970, 1984; Dean et al. 1985) has expanded his previous thoughts on chronological-environmental-sociocultural processes in various directions. Ambler conducted additional excavations in Dust Devil Cave (Ambler 1984b) and is directing a 3-year study of the Glen Canyon area (in progress).

Berry (1982) has presented an alternative view to the classic "gradualist" view of Anasazi cultural evolution. Using tree-ring and radiocarbon dates as a prime source of data, he concludes that the Anasazi sequence is punctuated at the transitions between Pecos classification stages by essential abandonments of the Colorado Plateau. A survey of the upper reaches of Paiute Canyon has led to new thoughts on local adaptations (Fairley n.d.), and combined with data from the Navajo Mountain locale, has resulted in interpretations concerning differential utilization of localized environments (Ambler, Fairley, and Geib 1983). An intensive survey of Wupatki National Monument is expected to result in a considerable amount of information on the early PIII occupation of that area (Anderson 1983). Other studies, in part stemming from the recent spate of CRM work, have included those by Ambler on craft specialization (1983) and ceramic chronology (1985), more quantified discussions of ceramic technology, production and exchange (Callahan and Fairley 1983; Geib and Callahan 1985), an examination of the socio-economic implications of PI-PII precursors to the late PIII cliff dwellings (Klesert 1982), and a more complete synthesis of rock art of the northern Southwest (Schaafsma 1980).

The amount of data available on the Kayenta Anasazi is increasing exponentially, and interpretations have become increasingly sophisticated. Although the broad outlines of Kayenta prehistory were set forth decades ago, our perspective now perhaps allows us to more clearly define what we don't know than what we do. The following summary of the prehistory of the area,
presented as additional background, is based largely upon the more recent work. It is presented in order to provide a framework for understanding the known sites of Navajo National Monument, not necessarily as a complete summary nor as a research design.

SYNOPSIS OF KAYENTA PREHISTORY

The archaeological studies mentioned above provide us with a considerable body of data and a number of interpretations, but the areal, temporal, and topical coverage is so uneven that any attempt at synthesis is beset by considerable difficulty. The outline below should therefore be considered as tentative, and is presented more as a means of establishing the broad parameters and problems of the cultural history than as detailed gospel. The basic temporal ordering devices will be the Pecos Classification and Colton's (1939) phase system as modified by Ambler (1983, 1985); a summary of these and other temporal classifications is presented as Figure 2. Most Kayenta archaeologists believe (assume) that we are dealing with a cultural continuum, and recognize that diversions into a series of sequential stages or phases is somewhat arbitrary. This "gradualist" assumption has been questioned by Berry (1982), who views Kayenta prehistory as a series of wholesale migrations in and out of the Kayenta region. The evidence for either view is actually rather slim; the truth may lie somewhere in between. It is becoming apparent that different localities had somewhat different histories; aside from the population parameters, regional differences remain largely unexplored. Hence, the following stage-by-stage summary must be taken as broad generalization. No attempt is made to detail the material culture inventory in the following summary, as such knowledge is easily available from a large number of general works (e.g., Kidder 1924; McGregor 1941 and succeeding editions; Wormington 1947; Lindsay 1969; Anderson 1969b; Ambler 1977; Martin and Plog 1973) and the specific site reports cited. References in the following summary will be held to a minimum; most have been cited earlier, and others will be mentioned in the concluding sections of this report.
Figure 2. Commonly utilized chronological/cultural schemes in and near Navajo National Monument.

(1) Stages from Kidder 1927, dates as commonly accepted (e.g., Colton 1935 and many works by different people).


Lithic and Archaic Stages

The Lithic (or PaleoIndian) Stage is generally characterized as the immediately post-Pleistocene adaptation of the hunting of large now extinct mammals such as mammoths, horse, camelids, and bison. The succeeding Archaic stage saw the demise of these animals and increasing dependence on localized plants and animals. The Lithic stage is therefore often characterized as big-game hunting, the Archaic as hunting and gathering; this dichotomy may not be as clear-cut as sometimes postulated.

There is presently no information on early human utilization within the confines of Navajo National Monument, or for the Shonto Plateau as a whole. With the cool temperatures and high precipitation characteristic of the terminal Pleistocene, the Shonto Plateau may have been particularly cool and moist, perhaps covered by ponderosa pine forests, and thus not supportive of herds of big-game animals and therefore not particularly conducive to human habitation. Even the Colorado Plateau as a whole was rarely utilized by Lithic stage big game hunters; few points have been found that are assignable to this stage (Schroedl 1977), and even fewer sites. A Clovis point has been reported from near Kayenta (Ayres 1966), a Folsom site near Mexican Hat (Green 1978), and Agate Basin sites are reputed but not reported.

Early Archaic (ca. 7000 to 5000 BC) materials are known from the Navajo Mountain locale (Lindsay et al. 1968; Ambler 1984b), and to a lesser degree on Black Mesa (Smiley and Andrews 1983: 50). It is thus expectable that early Archaic peoples at least traversed the Shonto Plateau and the canyons draining it, but no evidence of such visitation has yet been documented.

During the Altithermal, the area may have been equally unappealing for entirely different reasons. As noted by Hack (1945) and Ambler (1984b), extreme aridity and the formation of active sand dunes appear to represent the climate norm during this period. The region was not entirely abandoned, as attested by an occasional utilization of Dust Devil Cave (Ambler 1984b), but populations were probably even lower than during the early Archaic.

By late Archaic times, there is increasing evidence for human utilization of the surrounding region. Dust Devil Cave (Ambler 1984b) shows some occupation, and the Hitsatsinom Phase on Black Mesa (Smiley and Andrews 1983)
appears to be late Archaic. The "lozenge-shaped unnotched" point from Turkey Cave (Breternitz 1969) sounds suggestive of a Gypsum point. Nowhere in the Kayenta region, or for the Anasazi area as a whole, has clear evidence been found of what could unequivocally be called "Basketmaker I"; the origins of the Anasazi cultural sequence still remain obscure (cf. Irwin-Williams 1973).

Basketmaker II

The work in the Marsh Pass-Monument Valley region by early Peabody Museum expeditions was instrumental in defining Basketmaker II. This stage can be briefly characterized as a mixed agricultural (corn and squash), hunting (primarily deer and/or mountain sheep), and gathering economy. Frequent use of caves for habitation, storage, and/or burial is common. The few BMII houses known from the Kayenta area are shallow pitstructures. Pottery is not yet present, nor are the bow and arrow, but baskets, sandals, and other textiles are well made. Shallow basin grinding slabs and one-hand manos are common, as are large well-made dart points and numerous other flaked stone tools. A shamanistic/individualistic religious pattern is inferred. Some regional variation in BMII has been noted (e.g., Lindsay et al. 1968:101), but the general pattern seems to be similar over a wide area from at least Kanab to the upper San Juan. BMII occupations have been defined on Black Mesa (Lolomai Phase), and are also clearly present in the Navajo Mountain area. Given the geographic proximity and environmental similarities of Tsegi and Navajo Canyons to Black Mesa, Marsh Pass, and Navajo Mountain, it would be expectable that BMII folks also utilized the immediate environs of Navajo National Monument; Woodchuck Cave (Lockett and Hargrave 1953) demonstrates this to be the case. The essential absence of BMII remains in the Monument proper may be more a matter of clearing of caves or obscuring early deposits by later peoples, or the existence of better site locations from the BMII point of view than the locations chosen by PIII peoples. Gladwin (as reported by Breternitz 1969) may have found BMII material at Turkey Cave, although this was not noted by earlier or later investigators at the site. On the basis of dendrochronological data and material culture resemblances to BMII, it has
been suggested that BMII lasted to at least AD 700 (Lindsay et al. 1968) in the Navajo Mountain locale; generally the terminal date is thought to be in the 500s. On Black Mesa, however, the Lolomoi Phase is dated at 700 BC to AD 100 (Smiley and Andrews 1983). On the basis of the chronological evidence available, it would be therefore possible to postulate a northward movement of BMII people in the Kayenta region over the centuries, from Black Mesa to the southern Shonto Plateau and western Monument Valley to the Navajo Mountain area. Perhaps, then, several sequential phases could be postulated: a Lolomoi Phase centered on northern Black Mesa, a White Dog Phase in the Marsh Pass region, and a "Sand Dune Phase" on the Rainbow Plateau. Equally possible from the evidence available would be a widespread BMII horizon that became replaced in the south by the BMIII lifeway much earlier than in the north. Whether either temporal-spatial reconstruction (if demonstrable) is related to climatic changes (à la Euler et al. 1979; Dean et al. 1985), or to general demographic-migrational trends, is at this point purely conjectural. A cultural continuity between BMII and BMIII seems assured on the basis of close continuities of material culture items, but a simple unilinear sequence may be a gross oversimplification of the actual processes.

Basketmaker III

Basketmaker III can be characterized as the stage of the introduction of beans and pottery (an apparent functional relationship), the bow and arrow, cultivation of cotton, and communal religious organization (as exemplified by occasional large structures thought to have served as "great kivas"). Typical dwellings are partly subterranean, often slab-lined, with an antechamber, central firepit, 4 post roof support system, and low wing walls extending from the firepit to the house perimeter.

Black Mesa appears to have been essentially unoccupied between AD 100 and 850, in remarkable contrast to the Red Lake Valley, Klethla Valley, Tsegi, Tusayan, and Kayenta areas, where BMIII sites are well known. Only a few are known from the Shonto Plateau northward. Ceramically, at least 2 phases can be defined: a stage of only plain scraped (Lino Gray) or burnished (Obelisk Gray) pottery and a later stage also including painted bowls (Lino B/G) and occasional red-slipped (Tallahogan Red) vessels. The earlier expression is best exemplified at NA 8163 (Ambler and Olson 1977), and may have been found
by Kidder (Guernsey 1931) and Breternitz (1969) at Turkey Cave and by Ward (1975) at Inscription House. However, sites of this presumably earlier non-painted pottery phase are so rarely found that their distribution is unclear. A date of AD 555 from NA 8163 indicates that the beginning of painted pottery in the Kayenta area is later; AD 600 is suggested. Morss (1931:2) reports a cave "opposite Inscription House" as BMIII; his description, especially the lack of Lino Gray, sounds more like BMII; the apocynum breech clout could represent a late BMII textile technology such as noted at Sand Dune Cave. The later BMIII Lino Phase characterized by painted pottery appears to be a pan-Anasazi phenomenon, although somewhat erratically distributed geographically and temporally.

Populations seem to have been considerable higher than during BMII; many more sites are known, and some may have housed dozens of families. Lino Phase sites appear to be common from the Tsegi-Kayenta locality (Guernsey 1931; Juniper Cave as noted by Bannister, Dean, and Robinson 1968: 21), east of Black Mesa (Bond, Sudar-Murphy, and Frampton 1977), south of Black Mesa to the Little Colorado River (Daifuku 1961; Andrews 1981; Colton 1946), and on up to western Black Mesa and the Red Lake area (Ward 1976). In other words, BMIII manifestations are found surrounding but not on the northern part of Black Mesa, and are also largely absent from the plateaus north of the Klethla Valley (Lindsay et al. 1968; Morss 1931). As noted, some BMII technology from the Navajo Mountain area, particularly in the realm of twined bags and sandals, resembles BMIII items from elsewhere, supporting the contemporaneity of BMII in the Navajo Mountain locale with BMIII to the south as indicated by the dendrochronology.

The essential absence of BMIII ("Dot Klish Phase") sites in the Peabody coal lease area has caused considerable speculation among BMAP researchers, with explanations such as alluviation covering the sites (Gumerman and Euler 1976: 165), climatically-induced abandonment (Karlstrom, Gumerman, and Euler 1976; Euler et al. 1979), or identification and classificatory problems (Powell 1980: 66). The lack of BMIII on northern Black Mesa could also be attributed to the relative high elevation of that area, which in turn may have been related to the cultivation of beans. The particular varieties of beans first introduced to the northern Southwest may have had either rather long growing seasons or a physiology not adapted to the cool nights of the higher
elevations, and therefore impossible to grow except at lower elevations. Without beans, there is no need for pottery; without pottery, BMIII by definition is not present. Dates for the Lolomoi Phase do not indicate continued occupation; perhaps with the adoption of beans, the Anasazi moved to lower elevations.

