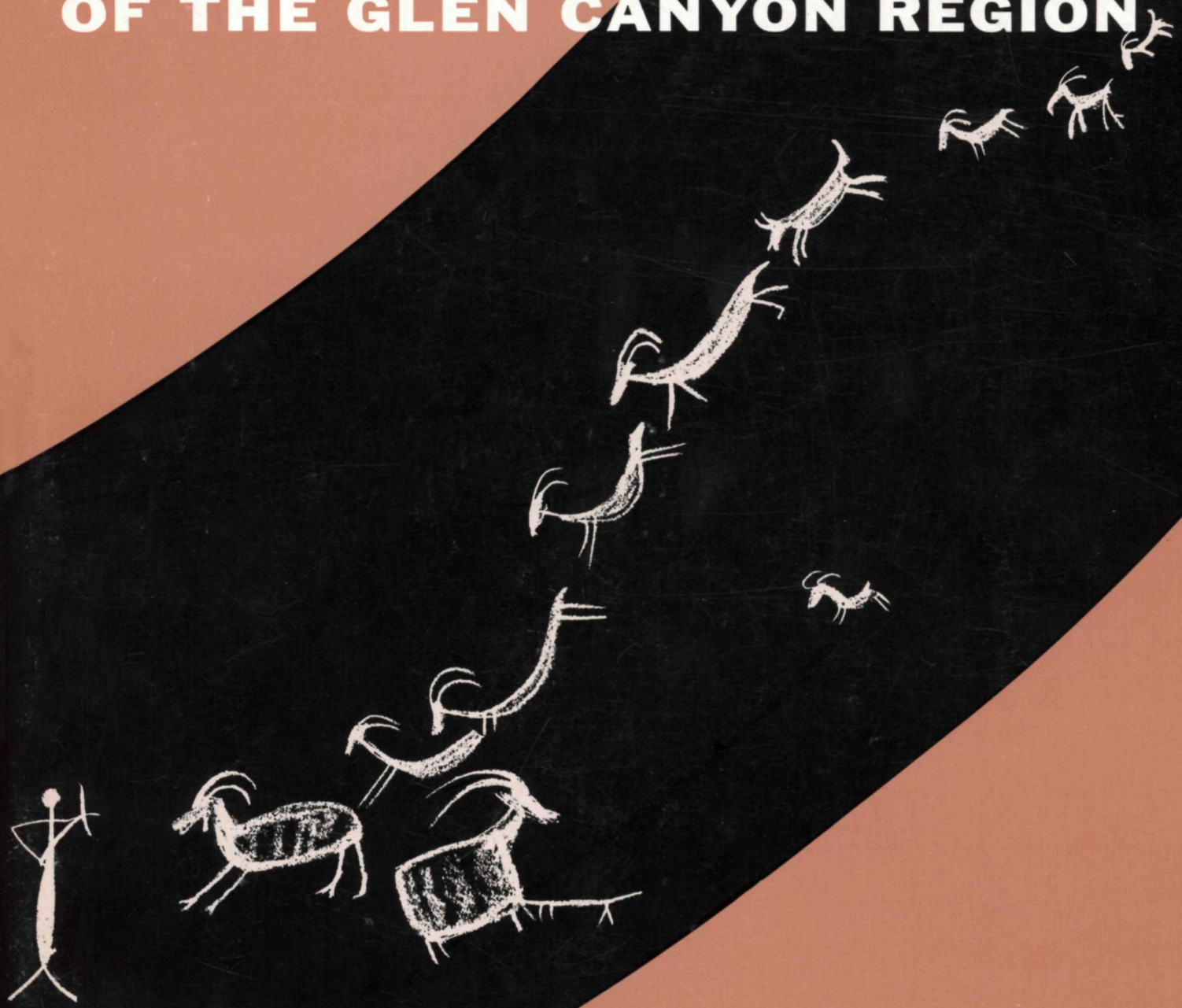


PETROGRAPHS OF THE GLEN CANYON REGION



BY CHRISTY G. TURNER II

MUSEUM OF NORTHERN ARIZONA BULLETIN 38
GLEN CANYON SERIES NUMBER 4

MUSEUM OF NORTHERN ARIZONA BULLETIN 38

(Glen Canyon Series No. 4)

Petrographs of the Glen Canyon Region

Styles, Chronology, Distribution, and
Relationships from Basketmaker to Navajo

By

Christy G. Turner II



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Upper Colorado River Basin

PETROGRAPHS OF THE GLEN CANYON REGION

by

Christy G. Turner II

as a part of the

UPPER COLORADO RIVER BASIN SALVAGE PROGRAM

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U. S. National Park Service and the Museum of Northern Arizona

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EDITOR: Alan P. Olson

FOREWORD

Since 1957, the Museum of Northern Arizona has conducted intensive archaeological investigations in the Glen Canyon area of the Colorado River before the destruction of the area and the archaeology by the accumulated water of Lake Powell. This report is a by-product of the Museum of Northern Arizona's Glen Canyon Project, sponsored by the National Park Service (Contract Numbers 14-10-333-431, 14-10-333-530, 14-10-0333-666, 14-10-0333-837) during the years 1958, 1959, 1960, and 1961.

Mr. Turner was a member of the Museum's Glen Canyon Project staff. Early operations began with extensive surveys and some sample excavations throughout both Glen Canyon and the San Juan Canyon areas, and the southern tributaries of these canyons. He also took part in several special expeditions into the baldrock country north of Navajo Mountain sponsored by the Museum of Northern Arizona and independently financed.

In all of these areas, sites were found varying in age from before A.D. 500 to the 1200's, and in association with many of them were found petroglyphs. Mr. Turner noticed that in many sites, the associated petroglyphs varied in style and that one style was often superimposed on another older petro-

glyph of a differing style. He also recognized, as more and more sites were studied, that there could be a correlation between the age of the site and its associated petroglyphs and the amounts of erosion of the drawing. In some instances, patination covered the older petroglyphs and the newer ones were pecked or painted on to the patination that had covered previously made drawings.

As a result of the observations made at many sites, Mr. Turner became interested in the possibility of correlating the petroglyphs with sites of varying ages, and in certain instances felt he could date the occupation of an otherwise undatable site. As the dating of archaeological sites is one of paramount importance to all archaeologists, this may be a significant step, a subject that has been avoided by most of the students of petroglyphs.

When I first read this report, I asked Mr. Turner to send it to Mr. Donald Scott, Director Emeritus of the Peabody Museum at Harvard, and one of the leading authorities in the world on petroglyphs. Mr. Scott's enthusiastic response and his constructive advice to this report encouraged Mr. Turner to continue his work and the Museum to publish it.

Edward B. Danson

ACKNOWLEDGEMENTS

The accumulation of knowledge results from contributions by, and exchange of information with, many people. No sizeable work can be done independently. The individual, engaged in preparing his research for publication, seeks for and finds the ready cooperation of his colleagues. The following are acknowledged for their gracious assistance in various phases of this work. The author assumes sole responsibility for any errors which may have occurred.

William Y. Adams, while Field Director on the Glen Canyon Project, suggested that this paper be written as a separate monograph rather than being incorporated in the site reports. Alexander J. Lindsay, Jr., present Field Director, has given every assistance and, most importantly, completely free rein to explore and ponder. J. Frank Wright of Blanding, Utah, and Paul V. Long, Jr., have supplied little-known but pertinent facts. During my enforced absence from the field in the summer of 1960, Lindsay, Wright, and Mike Moseley of Redlands, California, collected additional field data.

The entire staff and associates of the Museum of Northern Arizona Research Center have contributed: Harold S. Colton, information on regional Flagstaff petroglyphs; Edward B. Danson, guidance, encouragement, and details on petroglyphs from his own current research on the Hopi Indians; Miss

Katharine Bartlett, reference in obscure publications; Mrs. Lydia Solberg and Mrs. Paul V. Long, Jr., typing and manuscript proof-reading; Miss Elizabeth Galligan, clerical assistance; Milton A. Wetherill, recollections of his years spent on and around the Tsegi Mesas; Alan P. Olson, editorial procedure and valuable criticism; Jimmy Kewanwytewa and Willie Coin, Hopi information; Robert Black, references.

Discussions with William C. Miller of Pasadena, California, Lindsay, and Maurice E. Cooley resolved several problems relating to petroglyph temporal positioning. Miller, David A. Breternitz of Tucson, Arizona, and Robert C. Euler of Arizona State College, Flagstaff, contributed time and information about petroglyphs and prehistoric sites in Navajo Creek. Barton A. Wright assisted in artwork and idea exchange and development. Miss Evelyn C. Roat read manuscript and supplied numerous corrections which clarified the text. Calvin Cummings, Daniel Perin, and E. T. Nichols assisted in the field during the 1960 summer season.

Through the offices and cooperation of Jesse D. Jennings, Department of Anthropology, University of Utah Glen Canyon Project, William D. Lipe, Miss Dee Ann Suhm, David S. Dibble, and Floyd W. Sharrock supplied much-needed additional information and photographs from sites in the Glen Canyon

area where the University of Utah and the Museum of Northern Arizona are engaged in salvage archaeology for the National Park Service. Conversations with C. Gregory Crampton, also of the University of Utah, were helpful in regard to historical petroglyphs and inscriptions in Glen Canyon.