Pueblo I

By about AD 830, ceramic decoration changed from the rather casual Lino style to the more precise fine line Kana-a style. This change may have occurred rather suddenly, as exemplified by bowls decorated with Kana-a style design on one side (usually the interior) and Lino style on the other (e.g., Heacock et al. 1984; NA 8300, personal communication J.S. Dean 1982). If this stylistic change was sudden, it argues for an introduction of the Kana-a style from outside the Kayenta area, which appears probable anyway because of its earlier occurrences in the upper San Juan. It is not yet clear what other changes accompanied the design change on the black-on-white pottery; unobliterated coils on the necks of jars is one, village layout and construction may be another. For northern Black Mesa, Smiley and Andrews (1983: 55-56) note that some Pueblo I (Dinnebito Phase) sites look much like BMIII sites, whereas others have the construction and layout more typical of later Pueblo periods. The similarity of Pueblo I and BMIII structures in the Tsegí area is exemplified by Kidder and Guersney's (1919) characterization of this stage as the "Slab-house culture"; I suspect that the more formalized village layout appears somewhat later than the ceramic changes. The question is of some importance, for the change in village layout would seem to reflect a basic change in village social organization from a loosely integrated group of related families to a tightly integrated (unilineal?) group, and also a change in ceremonial organization from a largely shamanistic and individualistic orientation to communal ceremonies organized around the calendrical round.

Because of the massive amount of archaeological work conducted on northern Black Mesa, BMAP reports provide the bulk of the architectural data
for PI, although the early work by the Peabody Museum provides more information on the material culture. BMAP researchers (Gumerman, Westfall and Weed 1972) soon became dissatisfied with both the Pecos Classification and Colton's phase system, and combined late PI and early PII into a Wepo Phase, largely on the basis of ceramic style, with the index type being Wepo B/W. However, the definition of a Wepo Phase appears to have validity beyond ceramic style. Early PI (Marsh Pass Phase, or on Black Mesa, "Dinnebito Phase") sites usually appear to be small agglomerations of pithouses, and are rather sparsely distributed; a population decline, leveling, or dispersal compared to BMIII may be indicated. In contrast, the more frequently found Wepo Phase habitation sites are typically composed of a linear arrangement of contiguous masonry rooms with one or more kivas. Some of these sites are quite large, but off the mesa have often been ignored because of the unimposing appearance of the roomblock, which has the appearance of a low mound of small rubble. However, most of these sites are in areas where later PII and PIII peoples lived, and it appears that the constructional stone had been salvaged for later use; a few late PI sites in locations not occupied by later peoples still have standing masonry walls, and except for the associated ceramics, convey the initial impression of a Tsegi Phase site. The relationship of this kind of site to the earlier(?) pithouse villages is not well known, even on northern Black mesa (Smiley and Andrews 1983).

Morss (1931:2) noted that Pueblo I sites are essentially absent in the area north of the Klethla Valley; neither have they been found by later workers in the same region. However, it should be noted that some of the sherds illustrated by Morss (Plate 2) could be classified as Wepo B/W; some late PI expansion northward out of the Klethla Valley is indicated. PI sites do occur on the northwest flanks of Black Mesa from Marsh Pass to the Red Lake vicinity, and also are found to the south of Black Mesa. The geographic distribution therefore seems to largely correspond with BMIII, with two exceptions: a more significant occupation of northern Black Mesa and an incursion across the Shonto divide into Dzil Nez Mesa and the upper reaches of Paiute Canyon. The Paiute Canyon migration, for it can only be such, appears to have occurred during the Wepo Phase about AD 980 (Ambler, Fairley and Geib 1983). Upper Paiute Canyon, with its strong springs and irrigable land, would have been particularly attractive to the PI farmers, especially since ties
could easily be maintained with the Tsegi area only a short distance to the south. The triggering mechanism for the PI expansion into northern Black Mesa and the Dzil Nez Mesa-Paiute Canyon locality can perhaps be postulated to be population growth, accompanied by drought and alluvial degradation in the canyon systems. That these PI peoples, or their early PII descendants, never went further, out north onto Paiute Mesa, or west onto the Rainbow Plateau, could be an indication of continued occupation of those areas by people living a BMII lifeway.

Pueblo II

Colton (1939) originally equated the time from AD 900 to 1100 as PII, and called it the Black Mesa Phase, with the succeeding Klethla Phase considered to be early PIII. This has resulted in a considerable amount of confusion, as many later investigators have also been unable to escape the idea that PIII starts at 1100, yet are faced with the observation that sites dominated by Sosi and Dogoszhi B/Ws are almost invariably small sites that fit the definition of PII. Thus, we have sites that some people would unequivocally call PII being called PIII by others (cf. Linford 1982 and Ambler 1984a), or the characterization in many early BMAP reports of an abandonment in PIII even though only a few sherds of Flagstaff B/W have been found. As an attempt to at least standardize and hopefully clarify the situation, I have proposed (Ambler 1983, 1985) two phases for Pueblo II, following the terminology and to some degree the ceramic determinants of Colton: the Black Mesa Phase and the Klethla Phase (see Fig. 2). This does not go as far as Adams (1951), who in essence states that it is not until beginning of the Tsegi Phase (AD 1250) that the Kayenta enter the PIII stage of development. However, it appears that the PIII determinants such as large pueblos and more local specialization begin during PI; ceramic styles are therefore used as determinants. It should be noted that in contrast to earlier classificatory schemes, the black-on-white ceramic assemblage of the Klethla Phase is dominated by Sosi and Dogoszhi B/Ws, with Flagstaff B/W considered to be characteristic of early PIII. The Black Mesa and Klethla Phases as redefined do correspond nicely with the BMAP Lamoki and Toreva Phases.

Pueblo II in the Kayenta area is characterized by higher site density and an increased territory. The Shonto Plateau sees the first appearance of
Puebloan sites, at least in any numbers, at roughly 1050, and PII sites suddenly appear on the Rainbow Plateau, Cummings Mesa, Navajo Mountain area, and Paiute Mesa a generation later, about 1080. At about the same time, the Wupatki and Grand Canyon regions also see some influx of PII peoples. In the southeast part of the greater Kayenta region, typical Tusayan White Ware begins to be replaced by Little Colorado White Ware, until by 1150 or so the ceramic assemblage is clearly dominated by the southern ware. Whether this represents a shift in cultural boundaries, a social fragmentation, or simply increased reliance on locally produced pottery is as yet unclear.

Smiley and Andrews (1983; 56-57) also note that for northern Black Mesa there appears to be a reduction in mobility, increasing regional social integration, and an increased material culture diversity, trends that may hold for the region as a whole. For northern Black Mesa, the reduction in mobility does not last long; the Peabody Coal lease area is effectively abandoned by 1150. The population decline is thought to commence somewhat before 1100; the timing is certainly right for the Black Mesa folk to have contributed materially to the sudden population increase to the north.

Most Black Mesa and Klethla Phase sites are small, with 1-3 living rooms plus associated storage rooms, special purpose (e.g., maize grinding) rooms, and kivas. Some larger pueblos, perhaps 15-20 rooms, are also known, largely from surface evidence. Village layout generally follows a uniform pattern, with a principal masonry storage room flanked by other rooms and a circular fully subterranean kiva in front. The larger sites have a plaza defined by walls or rooms surrounding the kiva. Considerable variability in wall construction and specific features from one site to the next is apparent, an indication of personal variability. Kivas, usually considered to be ceremonial, often have utilitarian items associated; perhaps they also served as winter dwellings. The summer visitor or archaeological field worker often fails to appreciate the rigors of winter in the Kayenta county; a subterranean kiva would certainly be more snug than a surface room made of jacal.

By Pueblo II, the tripartite Kayenta ceramic tradition is well established. On the basis of clay characteristics, Geib and Callahan (1985) have shown that the white wares were probably made from the Mesa Verde and Mancos Formation clays exposed on and around the perimeter of Black Mesa,
whereas Tsegi Orange Ware was most likely made from clays from the Chinle Formation. This reconstruction is supported by the changes in orange ware/white ware frequencies as one moves from south to north (Ambler 1983). Tusayan Gray Ware also appears to have been made from Black Mesa clays, and Toreva sandstone could be the source for the temper of those culinary wares. It would thus appear that at least by PII, if not considerably earlier, widespread exchange in ceramics was an established part of the socio-economic system. The mechanisms for this exchange have yet to be explicated.

Pueblo III

Citadel and Shonto Phases

Increasing populations, large-scale economic symbiosis, and an impression of a generally higher standard of living set the stage for Pueblo III. However, the potentially smooth evolutionary flow is interrupted at about 1150. Black Mesa is abandoned, over much of the rest of the region population growth seems to have leveled off and declined in some localities. Berry (1982) postulates a precipitous decline for the region as a whole. One noticeable exception is the Wupatki locale, where site density rises markedly after 1150 (Anderson 1983). Most explanatory hypotheses for the demographic changes at this time have been unabashedly environmentally deterministic (e.g., Karlstrom, Gumerman and Euler 1976; Euler et al. 1979; Berry 1982). Various paleoclimatic reconstructions agree on a severe but short-lived period of arroyo cutting and drought in the mid 12th century, with a subsequent return toward more mesic conditions. For farmers dependent upon the cultivation of valley alluvium the resulting arroyo cutting would have had effects lasting for decades, until aggradation had again provided both suitable soils and an elevated water table. The Wupatki area, as barren as it may seem now, may therefore have been an attractive place in the late 1100s, with the generally mesic (but becoming drier) conditions prevailing during early PIII. However, many PII villages are located in situations that imply farming of other than canyon bottoms. As an over-simplified scenario, I suspect that during Pueblo II each hamlet, usually a small extended family, concentrated their agricultural efforts on a limited range of agricultural
strategies and farm locations, relying primarily upon either canyon alluvium, slope wash, sand dunes, spring-fed irrigation, or flood water; the ones severely effected by the erosional cycle of 1150 were those who had their agricultural lands literally removed. The others stuck it out, in much the same village and subsistence pattern as during the Klethla Phase. By 1200, however, canyons were alluviated again, but the general climatic trend was toward less moisture. The Wupatki area became uninhabitable, but lessons in living in large communities had been learned. The Wupatki experience may well have brought many Kayenta into closer contact with their neighbors to the south, resulting in other changes as well. For instance, Leavitt (1963) has proposed that the design style of Kayenta PIII pottery types, specifically Flagstaff B/W, was brought about by indirect influence from the Hohokam, through trade contacts with the Sinagua population in the Flagstaff area.

At the first (1981) Anasazi symposium, I proposed the term "Dzil Nez Phase" for the early expression of PIII in the Kayenta Area, as it was obvious that Kayenta ceramics as well as overall organizational characteristics necessitated a formal phase definition for the period from about 1170 to 1210. The term Dzil Nez was chosen as a geographic centroid to the known locations of early PIII sites in the northern Kayenta area. Upon reflection, however, I find that term singularly inappropriate; since the Wupatki locality was where much of the action was occurring, it seems more reasonable to select a name that reflects this situation: I therefore propose the term Citadel Phase despite the fact that "Dzil Nez" has achieved some degree of usage (e.g., Ambler 1985; Anderson 1983).

By the Tsegi Phase it is obvious that major reorganizations of village structure and changes in adaptational patterns have occurred. No longer is every family on its own, but some groups of families have banded together in large villages, and agricultural diversification on the village level is possible. The preceding Shonto Phase villages patterns may set the stage for those of the Tsegi Phase, but are often obscured by continued occupation of the same site locations. The Shonto Phase is poorly known.

Meanwhile, events on the perimeters of the Kayenta region are starting to affect Kayentans more directly than ever before. The Chinle drainage, securely part of Kayenta territory during BMIII and PI times, is taken over by
Mesa Verdeans and/or Chuskans; large settlements with affiliations to the Mogollon country are being established along Cottonwood Wash; the Sinagua have become a major political-economic force to the southwest (see McGuire and Downum 1982 for an interesting but somewhat fanciful reconstruction of the role of the Sinagua as middlemen in the interregional trade network); and essentially all the area north and west of the Colorado River is rapidly being abandoned by the Anasazi. Mesa Verdean pressures and influences from the north and east, relict but expanding Chacoan and/or Mogollon populations to the southeast, increasingly powerful Sinagua groups to the southwest, and refugees from the west may have therefore had more of a part to play in the development of the Tsegi Phase than simple internal growth and evolution.

Tsegi Phase

Betatakin is the only one of the three sites upon which Navajo National Monument centers that evidences no occupation earlier than the Tseyi Phase. This lack of previous occupation at Betatakin is probably due to the extreme slope of the cave floor, which rendered it unsuitable for habitation without extensive work. Kiet Siel shows some PI occupation and a strong PII utilization (Anderson 1971, Table 3); the alcove at Inscription House appears to have been utilized as early as BMIII, with a strong Black Mesa Phase occupation (Ward 1975, Table 1). The preponderance of Tusayan B/W over Kayenta B/W at Inscription House compared to the proportions at Betatakin and Kiet Siel argues that a large part of Inscription House may actually have been constructed during the Shonto Phase with the occupation continuing into the Tsegi Phase (cf. Ward 1975:35). Betatakin and Kiet Siel, however, judging from both the ceramic frequencies and extensive dendrochronological data, appear to have been built during the Tsegi Phase. In any case, it appears that the PIII inhabitants of each of these sites rebuilt anything that may have been standing to suit their own specifications, rather than simply altering or using existing structures. A suggestion that such total remodeling was not always the case is provided by Hawk's Nest (Hargrave 1935; Stein 1966), where Wepo Phase sherds are at least as common as PIII sherds, a Wepo Phase open site is nearby, and the northern part of the structure is noticeably different in construction technology than the southern set of rooms. Dzil Nez Mesa, however, was only sparsely utilized during the Tsegi Phase (Ambler, Fairley and Geib 1983); the light PIII occupation appears to have resulted in preservation of the earlier component.
Although the cliff ruins have attracted the most attention, especially during the early years of exploration, it is also evident that many Tsegi Phase sites were constructed in the open, and many of these may have housed at least as many people as the more famous cliff dwellings. Lindsay (1969: 243-246) has pointed out that several different basic architectural layouts were used during the Tsegi Phase. These are most easily seen in open sites, because the spatial restrictions placed by the natural conformation of caves tends to distort what appear to have been the ideal patterns. Expanding somewhat on Lindsay's classification, it would appear that 3 major village patterns were in existence during this time: plaza sites, courtyard sites, and pithouse villages. Plaza sites are characterized by a sturdy masonry roomblock at the northwest side of the site, usually with a central exceptionally long room flanked by living and/or storage rooms. Extending southeastward from either end of this major roomblock may be additional rooms, walls, or pithouses surrounding a large plaza containing one or more large circular kivas. Other rooms may be present across the front (SE) side, sometimes several tiers deep. Only a few of the smaller sites of this type have been excavated, such as Surprise Pueblo (Ambler, Lindsay and Stein 1964), Neskaahi Village (Hobler 1974), and Upper Desha Pueblo (Lindsay et al. 1968). Some even smaller villages such as NA 7455A (Ambler, Lindsay and Stein 1964) appear to be attenuated versions of this general pattern. Sites such as Long House in Long House Valley, Red House on the southern slopes of Navajo Mountain, and Thumb Rock Pueblo on southern Paiute Mesa provide examples of the larger end of the spectrum.

The layouts of courtyard sites show considerable variation, sometimes influenced by the exigencies of restricted site locations. Taking Segazlin Mesa (Lindsay et al. 1968) as a whole, the site is formed of a series of lineal roomblocks with several small courtyards each. Long rooms are absent, and the circular kivas are incorporated into essentially every roomblock. Kiet Siel may be a modified version of this plan. Pottery Pueblo (Lindsay n.d.) appears to be a much more haphazard and jumbled arrangement of irregular roomblocks, small courtyards, and occasional kivas. Small sites of the courtyard type are probably also quite common, and often utilize semi-subterranean and jacal construction, as exemplified by site UT V-13-16 near Navajo Mountain (Geib, Ambler and Callahan 1985).
Pithouse villages appear to have a great deal of variation, although our information is often confined to only portions of these sites. NA 8163 (Ambler and Olson 1977) and Dogtown (Ambler and Andrews 1981; Ambler 1983a; Callahan n.d.) appear to be formed of largely isolated pitstructures scattered over a fairly large area, with a high degree of variability in form and inferred function present. Both circular and rectangular kivas may be present. Pithouses are also found as part of sites that fit both the plaza and courtyard patterns.

Betatakin seems to be an anomaly. Dean (1969) identifies only one rectangular room as a kiva, although noting the possible former presence of another and mentioning the one in a separate shelter nearby (Anderson 1966). Kivas seem to have served as the focal point for many other Tsegi Phase sites, which makes their apparent absence at Betatakin even more striking. Although the nature of the cave floor at Betatakin would have made the construction of an ideal subterranean kiva difficult, the problem had been solved many at other sites by the use of retaining walls. As Dean notes, one or more kivas may have been present in the talus below the ruin. Cummings, however, searched the trash for burials (unsuccessfully); had he found a kiva there, he surely would have excavated it.

There appears to be a strong correlation between Tsegi Phase site layout and location. Plaza sites are typically situated on elevated but not inherently easily defendable locations with a southeasterly slope. The main room block and long room are commonly perched on the most elevated portion of the hill. The courtyard sites are often found in obviously defendable locations, with the access controlled by what can only be called fortifications: heavy walls, restricted passages, and/or loopholes in walls. In contrast, pithouse villages and single-family courtyard sites appear to have been selected with an eye largely toward suitable soils for construction and nearby arable land.

Several interpretations of these different Tsegi Phase settlement patterns are possible (Geib and Ambler 1983, 1985). Given the large amount of dendrochronological and ceramic evidence, it does not appear that these various site types are sequential rather than contemporaneous. The differences in village layout and specific architectural features imply
differences in socio-political organization, so it is conceivable that socially distinct groups are represented. Despite the general implausibility of such a scenario (Binford 1982), the ideological and social differences implied by the different village layout (and different kiva styles?) could support the hypothesis of at least two socially distinct groups interspersed in the same region. Since plaza sites have clear antecedents in the region going back at least 200 years, it can be postulated that they represent the culmination of Kayenta social evolution into tightly integrated large social units. Since linear and irregular courtyard sites are common at a slightly earlier time level west of the Colorado river among the Virgin Anasazi, it could be further argued that immigrants from the west brought this pattern to the Kayenta country. This reconstruction is not given credence by Hopi analogy, where the old-timers had control over the most easily defendable spots, and relegated the newcomers to militarily less desirable locations. It does appear that the courtyard sites and pithouse villages represent less tightly integrated social units, with each family forming an independent socio-economic unit that could move in and out of the village at will (Dean 1969).

As with any situation when dealing with human behavior, it is unlikely than any one explanation will suffice. Militaristic or raiding pressures, real or imagined, from the Mesa Verdeans to the east or Numic speakers to the west could have precipitated the construction of fortified villages; internal conflicts could equally well be represented. People from isolated single-family units could have retreated to the larger pueblos when in need of protection. The older, well established plaza pueblos may have afforded ample protection from raiders by virtue of their size, whereas new communities, whether the result of in situ population growth or immigration, may have chosen the more expedient method of defense, building in fortifiable locations. Whether of plaza or courtyard layout, the larger villages could also have served as winter habitations. A seasonal aggregation and dispersal is well documented for both Navajos and Pueblos in historic times, and there is as yet little reason to assume a different pattern prehistorically. The larger villages could well have also served as ceremonial and/or economic centers, with folks from the outlying small communities gathering there on a regular basis. Distinct social stratification among the Kayenta is a possibility, and Crotty (1983) interprets the differential burial treatment at RB 568 as evidence of such. If there was a Kayenta "elite," they may well
have resided at the larger sites; this does not preclude, indeed enhances the interpretation that these sites may have served as ceremonial, trade, and/or refuge centers.

Differences in village location, layout, and specific architectural features make it difficult to envision the Tsegi Phase Kayenta Anasazi as a culturally uniform group. The sizes and numbers of sites indicate a population growth rate higher than can be accounted for by in situ growth; newcomers may have added to the tensions as well as contributing to the variability and strength of the Kayenta.

The quality of Tsegi Phase decorated ceramics has long been of interest to archaeologists, pothunters, and museum visitors. Indeed, the addition of white outlining and elaborate motifs on polychrome vessels and the introduction of "mosquito bar" hatching to create Kayenta B/W serve as the primary distinguishing indicators of the Tsegi Phase. Accompanying the stylistic change in Tsegi Orange Ware and Tusayan White Ware is a textural change in Tusayan Gray Ware toward even less elaborate surface treatment, as exemplified by Kiet Siel Gray. Increased localization of utility ware manufacture is shown by the large amounts of Rainbow Gray in the Navajo Mountain locality (Callahan and Fairley 1983; Fairley and Callahan 1985) and higher proportions of corrugated wares in the southern portion of the Kayenta region. On the basis of clay characteristics, Geib and Callahan (1985) have convincingly argued that specific production zones existed for the white and orange wares, a conclusion substantiated by the different spatial frequencies of those wares (Ambler 1983). The ramifications of this local specialization in ceramic production have yet to be explored, but it would appear that the Kayenta continued to have a widespread exchange network. Given the increase in village size and possible indications of increasing social differentiation during the Tsegi Phase, it could be that the social mechanisms for this exchange changed from PII to late PIII; it is possible that control of trade became increasingly concentrated in the hands of a minority. However, such reconstructions can presently only be hinted at; considerably more research is necessary in order to define the socio-economic parameters of the Kayenta Anasazi, although some suggestions along these lines have been made (e.g., Lindsay 1969; Dean 1970; Ambler 1983b).

The Anasazi abandonment of much of the Kayenta region, indeed the entire San Juan drainage, by about AD 1300 has long been a subject of interest to scholars and laymen alike. Some investigators have been content to document
the abandonment, but many have felt the need to search for explanations. Generally, the explanations have focused upon three major causal realms: enemy groups, climatic and other environmental changes, and social problems.

The primary evidence for problems with other groups is the obviously defensive or easily defendable nature of many of the Tsegi Phase sites; no direct evidence of warfare in the form of burned and pillaged villages has yet come to light; in most instances the emigration seems to have been rather orderly. However, as Venc (1984) has pointed out, actual battles often occur away from settlements, and leave but few traces. Navajos and/or Apaches have been often singled out as possible enemy invaders/raiders. With the advent of tree-ring dating and ethnohistorical-archaeological studies, however, it now appears that the Athabascans moved into a void that had been abandoned for at least 2 centuries. More plausible potential Anasazi enemies would be the Numic speakers: the Southern Paiute and Ute. The Numic expansion into and beyond the Great Basin has been reasonably well documented on the basis of several lines of evidence, and appears to have occurred at a time level commensurate with the Anasazi abandonment of the area. However, it is difficult to envision how scattered Paiute bands could have had a serious effect on the much larger and better organized Anasazi populations; it was the mobility provided by the horse that made historic raiding endeavors practical. Defensive locations would have been of value against Numadic raiders, but were perhaps more important if the Kayenta were facing opponents with a similar technological, social, and demographic pattern. Adams (1951) pointed out that Mesa Verdeans may have posed a threat; but the Mesa Verde culture area also became abandoned at about the same time. It is difficult to envision small groups of "enemy invaders" as being a serious threat to the Anasazi.

Early in the development of dendrochronology, the potential of the tree-ring record for paleoclimatic reconstruction became apparent, and the "great drought" of the late 13th century has been often invoked as a causal factor in the Anasazi abandonment of the San Juan. More recent studies (e.g. Dean 1984) indicate that the drought of the late 1200s was neither as severe nor as widespread as formerly believed, making it difficult to accept as a sole
causal agent. Dean (1969) has argued convincingly that drought-induced arroyo cutting was a prime factor in the abandonment of the Tsegi. Although arroyo cutting may have had disastrous consequences for those Kayentans dependent on canyon alluvium for agriculture, it is difficult to see that this alone would have resulted in the abandonment of the entire territory. Euler et al. (1979) correlated intraregional population movements with paleoclimatic fluctuations, generally positing a utilization of upland areas during warm dry spells and lower elevations during cool and moist climatic conditions. The periodicity of the climatic change as reconstructed by Euler et al. may have had more wide-ranging effects than moving up and down in elevation; Berry (1982) postulates large-scale near-abandonment of the Anasazi region at intervals corresponding to the divisions between the Pecos classification stages, and sees the PIII abandonment as simply one of several similar drought-induced mass populations movements. In a somewhat similar vein, Ambler, Fairley, and Geib (1983) point out that migration was a common Kayenta adaptive response, and that the total abandonment at the end of the Tsegi Phase differed largely in scope, not in kind, from earlier population movements.