The Chief Park Naturalist at Zion National Park, Carl E. Jepson, supplied several photographs of petroglyphs in the park area. Naturalists at Grand Canyon National Park extended the same courtesies.

Hugh C. Cutler of the Missouri Botanical Garden donated considerable information and photographs which he had gathered near Bluff, Utah. Several Navajo Uplands petroglyphs were discovered through two field trips with Frank E. Masland, Jr. of Carlisle, Pennsylvania. David de Harport permitted examination of data he had collected from Canyon de Chelly and spent considerable time in discussions of the Canyon de Chelly petroglyphs. Charles Kelly

of Salt Lake City permitted examination of and quotation from his unpublished data on petroglyphs of Utah. Donald Scott, Peabody Museum, Harvard University, provided a great many helpful suggestions when requested to review this paper prior to its completion. My wife, Jacqueline, has assisted throughout the entire preparation of this paper.

Photographic credits are as follows: William Y. Adams; Figs. 7, 25, 37, 39, 49, 50, 78, 79, 85, 93. Miss Gene Foster; Fig. 18. Mike Moseley; Figs. 83, 92. E. T. Nichols; Figs. 8, 16, 19, 34, 74, 77, 84. J. Frank Wright; Figs. 23, 55-60. Map II was drawn by Calvin Cummings. The remaining photos and Map I are the authors.

To all of those mentioned and to others with whom I have discussed petroglyphs, I extend most sincere gratitude and appreciation.

Christy G. Turner II
1961

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ABSTRACT

The results of three years of petrograph analysis in Glen and San Juan Canyons as well as adjacent upland and tributary canyons in northeastern Arizona and southeastern Utah are described. The study was an outgrowth of the Glen Canyon Salvage Project.

Terms specific to petrograph technique and analysis are defined. Age determinants are based on ceramic associations and petrograph deterioration. With one exception the abundance of petrograph styles is directly proportional to the occupation intensity of the differing prehistoric occupations. The oldest style (Style 5) is scarcer because of its assumed preceramic nature and because of the destruction of proportionally more of these older sites.

Stylistic development is discussed in terms of five distinguishable horizons dating from Basketmaker to contemporary Navajo-Paiute. A distribution of Glen Canyon petrograph styles in the Southwest is presented.

Glen Canyon region designs are believed to take

their origin, in part, from more southerly cultures, excepting the oldest, Style 5, which is provisionally equated with the Desert Culture. The Rio Grande and Colorado Rivers offer the two most convincing major avenues of design transfer from south to north. Anthropomorphic diefication existed prior to A. D. 1050, and it is suggested here that this diefication could be the foundation on which the kachina cult of later years is built, or that it represents the earliest manifestation of the cult in the Anasazi culture area. Certain of the present day Hopi Indians are considered to have had ancestral clan affiliation with the prehistoric occupants of Glen and San Juan Canyons. No evidence exists of early Navajo petrographs in this region as is found further east. Diffusion of what appears to be Style 4 (A.D. 1050-1250) into southern Oregon and central Washington is hypothesized to indicate primary "contact" on the part of the eleventh to thirteenth century Anasazi with the Athabascan migration into the Southwest, representing a secondary response to the initial "contact."

INTRODUCTION

Indian pictographs have a great power of fascination for all ages. Young or old, cultured and illiterate, all are immediately interested at the simple mention of Indian pictographs. There is a queer attraction in those strange signs and primitive pictures, probably because they are human manifestations, sometimes attempts at aesthetic representations, and a challenge to our mind to decipher them.

Renaud 1947:59.

The field observations on which this report is based were carried out during the years from 1958 to 1960 in Glen and San Juan Canyons, their southern tributaries, and the highlands south of the river systems. Most of the work (Map I) is restricted to San Juan County, southeastern Utah. This study was initiated in conjunction with the Glen Canyon salvage archaeology program because of the vast number of petroglyphs within Glen and San Juan Canyons and the lack of any reliable classificatory scheme with which to date them. Attempts to define the styles, chronologies, distribution, and relationships of petroglyphs (*see Terminology*) in the Glen Canyon basin and surrounding areas constituted the main endeavors of research and study.

The following quotation is indicative of the thinking of Museum of Northern Arizona Glen Canyon Project personnel during the formative stages of the Project (Adams, Lindsay, and Turner 1958: 24):

Petroglyphs: Glen Canyon Basin offers a particularly favorable area in which to study petroglyphs because of the large numbers of them present and their frequent association with habitation remains, pottery, and other diagnostic cultural material. Petroglyphs might be studied in the following terms:

- a. Comparative study of petroglyphs from within the Glen Canyon Basin, to determine any differences which might be culturally, environmentally, or geographically linked.
- b. Comparison of Glen Canyon Basin petroglyphs with petroglyphs made by the same culture groups in other areas.
- c. Distribution study of the principal petroglyph elements in time and space.
- d. Identification of any seemingly diagnostic Kayenta, Mesa Verde, Fremont, or other petroglyph elements.

Subsequently, this preliminary thinking was expanded as problems of antiquity estimates arose from actual examination of most of the petroglyphs in Glen Canyon between the damsite and the confluence of the San Juan River and along the River from Honaker Trail to the Colorado River. All of the

major south bank tributary canyons and the adjacent southern highlands, exclusive of Navajo Creek, were also examined. This area is the responsibility of the Museum of Northern Arizona Glen Canyon Project, but it lies almost entirely in southern Utah with only a limited area in northern Arizona.

A study of published reports on the Glen Canyon basin petroglyphs made it apparent that intensive field studies would be necessary. Various written descriptions of identical sites differed and line drawings gave little indication as to the manner of pecking. Occasionally, petroglyphs were either chalked in (thus masking pecking and obliteration data), or the photographs were visually inadequate. Associated cultural material often was not described in detail.

Previous investigators of petroglyphs in Glen Canyon had limited their examinations to photography and description. Attempts at classification or temporal association are generally wanting. Valuable detailed descriptions are to be found in Adams and Adams (1959:33-6), Dibble (1959:16, 159-61, 342, 532-4), Foster (1954:6-18), Frost (1958), Gunner-son (1957:75-6; 1959:43, 112), Lipe (1960:32-3, 58-60, 73), and Steward (1941:319-27, 345-51). The outstanding bibliographies that aided the search for Southwestern references on petroglyphs were Fenenga (1949), Steward (1929), and Tatum (1946).

Throughout this report petroglyph sites were selected for study and discussion because of pottery association and for this reason several Glen Canyon region sites have not been included. In no case was any site ignored or left out because its designs conflicted with the style definitions included herein. Many sites have been included in order to show the range of variation that occurs. Illustrations accompanying this paper have been chosen for their clarity and degree of representation or deviation.

Style	Estimated Dates	Ethnic Group
Style One	1850 to present	Navajo-Paiutes, Anglos
Style Two	1300 to present	Hopi
Style Three	1200 to 1300	Anasazi; Kayenta, Late PIII
Style Four	1050 to 1250	Anasazi; Kayenta and Mesa Verde, PII-III
Style Five	Pre-1050	Anasazi; Basketmaker, PI, Early PII

Table 1. Petrograph style enumeration within Glen and San Juan Canyons. *The use of classes and class intervals is purely a necessity of data presentation. It is firmly believed that a continuum of design styles exists intergrading from the varying four prehistoric central tendencies. In no way does this report intend to convey to the reader that abrupt style boundaries exist at the estimated dates.*

Although Hurt (1939) provided an excellent discussion on methods of cataloguing pictographs, it was decided to avoid element emphasis and to center all effort on style definition. This was done because similar elements in differing areas might only be fortuitous and styles could be more or less similar owing to contacts and cultural relationships.

The most significant results of this investigation are the recognition of five petrograph style horizons (Table 1) in the Anasazi culture area tentatively dating from Basketmaker times to the present date,

their temporal placement, and extrapolated distribution within the southwestern United States. The source of designs after A.D. 1050 is believed to have been derived from Mexico, or influenced by prehistoric Mexican culture. Based on the petrograph style distribution, Anasazi colonization took place near Bishop, California and, seemingly, southern Oregon. The southern Oregon examples of Glen Canyon petroglyphs are offered as a key to further discoveries of the causes for Athabascan migrations to the Southwest.

TERMINOLOGY

A series of definitions is presented here with the hope of facilitating an orderly discussion of a controversial subject. Word connotation can differ among readers of diverse backgrounds. If the definitions described below are kept in mind, it is hoped that misunderstandings will be minimized.

DEFINITIONS

Elements, the basic representation, are lines and enclosed spaces which, in combination, make designs. Pottery design elements applicable to petroglyph analysis are listed in Table 2 and follow Douglas (1941). Any form that conveys meaning to the viewer or is representational, is made up of a number of elements. Elements by themselves do not convey meaning. For example, a straight line element is meaningless, but when placed in combination with two other straight lines which form a V at one end, a meaning is imparted—arrow, probe, direction.

Design is an arrangement of elements that conveys meaning, often beyond specific interpretation. The arrangement of elements is governed by two factors, technique and style. *Design* is used synonymously with petroglyph.