Only rarely noted by abandonment theorists is the effects that the Kayentans themselves may have had on their immediate environment. The effects of ever-increasing numbers of people on the fuelwood supplies, wild animal populations, productivity of agricultural plots, and the availability of wild plants could well have been as important in reaching a decision to relocate as other more external factors (Geib and Ambler 1985).

Combining the above potentially causal agents hardly makes for a simple explanation, but simple cause and effect explanations are rarely forthcoming in terms of human behavior. Increasing pressure on the natural resources, unfavorable climate conditions (which result in lower productivity of non-domesticates as well as crop plants), increased social differentiation and tension within Kayenta society perhaps aggravated by the arrivals of Numic speakers and increased competition with other Anasazi, probably all contributed to the demise of the Kayenta culture pattern. What may have served as a triggering mechanism in one locality may have been different in others, but once the emigration began in earnest, the fabric of the Kayenta socio-economic system would have been rendered, thus explaining why none remained behind. As an alternative or supplementary scenario, the increasing
village size and integration, as represented by the large plaza sites, could be considered to have allowed a migration into a new habitat where large community efforts would be necessary and efficient for a more intensive agricultural effort.

If this last potential reconstruction were the case, one would expect that the people of entire villages would move at once. Dean (1969) presents good evidence that Kiet Siel was abandoned gradually, a pattern that bespeaks the independent nature of the individual household. A family-by-family abandonment is analogous to the 1930s Dust Bowl migration, whereas the movement of entire villages would be more of a planned and organized movement. No evidence is available from the Kayenta region concerning abandonment of the presumably more tightly integrated plaza villages, but an example of the end result of such a migration is found at Point of Pines (Haury 1958), where a number of families moved en masse from the southern Kayenta ("Tusayan") region shortly before 1300. There are some suggestions (e.g. Wasley 1962; Lindsay 1969: 389; Brown 1972) that some Kayentans moved farther south, into what is now southeastern Arizona.

The traditional view, uncritically espoused by almost all authors who have dealt with the subject, is that the vast majority of the northern Kayentans simply moved to the southern part of the area, to join their relatives on southern Black Mesa and the valleys immediately to the south. This view has been challenged by Berry (1982:110), who points out that no beam cutting dates between 1280 and 1360 have been derived from the Antelope Mesa area. Berry therefore posits a movement from the entire Kayenta region to high altitude refugia even farther south, with a subsequent return to the Hopi area about 1360. Other investigators have pointed out, on the basis of both archaeological and ethnohistorical evidence, that the Hopi are of diverse origins; certainly the one-to-one correlation of the modern Hopi as being descended directly from the Kayenta Anasazi is a notion that must be examined in considerably more detail. Whatever the causes, timing, and mechanisms of the abandonment of their many contemporaneous villages, the Kayenta Anasazi appear to have ceased to exist as a recognizable cultural entity by 1300. At this point in our knowledge, it is difficult to postulate how much of the Kayenta pattern persisted until the arrival of Europeans. A few ceramic motifs survived, but shapes, colors, and general style changed appreciably;
circular kivas went out of fashion in northern Arizona, and the rectangular ones used by the Hopi bear much more resemblance to earlier kivas to the south. The cultural connections with living peoples are so tenuous that we cannot even postulate with any degree of assurance what language the Kayenta spoke. Contrary to most explicit or implicit views, we do not know what happened to the Kayenta Anasazi, or who their modern descendants are.
SITE DESCRIPTIONS AND EVALUATIONS

Although designated to encompass Kiet Siel, Betatakin, and Inscription House, by happenstance the Monument boundaries include other sites as well. However, there is no record of any intensive archaeological survey of the Monument, nor of the 240 acres leased from the Tribe; the only actual survey report that seems to exist is for the 4.6 acres for the sewer lagoons (memorandum from Norman W. Ritchie, March 24, 1976), although the environmental assessment for the proposed ranger station at Kiet Siel mentions that the area for those facilities was surveyed by a professional archaeologist. Given the site densities recorded in some nearby areas, it would not be surprising if more sites are located within the Monument than have been recorded. The following summary is drawn from published and unpublished sources rather than field examination, although I have at one time or another visited most of the known sites within the monument. Sites will be summarized by each of the three sections of the Monument starting with the principal site in each of those sections.

Evaluations are considered in terms of criteria of eligibility for inclusion in the National Register of Historic Places (36 CFR 60.4). Of these criteria, C and D are the most relevant; the principal sites were originally set aside for their outstanding "ethnological, scientific and educational interest." By virtue of being a National Monument, Navajo National Monument was automatically included on the National Register with the passage of the National Historic Preservation Act of 1966. Brief inventory forms were prepared for the three principal sites in 1970. Primary references are given in chronological order and only published references are listed here. Minor and secondary references, of which there are many, may be found in those sources and in the references for this report. Collections and records are summarized in Appendix I, with a brief listing given here.

KIET SIEL PARCEL

Kiet Siel

From the Navajo, Kiet Siel translates as "broken pieces of pottery" or potsherds, an attest to their former abundance on the surface. (Another site
of the same name, Kitsillie, is located on Black Mesa near upper Oraibi Wash.) Although it would seem that generations of Anglos intimately familiar with the area, including John Wetherill, would not be wrong, it is possible that the Navajo name (or another Navajo name) may be Kin Etzeel, or "deserted house", empty like a pinyon nut shell (S.B. Van Valkenburg, memorandum of February 11, 1965). Kiet Siel has been visited by dozens of archaeologists and some of these have recorded the site into the site numbering system of their home institution. The Museum of Northern Arizona carries two site numbers, NA 2519 and NA 4936; the Gila Pueblo site files, now at the Arizona State Museum, list it as Marsh Pass 2:1, and the Arizona State Museum number is Ariz. D:3:1.

Kiet Siel is located about 10 miles upstream from Marsh Pass, in a large rincon on the west side of Kiet Siel Canyon. Kiet Siel Canyon lies between Dogoszhi Biko and Long Canyon; the three join together within less than a mile of each other to form Laguna Creek and Tsegi Canyon proper. The large alcove in which Kiet Siel is located faces southeast, a traditional orientation for Kayenta villages, which doubtless contributed to its appeal as a dwelling place.

The identifiable presence of 154 rooms makes Kiet Siel one of the largest cliff-dwellings in the Southwest. At least 4 kivas are present at Kiet Siel; all seemed to have been roughly circular in plan, although remodeling and erosion have obscured the details of all but one. A fifth large rectangular structure may have also been a kiva prior to remodeling into domiciliary rooms, and the two kivas at Turkey Cave (see below) also were probably built and used by the residents of Kiet Siel. Two rooms adjoining kivas also appear to have served ceremonial functions (Dean 1969: 98-99). About two-thirds of the remaining rooms are granaries or storage rooms, several rooms served largely for grinding corn, and most of the remainder are living rooms. A prehistoric sump had been developed at the base of the cliff below the ruin and roofed in 1274. Dean (1969) identifies 25 room clusters at Kiet Siel, and posits that these were built, occupied, and abandoned by individual families at various times.

The overall village layout of Kiet Siel is of interest because of its "streets" that provide access to various parts of the site between groups of
room clusters rather than solely along the front as is so often the case in other Tsegi Phase cliff dwellings. Streets were possible because of the relatively wide ledge upon which the site was constructed, considerably enhanced by a massive retaining wall that stretches across the eastern two-thirds of the site. A huge white fir log has long been thought to have spanned the gap between the retaining wall and the southwest rooms; later thoughts by one of the 1933-34 crew (Hayden 1978) indicate that in prehistoric times it had never been raised to the position it now occupies.

Excavation in the trash (Anderson 1969, 1971) indicates occupation at least as early as Pueblo I and continuing into PII, with, of course, a major occupational episode in the Tsegi Phase. Dendrochronological data (Dean 1969) indicate that the structure as we now see it was constructed over a span of about 40 years from the mid 1240s to the mid 1280s. Only one beam (Room 56; AD 950) could be definitely identified as being reused from the PI or PII occupations. Dean (1969: 144) suggests that many of the earlier beams had been used as firewood. Given the energy necessary to acquire suitable construction timbers, the use of still usable beams as firewood would seem counter-productive during a construction phase; perhaps the site had been gradually abandoned several times before the final abandonment, and population remnants or wanderers burned the beams even before the PIII occupants moved in.

Between the 1897 activities of Richard Wetherill, later "explorers," and the 1933-34 CWA work, few if any intact deposits remain in any of the rooms, and Dean's study would appear to have extracted most of the architectural and chronological information that can be derived from the site. However, only a portion of the trash has been excavated (mostly of that by the CWA project and Anderson), and a great deal of artifactual and paleoecological information remains therein. Both categories of data would be of extreme importance for providing information not only on Kiet Siel itself, but the Kayenta Anasazi in general. Existing paleoecological information on late PIII in any detail other than bones, corn cobs, and a few feces is found only from excavations near Rainbow City (Geib, Ambler, and Callahan 1985), an amazing situation considering the potential of well-preserved cave deposits. The trash at Kiet Siel provides opportunities for diachronic studies of Kayenta ecological relationships. Also of vital importance to the understanding of Kayenta
Prehistory would be the acquisition of a considerably larger artifactual sample from the trash of Kiet Siel. This ruin is one of the most precisely dated prehistoric sites in the world, yet it is difficult to relate the stylistic, technological, exchange, and general cultural pattern to that noted at other related sites because of the sparseness of the artifactual information. On the grounds of information potential alone, Kiet Siel is eminently qualified for inclusion in the National Register. It is obviously also qualified for inclusion as an outstanding example of its type and for the role it has played in the development of Southwestern archaeology.


Collections and Records: American Museum of Natural History; University of Utah; Museum of Northern Arizona; Western Archeological Center; Arizona Pioneers Historical Society; Laboratory of Tree-Ring Research.

Turkey Cave

Being only a few hundred meters upstream from and on the same side of the canyon as Kiet Siel, Turkey Cave is also well known to archaeologists and visitors alike. Turkey Cave is sometimes confused with Turkey House, across the canyon and outside the Monument boundary; both Turkey Cave and Turkey House were excavated by Kidder in 1923 (reported in Guernsey 1931); Cummings and Gladwin worked here as well, but left us with no reports. A later test by Breternitz (1969) augments the work by Kidder. Turkey Cave bears several site numbers; NA 2520 (MNA), Marsh Pass 2:2 (Gila Pueblo), and Ariz. D:3:2 (Arizona State Museum).

Although a large sheltered alcove and facing southeast, Turkey Cave contains only a few masonry rooms; except for specialized purposes, the alcove at Kiet Siel was apparently large enough to house the Tsegi Phase inhabitants of this section of Kiet Siel Canyon. In PIII times, Turkey Cave may have even had a similar name; the amount of turkey feces and feathers attest to a considerable expenditure of effort in aviculture. A line of posts near the crest of the slope may have helped served to contain the fowl; alternatively, as suggested be Breternitz (1969), it may have served as a retaining wall.
Several small structures against the cave wall may also have been associated with the raising of turkeys.

Considerable amounts of cordage, yucca knots, quids, flakes, potsherds, cornhusks and cobs, and miscellaneous woody plant parts indicate more activity that simply raising turkeys. Perhaps Turkey Cave served as a generalized work area for the inhabitants of Kiet Siel, similar to earlier practice on Black Mesa (Ambler n.d.). The paucity of PIII sherds, however, indicates that actual occupation during that time was minimal; certainly the keeping of turkeys in a separate area would have been beneficial from olfactory, auditory, and sanitary viewpoints. Most of the trash probably relates to the earlier occupations rather than the Tsegi Phase.

In his relentless quest for kivas, Cummings excavated one of the two circular kivas at Turkey Cave; the other was cleaned out in 1934 by Irwin Hayden. Dean (1969:98) unquestioningly considers these to have been built and used by the residents of Kiet Siel. The logistics of constructing a kiva at Turkey Cave would have been simpler than in the restricted sloping area at Kiet Siel, although the aesthetics of having a religious structure in a turkey pen would not appeal to all.