Technique is the relationship between the artisan and his medium of expression—the stone on which he will put the design and the tools available to apply the design. Pecking and incising are the two techniques used in Glen and San Juan Canyons. Two means of layout were used before pecking the designs. The first utilizes a preliminary sketch on the rock prior to pecking the finished design. This allows the artisan to change the design if not to his complete liking. At NA7179, Beaver Creek, there is one example of a design having been lightly incised prior to the pecking which did not follow the incised line exactly. At the mouth of Trail Canyon, NA7167, lightly incised lines form part of the total design. The other layout technique is the application of the finished design without a preliminary sketch. However, if the initial sketch has been followed exactly there will be no evidence of the preliminary sketch. Thus,

the presence of a preliminary sketch can be determined, in the main, only in unfinished designs.

Pecking was done by two methods: (1) hammerstone and chisel, which resulted in very accurate removal of the surface stone and equidistant placement of each pecked dint and, (2) sharpened hammerstone, which gives a sloppy appearance imposed by varieties of muscular coordination. Abrading or incising the surface rock with another stone, stick, or bone will produce deep lines and is graphically effective. In general, this was not done where the stone was highly patinated and where even a lightly-pecked line would stand out strikingly. In any case, the incising of elements takes considerably more time than does pecking, to judge from personal experience.

Dint is the mark or single pit resulting from one blow dealt with either of the pecking techniques. The usefulness of the term lies in the necessity of describing the space between single blows in order to determine the manner of pecking.

Style is the characteristic modal expression. Style, as interpreted by an individual artisan, results in *individual style*. A similar interpretation by several individuals of the same culture area in the same time horizons results in *regional style*. *Style horizons* are styles of a specific attainment with time and space considerations. In Glen and San Juan Canyons, five style horizons (Table 1) are recognized and are designated serially, with the most recent having been given the lowest number. (See Distribution section for a discussion of regional style and style horizons in Glen Canyon.)

Petroglyph is any element or design that has been pecked, incised, or abraded on stone. Pictograph refers to a painted design. Examples of these in the Glen Canyon region are almost negligible in number compared to petroglyphs. *Petrograph* refers to both painted and pecked designs and is the generic term for both (Scott 1960).

Hodge (1910:242-3) defined pictographs as follows:








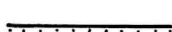

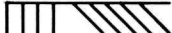
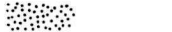
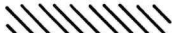
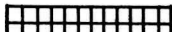

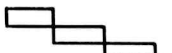







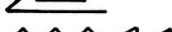


Element	Style 1	2	3	4	5
 Narrow line	16.6	16.6	8.3	41.5	16.6
 Broad line	7.5	5.0	7.5	30.0	50.0
 Wavy line				58.1	41.5
 Squiggled line				55.5	44.4
 Zigzag				90.0	10.0
 Parallel zigzags				61.6	38.5
 Simple rectilinear meander				100	
 Line with pendant dots					100
 Ticked line, straight or oblique				100	
 Fringed line, straight or oblique				33.2	66.4
 Spattered, stippled or dotted				66.6	33.3
 Diagonal hatching					100
 Cross hatching, horizontal				20.0	80.0
 Cross hatching, diagonal		100			
 Stepped squares or rectangles, open or closed				50.0	50.0
 Checkerboard					100
 Cribbing				100	
 Dot-and-circle				100	
 Single scroll				100	
 Watchspring scroll				92.8	5.8
 Rectangular scroll	20.0			80.0	
 Triangular scroll				100	
 Sawteeth, regular and oblique				100	
 Pendant sawteeth				100	
 Negative zigzag, regular or oblique					100

Table 2. Relative percentage frequency of petroglyph elements in the five Glen Canyon-Basin Style horizons. This listing of elements is modified after Douglas (1941). Percentages are reckoned by site. Each site may have more than one element present, but only one of each element was used to determine the percentage. No consideration was given to weighing the frequencies on the basis of unequal site numbers because it is felt that the table, as presented, graphically illustrates the element situation within the Glen Canyon region.







	Nested triangles			100
	Half terrace			100
	Terrace			100
	Key			100
	Sawtooth key			100
	Line with single scroll			100
	Interlocking U			100
	Concentric circles	25.0	75.0	
.....	Dotted line			52.8 46.2
	Wandering line			25.0 75.0
	Watchspring S scroll			100
	Interlocking S scroll	100		
	Squiggle maze			100
	Circle	25.0	25.0	50.0

Table 2. (cont.) Relative percentage frequency of petroglyph elements in the five Glen Canyon-Basin Style horizons.

. . . that form of thought-writing which seeks to convey ideas by means of picture signs or marks more or less suggestive or imitative of the object or idea in mind. Significance, therefore, is an essential element of pictographs, which are alike in that all express thought, register a fact, or convey a message.

Ideographs are petroglyphs that convey a readily discernable concept or idea. Several designs can be incorporated ideographically to portray a complex thought—hunt, game, hunger, strength, and so forth.

Meaning, with reference to petroglyphs, is the conveyed or signified idea, regardless of original intent, as interpreted by the viewer as the result of

responses based on his established or habitually associated ideas and symbol recognition.

Icon is an image of representation of a supposed religious or ceremonial nature, considered as a theme or central tendency because of repeated occurrence. *Iconographic* (adj.), *Iconograph* (n.)

Mixture, in the petroglyph styles, refers to the combination of differing elements normally found with specific style horizons that overlap, forming identifiable but not specific designs. Temporally, design mixtures are believed to bridge the gaps between style horizons and represent, in part, regional style expression.

PETROGRAPH STYLES

Recognition of the five styles of petroglyphs came about more as a casual development than as a logical deductive process. Inspection of the Glen Canyon region petroglyphs showed immediate differences between the Navajo-Paiute-Anglo designs and the prehistoric petroglyphs. Gradually, a distinction could be made between the rectilinear, highly-obliterated Style 5 and the well-executed Style 4. This established three styles, only one of which (Style 1) could be dated. However, it was felt strongly that Style 5 was older than Style 4 because of the differences in patination, obliteration, and positioning on cliff faces. By comprehensive compilation of all of the MNA petroglyph sites in the Glen Canyon region having associated pottery debris, it was possible to tentatively date Styles 4 and 5. Additional study of the pecking techniques made it possible to distinguish another style, Style 3. Further inspection of designs allowed Style 2 to be separated from the other styles. Of course, the enumeration did not exist until it was no longer possible to subdivide the differing styles either on the basis of design or obliteration.

Upon excavation at sites containing petroglyph panels at the ruin or within a distance of 20m., the dating became more convincing, especially with respect to Styles 1, 4, and 5. At the time of writing, no site has been found in the Glen Canyon region which contains Pueblo IV pottery and petroglyphs exclusively (regardless of style). Thus a positive correlation of Pueblo IV pottery with Style 2 is impossible, even though Style 2 designs are found at sites where Pueblo IV pottery sherds have been collected as surface debris always overlying the earlier Pueblo II-III sherds. Examinations of petroglyphs around the Hopi villages and near Moenave indicate that Style 2 is most prevalent there and can be justified as a legitimate style. Thus, in descending order of reliable dates, the five styles of Glen Canyon basin petroglyphs are: 1, 4, 5, 2, 3.

Five style horizons of petroglyphs (Table 1) have been recognized in Glen and San Juan Can-

yons. These styles, showing a developmental sequence that approximates the sequence of pottery types in northern Arizona, are associated with specific aboriginal occupations in the canyons and as such have been dated accordingly.

STYLE I

Style 1 designs are the handiwork of Navajos, Paiutes, and Anglos who have occupied or traversed the canyon since 1850. There is little difficulty in recognizing this style horizon (Fig. 1) as it embraces representations of eagles, rabbits, goats, sheep, horses, mules, cattle, cowboys, horses with saddles, words and names of people known to occupy the region or to have passed through it. Such names include Wetherill, Stanton, Judd, Bernheimer, Kolb, Hislop (Fig. 2), and names of Navajos known to range the canyons today.

The Navajo-Paiute pecking technique is an outline form with the enclosed area seldom pecked out (Fig. 3). Dints are shallow and broad, seldom placed equidistantly, and appear to have been done now and then with a metal tool (Fig. 4). River travellers have incised and occasionally pecked an original "sketch" or imitations of existing designs, but these are unmistakable for they are most often incised and Western culture elements are embodied. For example, at NA2692, a "Picasso-like" drawing occurs which does not resemble any Anasazi design (Fig. 5). This design has been found only at NA2692 and thus does not represent the central tendency of design throughout the canyon systems, including the tributary canyons where Anglo river travellers seldom venture. Many fresh-appearing petroglyphs have been categorized as Style 1 because similar designs are lacking in the side canyons. Incised designs characterize Anglo Style 1 petroglyphs, while Navajo-Paiute designs are incised and pecked about equally in number (Figs. 6 and 7). Re-pecking of the patinated prehistoric designs has been noted in several

instances (NA7166, 7580). Horses, horseback riders, names and dates, and men, characteristically wearing tall hats, are the most frequent items found in charcoal drawings.