The test by Breternitz (1969) revealed a PI pithouse, and Kidder's test revealed another pithouse that he considered either BMIII or PI in age. Since only a small amount of the cave has been tested, it is probable that several more pithouses are present. The amount of PI pottery certainly suggests a considerable utilization during that period.

Turkey Cave is obviously one of the most important sites within Navajo National Monument; its potential for yielding architectural, ecological, subsistence, chronological, and technological data for Pueblo I makes it a vital site for the archaeology of the entire region. A good deal of the cave remains unexcavated, and with today's analytical techniques, could yield a wealth of information. The NPS plans for a retaining wall to protect these deposits from erosion appears to be a good solution to prevent natural degradation.

Principal references: Guernsey 1931: 57-60; letter from J. Wetherill to F. Pinkley, Feb. 19, 1934; Hargrave 1935; Breternitz 1969; Bannister, Dean, and Robinson 1968: 44-45; Dean 1969: 98.
Collections and Records: Peabody Museum, Harvard University; Museum of Northern Arizona; Laboratory of Tree-ring Research; Arizona Pioneer Historical Society; University of Utah.

Rock Art between Kiet Siel and Turkey Cave

On the point between Kiet Siel and Turkey Cave are several pictographs in the Tsegi Painted style (Schaafsma 1967; 1980).

Ruin B

Douglass, in his 1909 survey that established the Monument boundaries, noted an apparently open site close to the center of the north boundary. Subsequent searches have failed to identify this site (Ritchie 1976).

BETATAKIN PARCEL

Betatakin

The hanging floor of Betatakin Canyon did not experience the same alluvial cycles as the Tsegi, so the physical setting of Betatakin today is much the same as it was when the Kayentans started cutting trees to build the village in the 1260s. Betatakin therefore has a special mystique despite the huge falls of cave roof that wiped out much of the central and eastern portion of the village. This rockfall essentially obliterated rather than crushed the rooms, in many cases causing the rooms to avalanche, leaving only their foundations pecked into the steep cave floor. The name, which translates from Navajo as "Ledge House", is obviously appropriate. Betatakin also carries MNA, ASM, and Gila Pueblo site numbers: NA 2515, Ariz. D:6:7, and Marsh Pass 6:4.

The steep floor at Betatakin precluded the use of the cave by any significant numbers of earlier people; all of the occupation has been ascribed to the Tsegi Phase. Dean (1969) postulates sporadic use starting about 1250, a lot of tree-cutting in 1269, and a major building episode from 1275-1277. The lack of any construction or repair activity after 1286 could indicate abandonment by 1290; Dean (1969:75) prefers 1300.
Betatakin has been somewhat more thoroughly reported than Kiet Siel. Judd's (1930) report on the 1917 stabilization effort provides detailed architectural descriptions. Judd, however, did not recover many artifacts, as most of these had apparently been removed by Cummings, who spent 3 months excavating the site the same year it was discovered (1909). Cummings' collection provided a large part of the data used by Anderson (1969b) for his technological summary. Dean's (1969) study provides a considerable amount of architectural and chronological data and one of the most soundly-based interpretations of social patterns derived from archaeological data. Unfortunately, Anderson's (1971) tests in the trash provide essentially the only collection of sherds, a small sample that makes quantified comparison with other ceramic assemblages difficult.

The large circular pictograph at the east end of the site has been interpreted as a representation of Masauwu and to be a symbol of the Hopi Fire Clan (Schaafsma 1980). As such, it may have served as a commonly recognized symbol denoting the social affiliations of the residents.

Judd assigned numbers to 135 rooms; a few more may have been completely obliterated, for an original total of perhaps 140. Dean (1969:50-52) has pointed out that the lack of easily identifiable kivas at Betatakin has precipitated undue efforts to define some rooms as kivas; he is confident about calling only one room a kiva. Dean notes Anderson's (1966) possibility of another adjacent kiva, and postulates additional kivas in the talus below the cave. NA 3533 (see below) was undoubtedly also used by the residents of Betatakin. Both Room 55, the undisputed kiva, and NA 3533 are rectangular, perhaps implying different ceremonial patterns at Betatakin than at Kiet Siel with its circular kivas. The dated construction history led Dean (1970) to postulate that Betatakin was founded by an already functioning social group, another difference with Kiet Siel, although the basic household unit is thought to be similar. Abandonment patterns are not clear at Betatakin; Dean (1969) infers a liesurely abandonment.

The rockfall that destroyed a portion of the site is generally thought to have occurred between 1300 and 1900; the possibilities of dating it more precisely through studies of pack rat middens or artifactual associations were negated by early clearing of this debris. Between the work of Judd and Dean, little additional architectural information is likely to come to light.
Unfortunately, Cummings' notes and provenience designations do not lend themselves to discussions of intrasite patterning, but detailed analytic studies of the artifacts using new techniques and approaches could lead to more insights than gained by Anderson. The greatest potential for additional studies at the site lies in the talus below. Additional testing in the trash would result in a larger sample of small artifacts necessary for comparison with assemblages from other sites; a systematic search for structures below the cave has apparently never been attempted. The trash is of especially important potential for yielding paleoecological data. The lack of natural disturbance of Betatakin Canyon provides the potential for eliciting additional ecological information; geological, soil or vegetation studies could reveal special farm plots or other special use areas. The site and environs therefore still retains considerable research potential. The interpretive value of Betatakin, its role in Southwestern archaeology, and the well-preserved architecture also all merit its inclusion in the National Register.

**Principal References:** Fewkes (1911); Judd (1930); Dean 1969, 1970; Anderson 1969, 1970.

**Collections and records:** University of Utah; Smithsonian Institution; Western Archaeological Center; Laboratory of Tree-Ring Research.

**Kiva Cave**

Immediately upstream from and west of Betatakin is a smaller shelter, sometimes known as Alcove Kiva. The site is also commonly referred to by its MNA number, NA 3533; in addition it bears RB-MV no. RB 593 (and RB 427?). Little evidence of use other than the construction of a rectangular kiva and presumably associated surface room is evident. The lack of habitation units and other features of domiciliary life have led to a consensus that this kiva is intimately associated with Betatakin. The kiva was excavated in 1930 by Milton Wetherill, but a report has not been located. It was re-cleared in 1964; Anderson's (1966) report stands as essentially the only reference. One non-cutting date is reported by Bannister, Dean, and Robinson (1968).

It is doubtful that other features are present at Kiva Cave, so the information potential of the site is low. However, it is of considerable
significance as the only intact kiva associated with Betatakin, and since it was commonly included on the Betatakin tours, has been seen by thousands of visitors prior to 1982.

LEASE AREA

RB 428, RB 429

At the head of Betatakin Canyon, outside the Monument proper but within the area leased from the Tribe, Beals, Brainerd and Smith (1945, Map 1) show two sites, RB 428 and 429. Ritchie (1976) describes what he considered to be RB 429 as a small PII cliff site or storage room high in the cliffs, with the walls essentially destroyed by sheep. The other of these two sites may be "Saucer Cave," near the base of the Navajo Sandstone at the head of the canyon, along the (1964) trail to Betatakin. This site was tested in 1969 by Sam Henderson of the NPS. Only one sherd hints at prehistoric utilization, but Henderson suggests that archaeological material could be deeper than the 3 1/2 foot depth reached in the test (Memorandum of October 30, 1969). If so, cave occupation probably was well before Betatakin.

NA 8613

Again within the lease area, about 50 yards west of Monument Headquarters, this site is briefly discussed by Anderson (1969a:26-27); he lists the ceramics in his Table 10. Anderson considers it to be an early PIII (borne out by the ceramics) campsite. Limited test trenching was apparently conducted in 1962, without finding any structural remains. Further information is needed for evaluation, but this appears to be the only Citadel Phase site within the Monument boundaries.

NA 8612

Anderson (1969a:24) lists this site as "near" the south boundary of the Monument, near the entry of the powerline. His map location (1969; Fig. 1) shows it about 1/4 mile west of headquarters, which may or may not place it within the lease area. A high proportion of Kana- a B/W, Tusayan Corrugated, and some Sosi B/W may indicate a Wepo Phase temporal affiliation; Anderson estimates a date of 1000 to 1100. Anderson indicates that an area of
limestone and sandstone rubble probably represents a room, with some trash extending downslope. As a small late PI site, this site would appear to have the potential of yielding data of a sort not previously recorded in the area, but more information is needed for an effective evaluation.

INSCRIPTION HOUSE PARCEL

Inscription House

This 80-room cliff-dwelling is located about 15 miles west of Monument Headquarters, which creates management problems. Because of the inability to provide adequate protection (the lack of ranger station nearby), Inscription House is presently closed to the public.

Most of the structural portions were excavated in 1914 and occasionally thereafter by Byron Cummings, who in his usual fashion published no report. In 1966, the Museum of Northern Arizona conducted salvage excavations under the direction of George J. Gumerman in the trash area below the structure, occasioned by increased erosion threatening these deposits. At this time, MNA also tested in 10 rooms, including 5 of the few left unexcavated by Cummings. The cave at the west end of the site was also trenched at this time. A summary report on these excavations was prepared by Ward (1975); ancillary studies prepared as the result of this project (Reed 1967; Kent and Loehr 1973; Fry and Hall 1973; Harris et al. 1973) were not published, nor are detailed data on the burials or artifacts presented.

Miller (1968) and Ward (1975) put forth a good case that the famed inscription found by Malcolm Cummings and Ida Wetherill in 1909 reads 1861 rather than 1661 as often previously thought, and that it was incised by one of the members of the Mormon group that came to retrieve the remains of George Smith, killed by Navajos the previous year. Cummings' original name of "Adobe House" (Ward 1975:6) would therefore probably be more appropriate. Aside from the interest generated by the supposedly early date, Inscription House has a number of characteristics that make it of more than usual archaeological interest.

Some of the 80 rooms are constructed on the cave floor, many others are supported by the masonry retaining wall that extends essentially the full
width of the alcove. Steps in this wall provide the main access to the village. Most of the rooms compose a ground-floor level, but 18 form a second story and at one location the site rose 3 stories. Almost half of the rooms have at least some portion of a wall constructed of adobe blocks. Ward (1975) attributes the frequent use of adobe at Inscription House and other nearby sites to a lack of building stone in the vicinity. These blocks, generally about 30-35 cm long, 12-15 cm wide, and 9-12 cm thick, typically have a core of grass stems and are carefully shaped. They appear to have been laid up while still plastic, so are thus reminiscent of the "turtle-back" construction evident in the region as early as BMII. A high proportion of the doorways at Inscription House are T-shaped, and entry boxes are lacking; both of these traits also serve to distinguish Inscription House from ruins in the Tsegi. Only a single kiva, a circular one, is present. One mealing room has also been identified; the remainder of the rooms, living, storage, and granaries, are grouped into clusters similar to those of Betatakin and Kiet Siel.

Schaafsma (1974, 1980:146-148) postulates that the pictographs above the rooms at Inscription House served as means of identifying or marking the individual household clusters. Many of these pictographs are hand prints, which she notes are often used by present-day Pueblo Indians as a means of identification.

The 1966 midden excavations, in addition to yielding 32 burials, also yielded ceramic data useful for interpreting the occupational history of the site. Over 60,000 sherds were recovered; about a fourth of these were field classified to the type level. (Most sherds were reburied in the midden, and thus are unavailable for study). The ceramics indicate an almost continuous utilization of the cave from the BMIII stage, with an obvious increase in the 1200s. The lower proportions of Kayenta B/W compared to Tusayan B/W than found at Betatakin and Kiet Siel indicate that the PIII occupation commenced during the Shonto Phase and perhaps dwindled during the Tsegi Phase. A considerable temporal span for the PIII occupation is also supported by the frequent remodelling and the trash-filled rooms (cf. Ward 1975, who ascribes the structures to the Tsegi Phase).

From an information viewpoint, Inscription House still has a great deal to offer. No socio-architectural studies as complete as those of Dean for the Tsegi have yet been done, although at Inscription House the hopes of obtaining
such detailed chronological data as that from the Tsegi are not bright; four separate tree-ring sampling efforts have resulted in only one cutting date (1271) (Bannister, Dean, and Robinson 1968:12). Inscription House appears to be the only site within Navajo National Monument that was occupied essentially continuously (?) (see Berry 1983) from BMIII until the abandonment of the area in the late 12th century, and thus offers a unique opportunity for diachronic studies within a single locality. As with Kiet Siel and Betatakin, the midden deposits at Inscription House offer ample opportunities for detailed studies of technology and subsistence; such studies here would provide valuable comparative data to those that should be conducted in the Tsegi. These should preferably be done soon, as the midden is continuing to erode.