STYLE 2

Style 2 is linked with Hopi revisitation of the canyons from the 14th Century to the present, as evidenced by the occasional Hopi yellow and utility-ware sherds found on the surface of less than 1.0 per cent of MNA sites in the Glen Canyon basin. Hopi pecking techniques produced shallow dinting and incising and petroglyph sites around the Hopi villages show a similar technique. Line widths vary from extremely narrow finely-executed ones to broad irregular rough lines often not completely delineating an outlined area. Known subject matter within the Glen Canyon region includes identifiable kachina representations, poorly-executed anthropomorphic figures, diagonal-hatched sandals, clan symbols, sheep, and circular designs (Fig. 8). Style 2 has a very low frequency in Glen and San Juan Canyons and considerably more representation is found outside the region near Moenave (Willow Springs) and the Hopi Mesas. Style 2 was partially defined by comparisons of a few petroglyphs having Pueblo IV sherd associations that did not fit the other Glen and San Juan Canyon styles with known Hopi petroglyphs from Moenave and the Hopi Mesas. The two areas were identical. The same weathering criteria held for petroglyph styles at the Hopi Mesas, but the relative style frequencies are reversed—more Style 2 designs are found at the Hopi villages than are all other styles. (For an excellent discussion of the Moenave petroglyphs and their interpretation, see Colton and Colton 1931:32-7.)

In the Hopi Mesa regions, petroglyphs definitely associated with Pueblo IV sherds often are designed within a circular framework. The earlier styles, Styles 3, 4, and 5, more often are framed within a rectangular layout frequently using triangular elements. Circular layout seems to characterize the Style 2 petroglyph horizon and suggests a close affinity between pottery designs and petroglyphs, although Jeddito and other Pueblo IV pottery designs have not been found in the form of petroglyphs in the Glen Canyon region. It should be noted that the Jeddito designs are also scarce at Moenave.

There is a significant lack of earlier designs in Style 2 times (*see* Style 4 for the most elaborative phase) and little is found in the way of new designs. Elaboration and evolution of a kachina and anthropomorphic designs does indicate a revival of a nearly-lost art during Style 3 times. Facial features are commonly portrayed in Style 2 kachina forms, more so than in the other style horizons (Fig. 9). It would seem, on the basis of design analysis, that the Hopi Style 2 is very strongly related to Style 4. However, new elements and design combinations (Table 2) are introduced in Style 2 times in the Glen Canyon

region which are indicative of influences from some unknown outside source.

STYLE 3

Style 3 is considered as being associated with the Late Pueblo III occupation in Glen and San Juan Canyons (*see* Petroglyph Age Determinants). The pecking technique is primarily a poorly-executed outline form with broad irregular-edged lines (Fig. 10). The pecking tool appears to have been a semi-controlled sharp siliceous stone hit directly against the cliff wall or slump boulder. Seemingly, the hammerstone—chisel technique was not used. Designs include sheep, broad-bellied lizard-men with occasional ear pendants, an occasional broad-lined stick figure, concentric circles, and negative designs. The horns of the sheep tend to stem from the neck region rather than from the head and the sheep often have the nasal region extending and drooping like the snout of an elephant. Naturalistic designs are poorly done, but the negative designs are often the most striking of a specific panel.

Representation is generally not naturalistic and always falls short of the quality of Style 4 imagery. Elaboration of elements does not characterize this style horizon. Rather, its complexion is a retrogression from the plasticity and peerless extensibility of Style 4. Designs can thus be recognized by hammerstone pecking technique; paucity of element variation, and position of the sheep's horns (Fig. 11). This style has more numerical representation than Style 2 but less than Style 4.

STYLE 4

Style 4 is the most widespread and characteristic petroglyph and pictograph form in the Glen Canyon region and is definitely associated with Pueblo II-III pottery types. Subject matter is so variable, compared to the other four styles, and the pecking technique so well executed that this style is easily recognized. Elements (*see* Table 2) are solid pecked and outline forms. Among others, designs include the following:

solid triangular anthropomorphs	sheep
hat-topped anthropomorphs	flat-bellied lizards
game-playing anthropomorphs	large-footed birds
bow-and-arrow-carrying anthropomorphs	large-footed sheep
humped-back anthropomorphs or snails	extensive non-representational design motifs (Fig. 12)
extremely large-handed anthropomorphs	bird-bodied sheep
left and right hand and foot prints	snakes
flute players	sheep hoof prints
lizard-men	bird tracks
reclining flute players	long-necked birds
openwork kachina heads	complex blanket or pottery designs
	simple blank designs
	rectangular frames
	notched toe sandal designs

dotted-center sunbursts	paired sandals
shields	possible birth scenes
masks	hunting shafts

STYLE 5

The Style 4 diagnostic designs are: birds, flute players, hunting scenes, anthropomorphs with enlarged appendages and genitals, bird-bodied open-mouthed cloven sheep, concentric circles, and watch-spring scrolls. Also included are the triangular-bodied elaborately-headdressed anthropomorphs (Fig. 13). Dints are generally spaced equidistantly and the pecking technique was usually a well controlled hammer-stone-chisel method. Design elaboration is rampant, with some scenes often having a humorous bent (Fig. 14). Dints are shallow to deep and incising is rare. Mesa Verde sites include all of these designs, but in addition have the triangular-bodied anthropomorphs wearing a bird-bodied headdress like those at NA-6800 and NA7166. At sites with Mesa Verde pottery in addition to Kayenta wares, there are some subtle differences to be seen in the petroglyphs. They show the use of curvilinear arms and legs on the anthropomorphs, occurrence of deer petroglyphs, bird-topped head gear and staffs, lack of lizard designs, and broader lines with wider dints (Fig. 15). These distinctions may be considered to represent a Mesa Verde division of Style 4.

Lizard forms are almost totally lacking on the north bank of the San Juan River and bird-topped headdressed anthropomorphs are almost entirely lacking on the south bank. Mesa Verde lizard forms are shown on pottery in Brew (1946, Figs. 142, 147). Two known exceptions are: (1) at the mouth of Paiute Creek where many of the petroglyphs appear to have been done by the same artisan who pecked the designs across the San Juan River at NA7166; (2) at a major pueblo center NA7713 (Pottery Pueblo) on Paiute Mesa. However, both exceptions had surface sherds of Mesa Verde types.

Style 4 is thus represented at both Kayenta and Mesa Verde sites and, as in pottery style differences, at least five design differences are noted in the petroglyphs. Both north and south riverbank divisions include elaborate and complex straight and curving line motifs. Exact placement of dints characterizes this style horizon. Curvilinear and rectilinear designs and elements are also diagnostic. With further analysis, this style horizon possibly could be subdivided additionally, aside from the north-south bank distinctions, but I feel this would lead mainly to recognition of individual styles rather than additional style horizons or regional styles. An impression gathered in the field is that Style 4 was represented at nearly every site having pottery sherds, regardless of the pottery age differences (exclusive of Hopi village sites and Hopi breakage sites in Glen and San Juan Canyons), and that Style 4 ran through all the post-Pueblo I (A.D. 1000) advances in pottery design.

Style 5 consists almost exclusively of rectilinear outline forms, occasionally filled within the outline with parallel and vertical cross-hatching (Fig. 16). Dints are the deepest of the five styles, relatively well placed, and solid pecked areas are very rare. Sheep have exceptionally large rectangular bodies with head, tail, and legs disproportionately small. Anthropomorphs have huge elongated bodies, filled occasionally with horizontal-vertical cross-hatching. Arms and legs are minor features, usually being a single line, with the head region often having elaborate head-dressing. Another characteristic of Style 5 designs is the squiggle maze—an interlocking network of lines, curvilinear and straight, that wander over a cliff wall, often for several square yards. Triangular forms are rare and an emphasis on rectilinear design is noted instead. Style 5 shows the greatest amount of weathering and is believed to be of pre-Pueblo II manufacture (*see* Petroglyph Age Determinants).

The use of rectangular forms as opposed to the Style 4 triangular anthropomorphs does not agree entirely with the finding of Kidder and Guernsey (1919, Plates 89, 90, 93, Fig. 96), although Style 5 is present in a few of their illustrations (Plates 91, 96, 97). No Style 5 petroglyphs are included in their 1921 report (Guernsey and Kidder 1921). On the basis of the Glen Canyon region petroglyphs, sound reason exists to believe that the rectangular forms are earlier than triangular ones and that the latter developed partially out of the former. Also, both forms exist together on a specific panel with nearly identical weathering and patination. This is suggestive of a developmental or evolutionary sequence with both styles being in vogue at some time starting around A.D. 1050 (Fig. 17). Elements and designs can be traced from Style 5 to Style 2, which is also indicative of a cultural continuum. These elements and designs include cross-hatching, headdresses, anthropomorphs, hunting shafts, and emphasis on sheep symbolisms. Field impressions of Style 5 designs intimated that this style is mainly of a pre-pottery time. It changes into Style 4 with the arrival of pottery, the bow and arrow, above ground architecture, and other developments in northern Arizona and southern Utah.

It should be noted that in sites ascribable to Basketmaker occupation, the triangular-bodied anthropomorphs are present but are always in the form of pictographs. The meaning of this distinction is not understood.