Principal References: West 1927; Ward 1975.

Records and Collections: Arizona State Museum; Museum of Northern Arizona; Western Archaeological Center; Smithsonian Institution; Navajo National Monument; Milwaukee Public Museum (?); University of Colorado Museum.

Snake House

Named for the large petroglyph of a snake above the rooms (another clan symbol?), Snake House (NA 5631) had only about 13 rooms, most of which are in poor condition. West (1927:36) notes that this site had been excavated; presumably this had been done by Cummings. The only map available is that prepared by the 1978 stabilization crew (Goulding 1979).

Owl House

North of Snake House, and barely within the Monument boundary, Owl House bears MNA site number NA 5630. Six rooms are evident on a high ledge within the alcove. Pictographs and petroglyphs are also in the same alcove. No published information exists; Reszka (1984) has a sketch map of the site.

NA 3240

The next alcove northwest of Inscription House has some prehistoric handprints and a large panel of Navajo pencil drawings. No published information exists; Schaafsma (1974) mentions the panel.
Other sites

Between Inscription House and Snake House is a small unnumbered site with rooms evidenced by viga holes in the cliffs and pictographs and petroglyphs, including a Basketmaker style petroglyph (Ritchie 1976).

SYNOPSIS OF STABILIZATION
Helen C. Fairley

Introduction

From the 1906 passage of the Antiquities Act, it was recognized that in order for future generations to be able to gain an appreciation for the architectural remnants of past Southwestern cultures in the face of often severe weather and increasing numbers of visitors, some sort of repair and preservation of selected ruins was necessary. The obvious ruins to be stabilized were those already designated for special treatment by virtue of being included within National Monuments and Parks. As part of the Indian Appropriation Act of May 18, 1916, $3,000 was allocated "for the preservation and repair of the ruins of Navajo National Monument". The vicissitudes of weather, timing, and finance in 1917 obviated any work except at Betatakin, but the other major sites have seen stabilization efforts in succeeding years. The following site-by-site summary provides as indication of the extent of this work.
A CWA crew, under the direction of John Wetherill and Irwin Hayden, conducted the first stabilization work at Kiet Siel. Trash and erosional fill in the rooms was cleaned out, numerous walls were partially or completely rebuilt, several walls were replastered, and the retaining wall at the front of Kiet Siel was reconstructed. A large log was moved into its supposed original position (see Hayden 1978) at the entrance to the ruin. The crew also excavated in the trash midden and made a detailed floor plan. Results of the work were never published. The original notes on this work are on file at the Museum of Northern Arizona.

An NPS stabilization crew under the supervision of Roland S. Richert concentrated on shoring up wall foundations, repairing several roofs, filling in major cracks, resetting loose cap stones and replastering jacal walls. Work was performed in 44 rooms. Richert employed a natural soil mortar without cement adhesive. Detailed notes and photographs on the repairs performed in each room were maintained (Richert 1958).

An NPS stabilization crew under the direction of Charles Voll performed minor patchwork repairs on several small areas (resetting cap stones, filling small cracks and repointing) (Voll 1970).

In the summer of this year, Larry V. Nordby from the NPS Southwest Regional Office spent a week at Kiet Siel with the permanent NNM maintenance crew in order to provide training in stabilization procedures. The crew performed minor repairs, replastered the jacal wall in Room L122 and restored a missing wall in Room L74. The work was sketchily reported (Nordby 1975).

An in-house crew of Navajo laborers under the supervision of the Park Service performed minor patchwork repairs. Individual room records were maintained (Dempster and Smith 1981).
1982 Routine minor repairs were performed by an in-house crew in various rooms. Most of the effort was directed towards repointing the retaining wall (Dempster 1982).

1984 An in-house crew under the direction of Jay Reszka concentrated on stabilizing the west retaining wall of the ruin (Reszka 1984).

**Turkey Cave**

1934 In conjunction with the CWA stabilization effort at Kiet Siel, dry-laid walls were constructed around standing structures in order to protect them from livestock damage (Breternitz 1969:3-4).

**Betatakin**

1917 Work commenced at Betatakin in 1917 under the direction of Neil M. Judd; the intervention of World War I prevented completion of the work at this ruin, and no stabilization was conducted at any of the other sites. Most of the effort was concentrated on rebuilding and stabilizing the central portion of the ruin which had been undermined by water seepage and damaged by rock falls. Many of the rooms in this central area were entirely reconstructed. Judd's report includes room by room description (with measurements) and a summary description of the material cultural remains (Judd 1930).

1958 An NPS stabilization crew consisting of 7 Navajo laborers under the direction of Roland S. Richert performed numerous minor patchwork repairs (pointing, grouting, resetting loose cap stones with natural clay mortar) in 25 rooms throughout the ruin (Richert 1958a).
1964 An NPS crew of eight Navajo laborers under the direction of NPS Ruin Stabilization Unit archaeologist Charles B. Voll worked in 22 rooms throughout the ruin. Most of the work involved spot grouting, plastering and resetting loose stones. Floor-wall junctures in Room 55 (kiva) were grouted and the floor in Room 117 was repaired. Steps leading up to Betatakin were recut at this time. The work is rather sketchily reported (Voll 1964).

1975 A reconnaissance of the Ruin to determine future stabilization needs was conducted by Larry V. Nordby, NPS Southwest Regional Office archaeologist, but no actual stabilization work was performed (Nordby 1975).

1981 This was the first year that stabilization work was performed at Navajo National Monument by an "in-house" crew. The work consisted of numerous minor patchwork repairs and the installation of several roof supports. The work was documented on a room-by-room basis (Dempster and Smith 1981).

1982 An in-house crew performed minor patchwork repairs in several rooms (Dempster 1982).

1984 Routine minor repairs were performed by an in-house crew under the supervision of Jay Reszka over a five-week period. This was probably the most extensive stabilization work performed at Betatakin since 1917 (Reszka 1984).

Kiva Cave

1964 This site was reexcavated and stabilized by a crew of 5 Navajo laborers under the direction of Charles B. Voll. The floor was hardened with a Duraweld solution, the west wall was partially reconstructed and stabilized, and all the walls were capped with tinted cement. The adjacent masonry structure was cleaned out and stabilized in similar manner (Voll 1964).
Inscription House

1939

In August of 1939, Charlie R. Steen undertook the first stabilization work at Inscription House. Sixty-seven rooms were identified and described, 18 of which required repairs. The most significant undertaking involved rebuilding the front retaining wall. The work was liberally documented with room by room photography and descriptions of the work performed in each room (Steen 1940).

1958

Between August 16 and September 3, Roland S. Richert directed the stabilization efforts of the NPS Region 3 Mobile Unit at Inscription House. Twenty of the rooms received minor patchwork repairs and the 205 ft. long retaining wall was stabilized (Richert 1958).

1977

Between July 28 and August 15, a stabilization crew from the University of Colorado performed stabilization work at Inscription House. Minor patchwork repairs were carried out in 15 rooms and the walkway above the front retaining wall was repaired (Breternitz and Breternitz 1978).

1981

An in-house stabilization crew undertook minor patchwork repairs in 16 rooms. Several roof supports were installed, and the walkway was patched in places. The work was documented with notes, sketches and photographs (Patterson 1981).

1984

An in-house crew under the supervision of Jay Reszka carried out minor repairs in 10 rooms and replaced 9 of the roof supports which had been installed in 1981 (Reszka 1984).
Snake House

1978 The first and only stabilization work was conducted at this site in 1978 by a crew from the University of Colorado under the direction of David and Susan Breternitz. Twenty-four minor stabilization tasks were performed (Goulding 1979).

Owl House

1984 The first detailed map and description of this ruin were compiled in conjunction with stabilization work in the summer of 1984. Two of the six rooms in the site were stabilized by an in-house NPS crew under the supervision of Jay Reszka (Reszka 1984c).
ETHNOGRAPHIC INVESTIGATIONS

The Pueblo Indians of the Southwest were a frequent subject of study by early ethnographers; ethnography and archaeology went hand in hand during the exploratory years in the Southwest. Ethnographic analogy was freely used to interpret archaeological finds, and archaeological data supplemented the oral histories gathered by ethnographers. The distinction between ethnography and archaeology was so nebulous around the turn of the century that many individuals were directly involved with both endeavors; Fewkes' work provides an obvious example of this kind of relationship. Fewkes was quite willing to provide ethnographic interpretations of archaeological data, even when little relationship could be demonstrated.

Today's archaeologists are more cautious, yet often anxious to utilize ethnographic data if it appears applicable. Information concerning Hopi subsistence patterns, socio-economic organization, technology, and ideology have all been used as analogues for interpreting Kayenta Anasazi prehistory. The general similarities in Hopi and Kayenta environmental conditions and subsistence patterns makes the work of such researchers as Beaglehole (1937), Whiting (1939), and Hack (1942) very useful, even if direct links between the Kayenta and Hopi cannot be demonstrated. However, the implicit and sometimes explicit assumption behind many analogies is that there is a direct historical link between the Kayenta Anasazi and the Hopi. As previously noted, this has yet to be convincingly demonstrated.

Even Hopi traditional beliefs tend to cast doubt on a direct unilineal relationship. Sekaquaptewa (1982) and Puhuyestewa (1982), as well as many Hopi recorded earlier, draw the traditional pre-migration boundaries of the Hopi ancestral lands as extending southwest from Navajo Mountain to the Grand Canyon, thence to the Williams-San Francisco Peaks-Wupatki area, and from there eastward to the Upper Chevelon Creek area, north to Lupton, Canyon de Chelly, and back to Navajo Mountain. This includes Kawetsima, the ruins and/or "northern land" in the Kayenta vicinity. Such an area does indeed encompass what has been defined as the area occupied by the Kayenta Anasazi; the problem is that it also includes areas occupied by other prehistoric groups as well. Particularly included are the Sinagua, a group that occupied the Flagstaff area up until about 1300, and then appear to have moved eastward
to the Chavez Pass - Winslow area and thence up to Hopi. The relationship between the prehistoric Sinagua and the Hopi has been rather convincingly demonstrated by the ease with which Hopis were able to identify the assemblage of objects accompanying the "Magician's" burial from Ridge Ruin (McGregor 1940). It would thus appear that not all Hopi are descended from the Kayenta; analogies based on a direct historical assumption may be fallacious. Oral histories or identifications or interpretations, of course, must always be used carefully, as they may change in response to internal and external social and political conditions.

However, it is certainly relevant that several Hopi elders have unhesitatingly and independently identified the circular pictograph at Betatakin as a Fire Clan symbol depicting Masauwu. Hopi legends indicate that certain clans did come from the north. Cummings (1942) reported finding ear pendants "similar to those worn by maidens of the Flute Clan in their ceremonies" and four reed flutes; he also drew a correlation with the Flute Clan ceremonial rooms and those of Betatakin. However, the abandonment of Kiet Siel and perhaps Betatakin appear to have been by individual households rather than by large groups; clan migration stories should be examined critically. Titiev (1944) notes that the split at Oraibi did not follow clan lines, which would have broken up households. Some Hopi origin myths indicate that it was upon arrival at Hopi that certain groups were designated as clans. It is noteworthy that after the 1906 split at Oraibi, some Hopi are reputed to have gone northward into the canyon country to investigate the feasibility of (re)locating at Kawetsima. The avowed reasons for not moving there was that it was too far from friends and relatives and that quarreling broke out over which clan would get to live there; that the country was by then occupied by Navajos and part of the Navajo Reservation probably also influenced the decision to remain at Hotevilla. Occasional visits by protohistoric and historic Hopi to the area north of Black Mesa are implied by occasional finds of Jeddito Black-on-yellow and other post-PIII sherds; these could also represent trade with Paiutes and Navajos.

Navajo legends as recorded by the Wetherills (J. Wetherill 1934; Gillmor and Wetherill 1934:124-127) give a slightly different perspective than either Hopi or archaeological reconstructions, but have enough rings of plausibility to be worthy of consideration. In essence, these stories speak of two groups
of Anasazi(?), one living in Canyon de Chelly and the other at Mesa Verde. Both were compelled to move because of drought, eventually ending up in the Tsegi, not mingling much because of linguistic differences. Those from Mesa Verde built Kiet Siel, with circular kivas, and those from De Chelly lived at Betatakin with square kivas. After a series of drought, wind, and hail, the remaining Anasazi in the Tsegi moved to Black Mesa (presumably Kitsillie or nearby ruins) and thence to Oraibi.