The general similarity in form between anthropomorphic petroglyphs and clay figurines is indicative of broad cultural style manifestations within specific style horizons. Morss's (1954:25) summarizing statement expresses his belief that the "Pillings figurines were of 11th Century manufacture." The general morphology of the Pillings Figurines (Morss 1954, Figs. 1-11), Fremont figurines (Morss 1954, Fig. 20) and Northern Periphery Figurines (Morss 1954, Figs. 21, 22) are consistently similar to the Glen Canyon region Style 4 petroglyphs of head-gearred anthropo-

morphs. While Style 4 continues to A.D. 1250, it does begin around A.D. 1050, which would corroborate the A.D. 1000-1100 date suggested by Morss for the Pillings figurines. His illustration (Fig. 19) of Basketmaker III figurines from northeastern Arizona shows these to be more rectangular than the later figurines. The latter tend to be triangular, thus resembling Style 4 petroglyphs. The Basketmaker III figurines resemble Style 5 petroglyphs by their general rectangular outline. In addition, quantitative differences exist between Styles 4 and 5 in the Glen Canyon region. Style 5 is considerably less frequent than is Style 4, even in optimum petroglyph locations. This has two plausible explanations: (1) there were fewer people during Style 5 times; (2) they showed less interest in petrographic expression.

STYLE DISCUSSION

Beginning with Style 5, which is considered to be the earliest petroglyph representation in the Glen Canyon region, there are through time, significant additions to and combinations of, petroglyph elements. Style 5 is restricted mainly to rectilinear compositions, with occasional use of curvilinear lines in the basilar portion of sheep and the inferior body and superior head regions of the anthropomorphic figures. Morss (1931:39) recognized designs of Style 5, although he was unable to determine the temporal placement of his examples. His description of one of three panels of "pictographs" near Thompson (east central Utah) follows:

Series from three periods are present. The first, . . . is a line of rectangular-bodied, small-headed, unornamented figures of heroic size in dark red paint which is now very dim [Style 5]. Superposed on the first series is a line of anthropomorphs in full pecking [Style 4]. Superposed on these, in turn, are two anthropomorphs in deep grooved outline of the same shape as the second series, but with typical Fremont treatments of the collar and the waist [Style 4].

Renaud (1931:65) also recognized Style 5 and wrote:

As to the actual age of the Colorado pictographs there is little to say . . . Nevertheless . . . at site R75, in the Apishapa district, 31 miles south of Fowler, any observer will notice that some figures are broadly pecked [Style 5], others more finely done [Style 4?]. The first are almost as dark as the iron-stained brown face of the Dakota sandstone on which they have been pecked. The others are lighter because not so weathered and patinated by time. Hence, the latter are more recent. Examining a large number of these petroglyphs reveals the fact that the older ones are generally made of conventional designs, of symbolic signs while the newer ones are usually realistic . . .

Horizontal and vertical cross-hatching customarily are used in Style 5 designs, less so in Style 4, and are completely absent in Style 3. During Style 2 times cross-hatching again appears, but is oriented

diagonally. Highly animated, excellently executed designs, and unprecedented combinations of elements seemingly develop from Style 5 and are characteristic of Style 4. Here the complex design motifs and new combinations of elements manifest themselves for almost two centuries, eventually subsiding into the technically inferior and numerically subordinate Style 3. During Style 3 times a reduction in the number of elements, as well as a reduction in the number of designs, seems to reflect a cultural process occurring throughout the Kayenta culture area at that time (withdrawal to large pueblo centers). Pottery designs became rigid and static and, seemingly, a cultural center developed further south in the Hopi country. Style 2 could be a resurgence of the multiple-element, complex design tradition of Style 4, although it does not reach the subjectively superior quality of Style 4. Table 2 presents the listing of elements and their frequency during the five phases of Glen Canyon basin petroglyph chronology, although Western Culture elements have not been inventoried for Style 1.

Broad straight lines, deeply incised, are characteristic of Style 5, while narrow lines very seldom occur. Style 4 lines are both narrow and broad as well as curvilinear, wavy, squiggled, zigzag, and meandered. In fact, almost all elements shown in Table 2 are to be found during Style 4 times, the main exceptions being diagonal hatching, lines with pendant dots, checkerboards, and interlocking S-scrolls. Style 2 is characterized by diagonal hatching as well as a reduction in the number of elements found in Style 4. The Hopi style (Style 2) seems to work within a framework of a circular pattern more than do any of the other style horizons. During Style 3 times, elements are limited mainly to broad lines forming a limited number of designs, mainly sheep. Anglo and Navajo-Paiute elements reflect more realistic drawings and adaptations of elements to depict objects in nature. Style 1 can be characterized as a photographic interpretation rather than stylistic interpretation.

As presented in Table 2, it is apparent that the number of elements increases from Style 5 to Style 4, dropping off in Style 3 times and again increasing in Style 2, although not to the high degree of Style 4. Style 2 terminates the native culture or traditional element depiction in the Glen Canyon region because Style 1 shows the introduction of Anglo culture elements. These include alphabet writing and depictions of domestic animals, events, and material culture items foreign to the Glen Canyon region prior to the main advent of western civilization in northern Arizona and southern Utah. No clear continuation of designs or elements occurs in the art continuum between Style 1 and 2 which can be attributed to Anglo contact with the people of the region.

Certain pottery style elements are lacking in any of the petroglyph style horizons in Glen and San Juan Canyons. For example, the following are missing:

classical meander	negative parallelograms
cross-ticked lines	hourglasses
framed dotted lines	filled corner triangles
squiggled diagonal hatching	pennants
broken framing lines	triangles with angled hooks
S-scrolls	triangles with curved hooks
picot edges	
negative diamonds or squares	

All of these designs are known to have occurred on pottery during at least one time horizon from Basketmaker to Pueblo V. Admittedly, negatively-designed petroglyphs are rare in the Glen Canyon basin and squiggled lines must have been more difficult to peck on stone than to paint on pottery. Despite the few elements missing in the Glen Canyon region, considerable variation nevertheless occurs, especially in Style 4, which indicates positive personal contact with the heartland of the Kayenta and possibly Mesa Verde culture areas.

POTTERY-PETROGLYPH PARALLELS

Near the termination of the petroglyph field studies, striking parallels (Table 3) were noticed in

the design styles of Kayenta Anasazi pottery and the Glen Canyon region petroglyphs. The pottery—petroglyph parallels became apparent through the use of a single-space (Kayenta area) continuous-temporal (known ceramic sequence) analysis. (1) Pottery and petroglyph designs start in the Kayenta Anasazi area with large areas left open and unworked. On pottery the lines are thin relative to later designs; the petroglyph lines are thin relative to the massive areas left unworked, but not thin compared to later designs. (2) The use of a triangular layout characterized by stepped triangle treatment occurs on pottery beginning with the very earliest known decorated types. This use of triangles gains popularity in Pueblo I times, is full-blown during Pueblo II-III times, and decreases in importance in and after Pueblo IV times. Petroglyphs show slight use of triangular elements in Style 5. These are dominant in Style 4, decreasing significantly in Styles 3 and 2. (3) Tracing the continuous development of pottery in the Kayenta Anasazi area, a further change occurs about A.D. 1200 (the cause of the change is not considered relevant here) resulting in designs that cover almost the entire vessel, giving an appearance of negative design. Styles 4 and 3 also have such negative pro-

Common Elements	Pottery Types	Petrograph Styles	Time Period
Fussy thin lines	Lino Black-on-gray	Style 5	BM III
Thin lines; very small triangles; open areas	Kana-a Black-on-white	Style 5	P I
Thin and broad lines	Kana-a Black-on-white Black Mesa Black-on-white	Style 5 & 4 mixture	P I, Early P II
Broad lines with pendant dots	Black Mesa Black-on-white	Style 5 & 4 mixture	P I-II
Full blown triangles ("Stepped triangles")	Late Black Mesa Black-on-white Flagstaff Black-on-white	Style 4	P II-III
Parallel lines and stepped triangles	Flagstaff Black-on-white Tusayan Black-on-white	Style 4	P II-III
Only broad lines	Sosi Black-on-white Dogoszhi Black-on-white	Style 4	P II-III
Squiggled lines and beginning of "negative" areas	Tusayan Black-on-white	Style 4	P II-III
Massive negative areas and triangular layout	Kayenta Black-on-white Wupatki Black-on-white	Style 4 & 3 mixture	P III
Massive negative areas with watchspring scrolls	Kayenta Black-on-white Wupatki Black-on-white	Late Style 4 Style 3	P III Late
Diagonal hatching; forms parallelograms	Wupatki Black-on-white Kayenta Black-on-white Jeddito Black-on-yellow	Style 2	P IV (P III Late)
Circular layout, mixed line size but generally bold look	Jeddito Black-on-yellow	Style 2	P IV
Anthropomorphs on pottery resembling petroglyphs	Jeddito Black-on-yellow	Style 2	P IV

Table 3. Pottery-Petrograph design parallels in the Glen Canyon region. Pottery examples were drawn from MNA collections, illustrations in Martin and Willis (1940), and Colton (1955, 1956). Since there is not a continuous sequence of polychromes starting in Basketmaker times, only the Black-on-white wares have been used. Dates used are: Basketmaker III, A.D. 500-700; Pueblo I, 700-900; Pueblo II, 900-1100; Pueblo III, 1100-1300; Late Pueblo III, 1250-1300; Pueblo IV, 1300-1600 (after Colton 1955, 1956).

ductions. (4) Finally, as the design continuum approaches the historic period, another change appears, in which there is an emphasis on circular layout and mixed line shapes and widths, often of poor craftsmanship. Again, the petroglyphs reflect this pottery design alteration, in having a circular design made up of variable width lines. Both pottery and petroglyph designs have in common a significant trait—detailed features of the human face.

Thus we can abstract the following parallels in pottery and petroglyph designs occurring at approximately the same time periods starting with the oldest. (1) Open areas—Basketmaker, Pueblo I, (2) Triangularization—Pueblo II-III, (3) Negativism—

Late Pueblo III, (4) Circularization and unruléd multiplicity—Pueblo IV.

In summary, 39 basic elements are found in the Glen Canyon basin which are combined, grouped, and structured to give a finite but imaginative array of various designs. The main designs revolve around four themes: anthropomorphs, zoomorphs, geometrical, and activity scenes. The elements are most numerous during Style 4 times, with supreme craftsmanship reigning. (Compare Tables 1, 2, and 3, with Renaud (1947:63) for the relative chronology of the petroglyphs of the western Plains. The styles "Subjects Represented" are in general agreement.)

PETROGLYPH AGE DETERMINANTS

POTTERY ASSOCIATION

The Museum of Northern Arizona archaeological survey has located over 100 Glen Canyon basin sites with associated petroglyphs. In addition, the University of Utah Glen Canyon Project has located numerous other such sites. The latter are not being used in this report to the same degree as are the museum-surveyed sites because of the areal division in which the two institutions are working and the difficulty involved in visiting the University sites.

These prehistoric remains are chiefly single occupation sites and do not, for the most part, show continuous occupation over any long period of time. They are, in sense, restricted to specific periods identifiable by clusters of pottery types. When more than one period of occupation is present it is differentiated by either stratigraphic interpretation or separation by artifact assemblage. At the multiple occupation sites, two or more petroglyph styles frequently are present. This necessitates the assumption that the majority of like individual designs are associated with the major quantity of like occupation debris except in obvious cases of reverse quantity association (for example, a few prehistoric petroglyphs with large amounts of Navajo-Paiute trash).

Tables 4 and 5 present the number of sites having pottery associated with petroglyphs and are a distillate of Tables 9 and 10. The first two tables are intended to show the frequencies by dated pottery types of the petroglyph styles. The following discussion centers about these tables.

Style 1 (A.D. 1850 to present) has been tabulated to show that Navajos, Paiutes, and Anglos have applied designs at already existing sites, albeit Style 1 is not considered to have any relationship with dated pottery sherds. An early date inscribed in the Glen Canyon basin occurs at Music Temple—1871 (Crampton 1959:5). Crampton (1960:11) discusses historic petroglyphs near the Crossing of

the Fathers which are readily discernible as Styles 1 and 4. Those which he suggests as having a "Spanish-Mexican cast or style about them" are indeed Style 1. Along with his suggestion of Spanish-Mexican cast, I would also add possible Navajo-Paiute imitative writing and animal brand insignia.

The earliest inscribed date attributable to Navajos or Paiutes is 1921 in Face Canyon, a southern tributary of the Colorado River (Fig. 18). Earlier Navajo dates, petroglyphs, or debris have yet to be located. In Glen Canyon there are documentary records of western civilization in the 1700's, but petroglyphs are nonexistent for these earliest intrusions. According to Crampton (1960) 1836 is the earliest known inscription (French fur trader), although it lacks the complimentary substantiating evidence of artifactual remains. Thus Style 1 is considered only as a starting point in the Glen Canyon basin petroglyph series and does not lend itself to any further analysis. Specific trash (bottles, cans, and so forth), datable through manufacturing techniques, is lacking for any of the early Style 1 inscriptions, although there is some stylistic difference in handwriting for the 1800's when compared to dates and words inscribed in the 1900's.

Pueblo IV pottery associated with Style 2 (A.D. 1300 to present) is found in both Glen and San Juan Canyons in trash deposits of an earlier origin, although the Pueblo IV sherds are invariably surface or near-surface material and thus are younger than the underlying deposits. As has been said previously, there is a lack of pure Pueblo IV sites in the Glen Canyon basin. Thus all inferences as to style and pottery association must rest on the recognition of relationships between Style 2 and designs found elsewhere, especially in the Hopi country, and on the stylistic differences in the petroglyphs. Jeddito Black-on-yellow, Awatobi Rough, and Jeddito Corrugated have been found at sites having Style 2 petroglyphs

Pottery Type	Dates (After Colton 1955, 1956)	Associated Styles-- Number of Sites				
		Style 1	2	3	4	5
Shinarump Corrugated	PIII?	1	0	0	1	0
Johnson Corrugated	PII-III	1	0	0	1	0
Washington Corrugated	Late PII-Early PIII?	1	0	0	1	0
Tusayan Corrugated	950-1275	3	2	3	10	6
Moenkopi Corrugated	1050-1275	3	1	3	9	5
Kana-a Black-on-white	700-900	2**	1**	0	1	1
Black Mesa Black-on-white	900-1100	1	1	2	3	3
Sosi Black-on-white	1070-1150	2	0	1	3	1
Dogoszhi Black-on-white	1070-1150	1	0	1	2	1
Shato Black-on-white	1050-1150	1	0	0	1	0
Flagstaff Black-on-white	1125-1200	2	1	2	3	1
Wupatki Black-on-white	1150-1200	1	0	1	2	1
North Creek Fugitive Red	PII-III?	1	0	0	1	0
Medicine Black-on-red	1050-1100	1	0	0	1	0
Tsegi Orange	1250-1300 (1200*)	1	0	2	2	2
Tusayan Black-on-red	1050-1150	3	2	2	6	4
Tusayan Polychrome	1150-1300	2	0	1	3	2
Citadel Polychrome	1125-1175	1	0	0	3	2
Tsegi Red-on-orange	1225-1300 (Earlier*)	1	0	0	2	0
Jeddito Black-on-yellow	1325-1600	0	1	0	1	1
Jeddito Plain	1300-Present	1	2	0	1	1
North Creek Gray	PII-III	2	1	0	2	0
Johnson Gray	Late PII	2	1	0	1	0
Shinarump Brown	PIII?	1	0	0	1	0
Kiet Siel Gray	1275-1300	0	0	1	2	2
Chapin Gray	450-900***	0	0	0	1	1
McElmo Black-on-white	1130-1200***	0	0	0	1	1

Table 4. Pottery-site style frequency-pottery types, dates and associated petroglyph styles in Glen Canyon.

* Suggested dates, Breternitz, personal communication. See also Adams and Adams (1959).

** NA 6424 adjoins NA 6457 which has Style 5.

*** Abel 1955.

along with other petroglyph styles. These Style 2 petroglyphs are nearly identical with designs at Hopi, Moenave, and near Flagstaff which have good Pueblo IV sherd associations. Sites with Jeddito Black-on-yellow have the best association with Style 2. Invariably, Style 2 petroglyphs show less obliteration than Styles 3, 4, and 5 when these occur on the same panel and they can be sorted out on the basis of obliterations as well as stylistic differences (*see* Petroglyph Age Determinants—Deterioration).

Style 3 is the least well defined of the five styles. The following dated pottery types have fair association with Style 3 (A.D. 1200-1300): Tusayan Corrugated, Moenkopi Corrugated, Betatakin Black-on-white, Tsegi Orange, Tusayan Polychrome, Tsegi Red-on-orange and Dogoszhi Polychrome. Tsegi Red-on-orange and Tusayan Polychrome have the best association with Style 3 petroglyphs, although an overlap is noted in style phases since these pottery types also are found occasionally with Style 4. Style 3 has a larger numerical representation in San Juan Canyon than it does in Glen Canyon and is seemingly related to the Mesa Verde intrusion into the San Juan area. However, I do not believe that Style 3 was created by Mesa Verde culture-bearing people.

The time period A.D. 1275-1300 has the least amount of pottery representation. It was probably within this 25-year period that Style 3, which is also numerically small, flourished and was manufactured by the "hangers'-on" of the withdrawing San Juan Anasazi. Style 3 is also seemingly akin to the Anasazi withdrawal from the Glen Canyon region which terminated about A.D. 1275-1300.

There is a tempting possibility that, with the disuse of the Glen Canyon region by the Anasazi, another group entered, such as Paiute or Navajo culture-bearing people, who were responsible for the manufacture of Style 3, admittedly an inferior Style 4. It could be conjectured that Style 3 is imitative of Style 4 and not culturally related, but data for this interpretation is totally lacking.

The temporal placement of Style 4 is on extremely solid ground, as can be ascertained by inspection of Tables 4, 5, 9, and 10. This style, more than the other styles, can be used as a subsidiary dating technique for prehistoric sites with petroglyphs. It must be borne in mind that all the designs are not unique to this style horizon. However, when considered as a trait assemblage, they are reliable as a dating mechanism.