The Navajo myths concerning the Anasazi imply that Navajos were in the region at the time the Anasazi departed; as previously noted, the earliest documented Navajo utilization west of the Chinle is perhaps as early as the 1600s, but with no serious occupation until the mid-1800s.

Mostly after the beginning of this century, many ethnographers started working with the Navajo. Although differences between eastern and western Navajo have long been noted, both general and topical studies of the Navajo are applicable to those of the Navajo National Monument region because of widespread similarities in Navajo lifeway and ideology. Those studies most relevant to the Navajo National Monument area have been noted earlier, as have the broad outlines of the ethnohistory.
RECOMMENDATIONS

Management Considerations

The National Park Service responsibilities for Navajo National Monument are rather clearly delineated in the 1906 Antiquities Act, the 1909 enabling proclamation, the 1916 Organic Act that established the National Park Service, the Historic Sites Act of 1935, the National Historic Preservation Act of 1966, the National Environmental Policy Act of 1969, the 1974 Amendments to the Reservoir Salvage Act of 1960 (usually known as the Archaeological and Historic Preservation Act of 1974), and the Archaeological Resources Protection Act of 1979. Three themes are paramount within these laws and the accompanying regulations: preservation, education and public enjoyment, and scientific research. Any one of these goals could perhaps be met without a very complex infrastructure, but in order to integrate them all into a coherent framework requires a considerable amount of foresight, planning, and coordination. The management of Navajo National Monument is further complicated by the physical separation of the three units of the Monument, the fragility of the ruins and the means of access thereto, the surrounding land ownership and land use patterns, visitation trends, visitor safety, the state of our knowledge of Kayenta Anasazi prehistory, and many other internal and external forces and conditions. Some of these factors that bear most directly on the archaeology are discussed below.

The provisions of Executive Order 11593, now incorporated into the Archaeological and Historic Preservation Act of 1974, have not yet been fulfilled for Navajo National Monument. Although the easily visible sites are well known, it is expectable that other sites are present within the Monument boundaries as well; not enough information is available on some of the known smaller sites, both habitation and special use (e.g., pecked steps), to properly evaluate them. A top management priority should therefore be to initiate an intensive archaeological survey of the three Monument areas. Such a survey should also include the 240-acre headquarters area; as lessee, the NPS has as much obligation to that tract of land as to the Monument proper. An archaeological survey of Navajo National Monument would be somewhat more complex than other surveys of similar size because of the rugged topography, discontinuous parcels, and the necessity of correlating earlier site records.
with the survey results. On the other hand, the major sites have been mapped and studied in some detail, thus reducing the survey burden. Ideally, such a survey should include more detailed studies of the geology and soils to yield clues concerning prehistoric land use and resource utilization patterns.

Ever since John Wetherill assumed custodial duties in 1909, the staff of Navajo National Monument has also recognized their responsibility to the other sites near the Monument, particularly the other well-preserved cliff ruins within the Tsegi drainage. This arrangement has the tacit approval of the tribe and local residents, who require that a park ranger accompany any visitors to these sites. Certainly any long-range plans for the Monument must take into consideration the potential indirect impacts on other sites in the area. There are presently 4 Navajo families living in the Tsegi, with another family using the area on a seasonal basis; other families utilize Nitsin Canyon and the Navajo Canyon system. Developments should also take into account any possible effects on these long-established residents.

The number of visitors has increased considerably since 1909. John Wetherill estimated 130 visitors in 1917; Navajo National Monument records from 1920 on (none for 1923) are shown in Table 1. "Mission 66" and the paving of US 160 were obviously instrumental in greatly increasing the numbers of visitors, with subsequent increases perhaps attributable to general demographic, recreational, and economic patterns and perhaps to a greater public awareness of the past. Trend projection is fraught with problems, but given no major economic disasters and the same amount of accessibility, it is probable that visitation will continue to increase, and consistently be over 50,000 people per year. The most marked increases in visitation occurred in the 1960s with the paving of US 160 and the Monument entrance road; a comparable increase could result should the road between Monument headquarters and Shonto be paved. Such paving would provide an alternate route between Kayenta and Page, and many more travelers could be expected to stop at Navajo National Monument.
Table 1. Navajo National Monument Visitor Count by Year.

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The number of visitors presents a number of logistic, scheduling, financial, and safety problems. Most of these lie largely outside the realm of archaeology, but some are directly related to potential impact on the sites. The size of groups must of necessity remain small, in order to hold vibration and wear on the sites to a minimum. As numbers of visitors increase, the frequency of tours should increase, not the size. Self-guiding tours to Betatakin would not be in the best interests of ruin preservation, since the irregular flow of visitors could produce unacceptable numbers of people in the ruin at any one time; the presence of a ranger at the site would not appreciably alleviate the problem. Self-guided tours to Betatakin would also have the potential of allowing people to pass on down Betatakin Canyon into the Tsegi, where they could wreak havoc on some of the other nearby important sites. For adequate site preservation, the continuation of ranger-led tours is the best alternative. Repairing the 1964 trail to Betatakin would simplify the logistics of guided tours, but aside from maintenance of this or other existing trails, I would not recommend any additional construction.

Visitor safety also should be considered, and regulated group size would add to the safety factor. The caves in which the three major ruins are located were formed as parts of the ceilings fell; that the processes are continuing is attested to the rockfall at Betatakin that was cleared away by early excavators. Another large slab in the northeast part of the Betatakin alcove appears to be separating; whether it will fall in the next 600 years is uncertain, but it should at least be watched. One could argue that something should be done about that slab in order to preserve rooms 124-127; this would seem to be an excessive interpretation of the preservation ethic. Certainly all rangers should be aware of Guernsey's (1931) warning that a major rockfall is often preceded by small rocks becoming detached.

The number of visitors also presents admirable opportunities for public education. The support of archaeology and the National Park Service ultimately rests upon the public, and all effort should be made to ensure that the public gains an appreciation for archaeology and a realistic picture of Kayenta Anasazi life. One occasionally hears of weird interpretations offered by NPS rangers, and I have heard a few of these strange pronouncements myself; I presume they are no longer being included in the Navajo National Monument.
talks. Archaeology is interesting enough and we know enough about the Kayenta to be able to say some exciting things without making up stories or feeling that the public must be entertained.

Stabilization Needs

It is evident that the pace of stabilization work at Navajo National Monument has increased over the years, although the increase in frequency is not necessarily an indication of scale; the 1917 work at Betatakin and the 1934 work at Kiet Siel were major undertakings compared to some of the more recent efforts. As the result of the recognition of prehistoric sites as cultural resources from which information about the past can be gained, the NPS procedures for evaluating stabilization needs and documenting the actual procedures have become much more explicit (Nordby 1984). The potential importance of even small bits of information could easily have far-reaching ramifications for future interpretations, so it is commonly accepted today that any modification of the physical remnants of the past must be carefully documented. For instance, Dean (1969) has noted the problems he encountered during his chronological study of Betatakin and Kiet Siel because of prior repair, restoration, and movement of roof beams from one part of a ruin to another.

The stabilization ethic seems to rest on three major premises: the ruin should be preserved for its own sake, the ruin should be preserved for the enjoyment or education of visitors, and visitors should not be placed in potentially dangerous situations. I do not pretend to be an expert on stabilization, and also find myself ambivalent about the general philosophy of stabilization. I therefore will confine myself to general issues rather than addressing specific needs; much of the following discussion consists of my personal views, and does not specifically reflect NPS policy. I find myself in sympathy with the oft-held Native American position that abandoned villages should be allowed to return to the earth in their own good time; the archaeological dictum that any sort of disturbance is likely to remove a part of the potential resource base is similar. However, being an archaeologist, I believe it is vital in terms of understanding human behavior and cultural processes to study selected bits of the remains of past cultures. Stabilization is really for the public and not for Indians nor archaeologists, although both
of the latter are part of this public and also visit, enjoy and learn from the ruins. However, I cannot help but think that the archaeological work should come first; the public that cares will be more interested in learning about the archaeology than gazing at a bunch of rebuilt walls.

How much of the public really does care? My impression is that only a very small proportion of the visitors to archaeological parks and monuments really have much appreciation for what they are seeing. From comments at the trail head, most visitors to Betatakin seem more impressed with themselves for climbing out of the canyon than with the ruin. I feel more at home at a site that has not been stabilized than at one that has, but the stabilization may not disturb the average visitor. The average visitors are important, but do they really get a feeling for archaeology or prehistoric lifeways at a stabilized ruin? It would seem not, for where are the individual supporters of archaeology these days? Gone are the Bernheimers, Bowles, Claflins, Hemenways, and other private financers of large-scale expeditions; in their place we have the individual taxpayer, of whom only one in a thousand has bothered to visit Navajo National Monument. I would advocate changing priorities slightly, and diverting some of the funds that are presently used for stabilization into research.

Ever since Judd's work at Betatakin, it seems that the stabilization cart has been pulling the archaeological horse. Almost all the major reported archaeological work at Navajo National Monument has been a by-product of stabilization rather than the reverse; Dean's 1969 work stands as a notable exception, and his study was hampered by earlier stabilization work. Preservation and repair is important, but earlier in this century it was a common attitude that the ruins in Navajo National Monument should serve as a focal point for research; this goal seems almost forgotten in the zeal to keep the ruins from deteriorating.

Certainly it is time to treat stabilization not as an end unto itself, albeit sometimes necessary, but in a manner similar to any other disturbing activity. The common approach has been to simply record and salvage the architectural, stratigraphic, and artifactual information that is uncovered during the course of stabilization. A more straightforward cultural resource management approach would be to first determine the necessity for and
alternatives to stabilization, then consider the amount of disturbance, and
design research questions and approaches to minimize the potential loss of
information. The accompanying corollary would be that any research should
consider the potential visitor appeal and stabilization needs. More effort
into research would quicken the interest of visitors more than preserving one
obscure wall.

Stabilization needs at Betatakin and Kiet Siel would now seem to fall
mostly in the maintenance category; continued documentation of degradation and
rectifying repair should suffice to enable visitors to enjoy the sites yet not
compromise the integrity of the sites or what remains of their research
value. Inscription House may be another story. Here, the potential for
further degradation is high; despite past protective measures more of the
lower portion of the site can easily erode, and despite the ban on visitation,
it is likely that occasional adventurous souls still visit the site. A
comprehensive management plan for Inscription House should include
stabilization needs, research questions and potential visitation. A fence to
keep livestock out of the site area would certainly be a help.

Research Potential and Suggestions

Archival Archaeology

It might seem at first glance that following the activities of Richard
Wetherill and the Irwin Hayden - John Wetherill CWA work at Kiet Siel, Byron
Cummings and Neil Judd at Betatakin, and Cummings at Inscription House, that
there would be little use in thinking about potential research problems that
could yet be examined at these sites. However, this is definitely not the
case. Richard Wetherill's collection remains completely unstudied, as does
the material Cummings excavated from Inscription House. Anderson (1969b)
studied some of the CWA material from Kiet Siel and some of Cummings'
artifacts from Betatakin, but oriented his essentially descriptive report
toward the perishable items, with only cursory attention to the ceramic and
lithic artifacts. He undertook little technical analysis, and his report
serves largely as a catalog with some ethnographic analogy; provenience data
is available for the CWA materials and thus would make any analysis much more
meaningful. Similarly, Ward's (1975) report on Inscription House treats the
artifactual materials only cursorily and neglects entire categories; the specialist reports were not even included in the publication. Judd appears to describe the materials he recovered rather thoroughly, but analytical techniques have improved considerably over the decades, and these could be profitably reexamined. Even the more recent work by Breternitz, Anderson, and Ward provide ceramic descriptive data at only a general level, with no indication of material constituents, which have been recently shown to be quite useful in discussing technological variation (Callahan and Fairley 1983; Fairley and Callahan 1985; Geib and Callahan 1985). The 1923 materials recovered from Turkey Cave by the Peabody Museum should be compared in detail to those recovered by Breternitz, and to those recovered by Gladwin if they can be found.