The following pottery types are considered to be associated with Style 4 petroglyphs:

Tusayan Black-on-red	Tusayan Black-on-white
Citadel Polychrome	Medicine Black-on-red
Wupatki Black-on-white	Tusayan Corrugated
McElmo Black-on-white	Moenkopi Corrugated
Mesa Verde Black-on-white	Black Mesa Black-on-white

Dogoszhi Black-on-white

This association varies with differing sites when only Style 4 is present and also Black Mesa Black-on-

white. The two are considered as being associated thus giving Style 4 an early date. When Black Mesa Black-on-white and a later pottery type are found with styles 4 and 5, the Black Mesa is thought to be associated with Style 5.

The zenith of aboriginal occupation in the Glen Canyon basin was reached during A.D. 1150-1200. This is witnessed by the prolific variety of dated pottery types assembled for this period, the number of datable habitation and camp sites, and the great number of associated petroglyphs (Adams and Adams 1959:27, 36). In order to accommodate petroglyph-pottery associations, Style 4 has been temporally expanded to date from A.D. 1050-1250, although it could center about the A.D. 1150-1200 San Juan occupation climax date suggested by Adams and Adams (1959). Style 4 designs also are identical to petroglyphs at sites in the Kayenta culture area heartland of Pueblo II-III (Table 11), which necessitates a longer time phase for this style.

Pottery types considered to have late association with Style 5 petroglyphs are: Tusayan Corrugated, Moenkopi Corrugated, Kana-a Black-on-white, Black Mesa Black-on-white, Tusayan Black-on-red, and Deadmans Black-on-red. Kana-a, Black Mesa, Deadmans, and Tusayan have beginning dates prior to A.D. 1050 while the other two start at A.D. 1050. This is suggestive of a design transition centering about A.D. 1050. It should be pointed out that a few sites having Style 5 designs are entirely lacking in pottery, or nearly so, which further suggests a Basketmaker II or pre-pottery temporal assignment to the origin of Style 5. I subscribe to the opinion that Style 5 designs originated long before pottery was introduced into northern Arizona and that the pottery-petroglyph association of Style 5 centers around A.D. 800-900.

Style 5 designs have a higher frequency in Glen Canyon than in San Juan Canyon. Many of the Style 5 petroglyph panels in Glen Canyon are stranded high above the present ground surface, well out of reach, often as high as 12 feet above the present river alluvium or bed rock. At NA6457 and NA6415, some designs are 30 feet above ground level. At the base of many of these panels there are definite scars on the cliff, indicating a large-scale removal of alluvium, talus, or dune after the panels had been pecked. Complementary geological data substantiating a large-scale removal of river terrace alluvium or cliff-base talus is lacking; hence an open-end beginning date for Style 5 is necessary.

The vast amount of obliteration and patination of Style 5 designs suggests that more than twice the period of time between Style 4 and the present has passed since some of the extremely obliterated Style 5 designs were applied to the cliff faces. Straight line projection would give a *tentative* beginning date of 100 B. C. On the basis of the admittedly imperfect pottery association, it can be stated that *at least* 1000 years are necessary for patination accretion on Style 5 petroglyphs to reach the dark blue-black stage—and this estimate is admittedly very conservative.

Pottery Type	Dates (After Colton 1955, 1956; Abel, 1955)	Associated Styles-- Number of Sites				
		Style 1	2	3	4	5
Tusayan Corrugated	950-1275	8	3	10	21	4
Moenkopi Corrugated	1050-1275	5	4	12	25	5
Mesa Verde Corrugated	1200-1300	3	3	3	9	3
Jeddito Corrugated	1300-1400	1	2	2	2	1
Tusayan Black-on-white	1225-1300	0	1	0	2	0
Black Mesa Black-on-white	900-1100	3	0	2	4	1
Sosi Black-on-white	1070-1150	4	1	7	14	3
Dogoszhi Black-on-white	1070-1150	3	1	6	10	4
Flagstaff Black-on-white	1125-1200	4	1	4	7	2
Wupatki Black-on-white	1150-1200	2	0	4	8	3
Shato Black-on-white	1050-1150	0	0	2	3	1
Mesa Verde Black-on-white	1200-1300	3	3	2	6	2
Mesa Verde Polychrome	1200-1300	1	1	1	1	1
McElmo Black-on-white	1130-1200	3	4	3	10	2
Morfield Black-on-gray	950-1100	1	1	1	1	0
Tsegi Orange	1250-1300	0	1	1	3	1
Medicine Black-on-red	1050-1100	3	1	3	6	1
Tusayan Black-on-red	1050-1150	7	4	8	19	4
Tusayan Polychrome	1150-1300	4	2	6	15	5
Citadel Polychrome	1125-1175	5	3	8	13	4
Tsegi Red-on-orange	1225-1300	1	1	2	6	2
Dogoszhi Polychrome	1250-1300	2	2	3	4	1
Jeddito Black-on-hellow	1325-1600	2	2	2	2	1
Awatobi Rough	1300-Present	1	1	1	1	0
Deadmans Black-on-red	750-1050	0	0	0	1	1
Kiet Siel Gray	1275-1300	0	1	1	2	0
Sityatki Polychrome	1400-1625	0	1	0	1	0
Tsegi Black-on-orange	1225-1300	0	0	1	1	0

Table 5. Pottery-site style frequency-Pottery types, dates and associated Petroglyph Styles in San Juan Canyon.

DETERIORATION

Observations and analysis of the Glen Canyon region petroglyphs have led to a number of logical inferences that can be tested by comparisons with petroglyphs from other areas. One such test was made with petroglyphs associated with dated prehistoric sites in Navajo Canyon (Miller, Breternitz, and Euler, in preparation). The test, utilizing the deductions and style horizons established in Glen and San Juan Canyons, consisted of examining photographs of Navajo Canyon petroglyphs and giving an estimate of the site's antiquity. This was done without knowing what pottery types were associated with the site. A high degree of correlation was found between the estimated petroglyph age and the dates determined by pottery types from the sites. Table 6 presents the results of this test.

INFERENCES

- (1) Similar designs are related and associated with specific time horizons; differing designs are not related and do not occur with equal frequencies during the same time horizon.
- (2) Where more than one style is present at a specific site, the style which utilizes the greatest number of elements and designs is associated with the major quantity of recoverable artifactual remains.
- (3) In a specific petroglyph panel, those designs that show more weathering and patination are older than designs without weathering and patination.
- (4) Where evidence exists of soil erosion beneath a panel of petroglyphs, those petroglyphs which are higher on the vertical cliff and are of a different style antedate the petroglyphs positioned below (Fig. 19).
- (5) A developmental sequence of styles is represented in the Glen Canyon region.
- (6) Where only one style horizon is represented at a specific site having a limited time range of pot-

tery type, the style horizon is associated with the time horizon indicated by the pottery types.

(7) Once a petroglyph style horizon has been determined by association with short-period occupation sites, the style then may be extrapolated to sites having that style, plus others represented, with the dated style retaining the same date as determined by association with the short-period occupation site.

AIRBORNE ABRASION

Degrees of obliteration are the partial result of sand and fine gritty materials being blown against a panel of petroglyphs or a single petroglyph. The degree of protection afforded a set of petroglyphs and the depth of dinting mainly determines the state of preservation. Windblown sand and dust are believed to be the major factor in petroglyph obliteration (Fig. 20).

PATINATION

Patination may be the result of airborne abrasion, but it is also considered to be the degree of stain prevalent over a petroglyph when compared to the raw rock on which it is pecked. A light tan-brown to an almost purple-black is the range of color variation observed. No effort has been made to determine the relative thickness because color is considered to be a function of patina depth. On the basis of tentative pottery association, the blue-black patina requires around 900 to 1200 years to form and the purple-black patina requires even more time (Fig. 21).

Sunlight is instrumental in the formation of patina. This is in direct conflict with Hunt's statement (1954:183) that patina "... may develop on surfaces that are dark or poorly lighted, such as tunnel walls or joint planes." Petroglyphs that are shaded all year around do not have patina. Petroglyphs of the same style, with some parts shaded part of the

Site	Pottery Determined Age	Style	Age Estimated from Petroglyphs	Comments
NA4159	Middle PIII	4	PIII	White circles are Style 4
NA5628	Late PIII	3	PIII, late	Man with arms is new
NA5631	Late PII-Early PIII	4	PIII	
NA5635	Middle and Late PIII	4	PIII	
NA5643	Early PIII	4	PII-III	
NA5648	Early and Middle PIII	3,4	PIII	Circular designs are Style 4
NA5653	Late PIII	3,4,5	PIII, PIII late	Wide line squiggle is Style 5; Style 3 sheep present; Kokopele is H PIII
NA5653A	BMIII (near NA5653)	-	-	Style 5 present at this site locality
NA5658	PII late and middle PIII	3,4	PIII, PII?	Kokopele is PIII
NA5787	Middle PIII	4	PII-III	Painted petroglyphs are not BM
NA5791	Middle PIII	3,4	PIII	Unusual incised blanket design
NA5990	Middle and Late PIII	4	PIII	Super-nova may be extinct Moon Clan Symbol
NA6389	Indet. PIII	4	PIII	Good Style 4 designs
NA6391	Indet. PIII	4	PIII	Good Style 4 designs
NA6395	Indet.	2,3,4,5	BM-Present	All styles present
NA6396	Indet.	4?	PII?	Two anthropomorphs possibly PII
NA7105	PI and Early PIII	4?	PIII?	Bird design not PI; probably PIII
NA7109	PI, PII, and Early PIII	4,5?	PII-III	Petroglyphs are PIII and earlier

Table 6. Age estimates of prehistoric Navajo Canyon sites using Glen Canyon petroglyph style horizons as temporal indicators. (after Miller, Breternitz, and Euler, in preparation.)

time and some sunlit, vary in patina, although almost always the sunlit designs have more patina than the partially shaded designs. Ground level airborne abrasion tends to obliterate ground level designs and also prevents the formation of patina. Moisture is also involved in patination. Designs that are protected from moisture but not sunlight have less patina than designs that lack protection from both sunlight and moisture.