Without setting foot in the field, it is therefore possible to learn a great deal more than we know today about the principal sites within Navajo National Monument. The most effective approach to such an archival research program would be to study each site as a unit, with care being taken to ensure that similar analytical methods are employed for the materials from each site to ensure comparability. For each site, this would entail travel to several institutions for a prolonged examination of all pertinent records and collections; there would be little sense in embarking upon such a study if only portions of the known collections were examined.

Priorities for archival research are difficult to establish, since any work along these lines will add considerably to our knowledge. I would suggest that Betatakin be examined first; as the only pure Tsegi Phase site, a complete characterization and interpretation would provide a baseline for comparison with other Tsegi Phase sites exterior to the Monument and the assemblages from Kiet Siel and Inscription House that have some admixture of earlier materials. Examination of the materials from the other sites should follow closely.

Provisions should be made for publication of the results of these studies. One of the problems with previous work is that minimal funding has often precluded analysis, writing, and complete publication. Publication of extant reports presently in limbo should also receive high priority. These include the specialist reports associated with the relatively recent work at
Inscription House as well as other reports such as those by Cutler and that by Schaffsma (1974). It should be noted that Culter's report carries notations by K. Anderson indicating that some provenience designations are wrong; these problems stand more of a chance of being corrected now than some time in the future. The considerable advances in physical anthropological techniques in the past decades have probably rendered Reed's (1967) study obsolete; a similar more in depth study should be undertaken.

There are also important collections and records from the immediate vicinity of Navajo National Monument that remain unstudied or understudied. The Kayenta Anasazi that lived at Kiet Siel, Turkey Cave, Betatakin, and Inscription House did not recognize the present Monument boundaries, and doubtless had close social and cultural ties with their immediate and even distant neighbors. Indeed, it is impossible to look at the prehistory of Navajo National Monument without reference to the systemic interrelations within any one locality and the Kayenta region a whole. Major data sets that could be profitably (re)examined include that gathered over the years by the Peabody Museum expeditions and the Rainbow Bridge-Monument Valley expedition. Other materials include those gathered by Cummings and Gladwin. Of particular relevance to Inscription House would be the survey conducted of Navajo Canyon, unreported except in brief summary form (Miller and Breternitz 19 ). As an avowed advocate of archaeological research, it would appear appropriate for the NPS to take a lead role in studies even outside the Monument boundaries. The information gained thereby would greatly assist in understanding the prehistory of the Monument itself.

Survey

Although mandated by federal law, the survey of the Monument itself and the headquarters lease area should not be viewed as simply a management problem of inventory. An intensive survey will provide the basis for a much more complete understanding of the immediate environment of the sites and the Kayenta utilization of that environment. Special use sites are documented for many other areas of the Southwest in general and the Kayenta region more specifically; they have been essentially ignored within Navajo National Monument.
A complete survey of the Monument can not be expected to reveal more than a small portion of the total picture, however. Both ethnographic and archaeological studies have demonstrated that people on a technological level akin to that of the Kayenta did not confine themselves to the immediate vicinity of their homes, but utilized a considerable expanse of territory for farming, hunting, gathering, and the procurement of raw materials. Earlier surveys in this area were largely confined to the canyons; the surrounding plateaus have been essentially ignored. As an additional step toward elucidating prehistoric events, processes, and relationships, block surveys should therefore also be performed in the upland areas adjacent to and near the Monument; if the existing data from the canyons can be profitably examined, it could stand as a basis for comparison until some of the other sources of information as outlined above have been examined. Eventually, however, surveys of adjoining canyons with a level of intensity appropriate for detailed comparison should be made, and the canyons should also be more closely examined for their resource potential. Any survey work outside the Monument boundaries would obviously need to be coordinated closely with the Navajo Tribe and the Bureau of Indian Affairs.

Excavation

Cummings' first effort at Betatakin was to explore the trash for burials; failing to find any, he devoted the remainder of his energies to clearing rooms. Judd appears to have finished the few room deposits left by Cummings. Where Richard Wetherill concentrated his activities at Kiet Siel is unknown; the CWA project was able to recover burials in the trash, but John Wetherill thought it worthy of special note when they encountered untouched room deposits in 1934. Similarly, only a few rooms remain completely unexcavated at Inscription House. Should any intact room deposits remain at any of these three sites, the preservation ethic should prevail: if archaeological methods improve as much in the next 50 years as they have in the past 50, much more could be learned from room deposits in the future than at present.

Trash deposits at these three sites may be a different story, however. It is not clear how much of the debris at the base of the cliff Cummings "shoveled over;" Anderson (1971) was unsure of whether he was working in
primary deposits or back dirt. Because Betatakin alcove saw no occupation earlier than the Tsegi Phase, the finding of intact trash deposits would be of considerable importance in examining many research questions. The sherd sample from Betatakin is so small as to make comparisons with other sites hazardous, especially given Anderson's concerns over the effect of Cummings' work and of visitor collection over the years. Paleoecological data is desperately needed for comparison with the growing body of such data from other Kayenta sites. Thus, any additional interpretations of Betatakin are essentially impossible until trash deposits can be located; a deliberate search for them should be made, followed by some excavation. On the basis of surface evidence (undisturbed natural deposits are exposed over much of the area directly below the rooms), Anderson considers the talus to contain only a few shallow midden deposits; some trash could, however, be obscured by vegetation farther down the slope. A series of test pits should demonstrate if this is the case. Failing all else, the trash adjoining Anderson's tests should be sampled for paleoecological remains.

Kiet Siel has demonstrably more midden deposits than Betatakin. In part this is attributable to a considerably longer occupational history, in part to the larger size of the village, and perhaps in part to the differences in slope below the two villages. The profiles of the trash as found by Anderson and Wetherill differ considerably. The CWA test exposed about 11 vertical feet of midden debris and was still encountering cultural material; Anderson encountered apparently sterile soil at 3 feet away from the cliff, although it was probably several feet thicker near the cliff. Considerable amounts of midden deposits presumably remain. Although not having the same potential for precise definition of artifactual and biotic assemblages as could be found at a single component site such as Betatakin, the Kiet Siel midden, if more carefully excavated and analyzed than previously, should yield a great deal of information on technological, subsistence, and environmental conditions and their changes through time. Although only barely noted in the literature, structural remains are also present below the main village of Kiet Siel; midden excavations should be designed to avoid these in order to test primary trash.

Inscription house midden deposits also still retain the potential for much more complete studies than have been conducted to date. Turkey Cave,
however, probably retains the greatest potential for stratigraphic and paleoecological studies; the Tsegi Phase information may largely relate to the care and feeding of turkeys, but the earlier material would appear to be occupational. With the massive amounts of ecological and artifactual data derived from Black Mesa, excavations in this dry cave site would provide valuable points of comparison.

Conclusion

In summary, it is apparent that Kiet Siel, Betatakin, and Inscription House are not only spectacular to the casual visitor, but that they and other sites within Navajo National Monument offer considerable potential for additional investigation. It would seem that the protection afforded by the National Park Service also expands outside the Monument boundaries; perhaps interpretation would also be enhanced if some nearby areas were systematically examined and nearby sites were excavated in a systematic fashion. The prehistoric occupants of the main sites obviously did not recognize the boundaries drawn more than 600 years later; nor should the Park Service do so in the course of interpreting prehistoric culture patterns and relationships.
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**APPENDIX I**

**REPOSITORIES**

An attempt was made in person, by telephone, and/or by letter to contact all institutions reported or suspected to house any collections, records, photographs, or other archival materials pertaining directly to Navajo National Monument. These are listed below in alphabetical order. Those prefaced with an asterisk have not been verified by that institution.

* **American Museum of Natural History, New York**
  Richard Wetherill's 1897 collection from Kiet Siel, along with materials gathered from other sites on that trip, was sold to the Hyde brothers, who donated it to the AMNH. The artifacts have never been studied, and may not have even been uncrated. Whether any notes or maps accompany the collection is unknown.

* **Arizona Pioneers Historical Society, Tucson**

* **Arizona State Museum, University of Arizona, Tucson**
  Materials from Cummings' post-1913 work are presumably here; of primary interest could be any materials from Inscription House. Gladwin's materials from Turkey Cave may have been transferred to the ASM with other Gila Pueblo materials.

* **Center for Anthropological Studies, Albuquerque**
  Notes and some materials from 1966 MNA excavations at Inscription House are currently on loan; they will go to the Western Archeological Center after study.

* **Heard Museum, Phoenix**
  The Heard Museum was contacted because of 1930s correspondence intimating that some pothunted artifacts from within the Monument had been sold to Mrs. Heard. This could not be verified at the time or in 1984.

* **Laboratory of Tree-Ring Research, University of Arizona, Tucson**
  All tree-ring specimens listed in Banister, Dean, and Robinson (1968) and Dean (1969) are curated here, along with 41 collected from Inscription House by A. Ward in 1973 and 1 from the 1977 stabilization effort there, 1 more recently collected from Betatakin, 1 from Owl House, and 3 from Turkey Cave.
Milwaukee Public Museum, Milwaukee
West (1927) is not clear on how much was collected or from where; no specimens attributable to Inscription House are in the collections, and no notes or draft manuscripts can be found.

Museum of Northern Arizona, Flagstaff
Field notes and collections from 1933-34 stabilization/excavation at Kiet Siel. Rainbow Bridge-Monument Valley Expedition collections from 1933-34. Miscellaneous collections and site records. RB-MV photos from 1933-1936, including some of Navajo National Monument sites.

Navajo National Monument
Originals and copies of correspondence, memoranda, Southwestern Monument Monthly Reports, miscellaneous notes, weather records, publications, bibliographies, photographs, stabilization records, drafts of Ritchie's (1976) assessment, etc. Perhaps 2,000 specimens, mostly small and fragmentary with very general provenience if any, consisting largely of "donations" brought in by local Navajos or Anglos, largely from outside the actual Monument boundaries, but including some miscellaneous items picked up at sites or along trails by visitors and NPS personnel. A few items from Anderson's highway salvage work. About 100-120 items on display from various sources within and adjacent to the Monument.

Northern Arizona University, Flagstaff
Copies of some of the records on file at Navajo National Monument, correspondence generated during the course of this assessment. 1911 photographs of Betatakin taken by Stewart Young (in Special Collection Library).

Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge
Artifacts and notes from excavations at Turkey Cave (Guernsey 1931), possibly some miscellaneous items from other sites within the Monument. Also the bulk of the materials and records from other Peabody Museum expeditions in the area.

Smithsonian Institution, Washington
Collections (in the National Museum of Natural History) include all the artifacts collected by Judd in 1917 at Betatakin, plus one specimen from Inscription House and several more objects from the immediate vicinity collected by Judd. Four specimens collected by W.B. Douglass from Kiet Siel and 10 from Betatakin are also in the collections, as are 124 specimens collected by Fewkes from Betatakin and 18 from Inscription House. Eleven specimens from Betatakin and one from Turkey Cave collected by Cummings are also included. Some specimens from Peabody Museum expeditions is also at the National Museum, and 4 specimens collected by the Laboratory of Tree-Ring Research (U of A) are also listed. In the National Anthropological Archives are Judd's typescript 1917 diary, field notes, photographs and sketches relating to Betatakin (see also Glenn 1982), a typescript of Cummings 1909 notes from Betatakin, 9 photographs of Betatakin taken by A.E. Douglas in 1923, and miscellaneous material related to Fewkes.

University of California at Los Angeles
RBMV site records, field notes, etc from 1935-1938 may include some materials from the Monument.

University of Colorado Museum, Boulder
Small sherd collections made by Earl Morris from Betatakin and Inscription House.

University of Utah, Salt Lake City
The bulk of Cummings' collections while at the University of Utah are still stored here - about 10 cubic meters of mostly perishable items; some have not been unpacked since the 1950s. Provenience information is very poor. The Special Collections Division of the Marriott Library holds many of Stuart Young's photographs.

Western Archeological Center, National Park Service, Tucson
Collections and field notes from 1964 excavations by Anderson at Kiet Siel and Betatakin; sherds and some miscellany from 1966 excavations at Inscription House; artifacts from 1963 excavations at Turkey Cave; a few miscellaneous artifacts picked up at Kiet Siel and Betatakin; 66 photographs of Betatakin from 1909 to 1955; 88 photographs of Kiet Siel from 1909 to 1958, including those from the 1934 excavations.