LICHEN

Lichen is not considered to be a major cause of petroglyph obliteration; rather, it is used as a subsidiary consideration of age. Petroglyphs having a pottery association less than 600 years old rarely have any lichen or lichen stain (Fig. 22). While petroglyphs generally are not located in favorable settings for lichenous growth, occasionally lichen do take hold in the lines of the designs. This is shown more in Style 5 than in the other styles.

Laudermilk (1931:65-6) wrote: "... It appears reasonable to believe that the presence of a lichen is sometimes an important contributing factor in the genesis of desert varnish," although he admits that, "There may well be other cases in which the formation of the varnish is entirely ignoranic." Through laboratory tests and field observations, Laudermilk also shows that the rate of lichen growth is slow. However, given enough time this could account for the staining of large panels of rock. He also shows that growth of lichen is fastest under warm and moist conditions and it is retarded when dry and cold.

UNRECOGNIZED SOURCES OF OBLITERATION

Included in this category are the other possible sources of obliteration that do not leave desirable temporally diagnostic marks. Water, molecular breakdown of the surface stone, rock decay, physical violence such as rockfalls, and human obliteration constitute this group (Fig. 23).

SURFACE CONSIDERATIONS

When multiple styles are present on a single panel another relative criterion, weathering, is available for chronological positioning. The degree of weathering is conspicuously dissimilar among the five petroglyph style horizons. The Navajo-Paiute (Style 1) are unquestionably fresh-appearing (Fig. 24). Hopi designs (Style 2) have very slight weathering, generally less than Style 3 (Fig. 25). The late Pueblo III (Style 3) designs begin to show slight weathering, depending on their location (Fig. 26). Style 4 has from none to considerable weathering or near-complete obliteration (Figs. 27, 28). Because of "weathering out" of minute cracks in the stone, design line sharpness can either be seen readily or nearly impossible to discern. Style 5 is always highly obliterated and the designs are hard to see even when standing close to the petroglyph panel (Fig. 29).

Personal Inspection	Photographs	Published Illustrations
Glen Canyon Sites		
NA2692	NA2659	NA3712
3732	5363	3714
3742	5369	3717
6415	5500	3744
6419	6420	5356
6424	6425	5358
6426	6440	5368
6457	6469	Total 7
6460	6480	
7136	6482	
7370	6497	
7379	6514	
Total 12	6534	
	6535	
	6884	
	6886	
	6888	
	428a332*	
	428a457	
	428a566	
	428a598	
	42Ka235	
	42Ka446	
	42Ka449	
	42Ga324	
	42Ga358	
	42Ga367	
	42Ga432	
	42Ga443	
	Total 30	
San Juan Sites		
NA2681	NA2658	None
2682	6257	
6259	6279	
6260	6280	
6261	6281	
6262	6605	
6263	6608	
6266	6609	
6278	6611	
6282	7149	
6610	7153	
6800	7157	
6814	7168	
6826	Total 13	
6827		
7147		
7164		
7166		
7167		
7176		
7177		
7179		
7180		
7181		
7182		
7231		
7238		
7244		
7245		
7247		
7421		
7664		
7666		
7667		
7668		
Total 35		
Highland Sites		
NA4209	NA4159	None
7333	5628	
7414	5631	
7523	5635	
7531	5643	
7568	5648	
7580	5653	
7581	5651A	
7597	5658	
7598	5757	
7603	5791	
7608	5990	
7713	6189	
7755	6391	
Total 14	6395	
	6396	
	7105	
	7109	
	7623	
	7625	
	7629	
	7638	
	7646	
	7656	
	7659	
	7662	
	7672	
	7722	
	7723	
	7738	
	7766	
	7770	
	7773	
	7775	
	Total 34	

Table 7. Selected Glen Canyon-region sites with petroglyphs. Method of examination. Grand Total of sites used for this study 145, consisting of over 3500 individual petroglyphs. Also, additional sites in the Glen Canyon region were used for comparative purposes only which brings the total number of petroglyphs to well over 4000.

* University of Utah site survey number.

Without question, since patination and obliteration differ considerably in widely separated locales within the Glen Canyon region, highly sheltered and protected alcove sites will not fit this relative weathering classification. Instead, they can be correlated by style and attendant pottery types. A modern example of differential surface obliteration is located on a sandstone knob near the road halfway between Wahweap Lodge, Arizona, and Kane Creek Landing, Utah. Here, several initials and dates, ranging from 1956 to 1958 occur. The 1956 dates are somewhat obliterated, yet were incised to the same depth as the 1958 dates. No patination is evident. There is only weathering away of the rock surface by airborne abrasion. Polar examples are the protected Style 4 petroglyphs that lack discernable abrasion, yet are over 700 years old (Fig. 30). These examples should make explicit the fact that no single criterion can be used for dating or ascribing cultural placement to a single petroglyph or set thereof. Many phenomena must be considered and then weighed in the light of immediate environmental conditions.

Navajo and Wingate sandstone are the chief types of rock on which petroglyphs are chipped. The other regional stone groups, including the Chinle, Organ Rock, Cedar Mesa, Rico, Hermosa, and Carmel have yet to reveal designs.

Reasons for this are threefold:

(1) The latter stone groups are either too hard to apply dinting readily, or they are too soft to hold the design.

(2) The availability or proximity of the stone to the habitation or camp site is important. Both the Wingate and the Navajo are readily available in most of the Glen Canyon region, are also easy to peck, and often have a highly patinated surface on which the designs contrast. Where petroglyphs have been pecked on Navajo or Wingate sandstone without a patinated surface, it must be conceded that surface coloration was not a consideration, since patinated stone is generally nearby. Rather, some other reason was

considered by the artisan in his choice of a petroglyph location. At NA3740, Spring Canyon Bar (Figs. 31, 32), the choice was based on access to a very high point on the cliff. Here the petroglyphs contrast with the background rock and can be seen from several hundred meters distant. Conversely, petroglyphs near the ground surface can be seen from only five to ten meters away.

(3) The surface consideration was generally the desirability of the dark-brown patinated Navajo or Wingate sandstone slump boulders or living rock free of surface defects.

To sum up, the preferred surface was generally smooth and patinated, was either on a slump boulder or cliff wall, and was located near a habitation site, trail, or water.

SITE EXAMPLES

The following examples should suffice to demonstrate the pottery-petroglyph-obliteration-patination considerations which were necessary for final evaluation of the stylistic separations (see Tables 9, 10, and 11 for individual site accounts and sherd tallies).

Along the banks of Paiute Creek near its juncture with the San Juan River, extensive petroglyph panels are found on the Wingate sandstone slump boulders that form natural shelters on the barren Chinle formation. NA6260, 6261, 6826, 6827, and 7166 are sites displaying many individual designs and multiple styles on large showy panels. Lower Paiute Creek undoubtedly has seen considerable use, through time, to judge by the number of petroglyphs and the continuous sequence of styles. This location surely must have served as a river crossing as well as a farming locale, since the Navajos use it as a crossing even today.

NA6260 consists of several petroglyph panels with one impressive panel on the south side of a Wingate slump boulder capping the Chinle remnant hillock between "Newspaper Rock" and a Navajo

	Style 1	2	3	4	5
Obliteration (composite)	None	Very slight	Slight	None to near complete	Considerable to near complete
Air-borne abrasion	Rare	Common	Common	Common	Abundant
Patination	None	None	Rare	Common	Abundant
Lichen	None	Rare	Rare	Rare	Occasional
Unrecognized sources of obliteration	Rare	Rare	Common	Common	Abundant
Patination stage designation (not necessarily related to style horizons)	A:	B:	C:	D:	E:
	Fresh and no patination	Fresh but patina starting to form	Patinated but readily visible	Slightly less than background	Same degree as background

Table 8. Relative occurrence of obliterating mechanisms.

encampment. Very little obliteration, no lichen, and some Navajo scratchings are in evidence on the panel. Style 4 patination is in C-stage while Styles 1 and 2 (writing, scrolls, and zoomorphs) are in A-stage patination. The background color is very dark brown to light brown—dark brown on the outside of the slump boulder where sunlight strikes the surface for a longer time. The panel faces eastward and includes Styles 1, 2, 3 (?), and 4.

NA6261, "Newspaper Rock," is a slump boulder covered with designs. The major panel faces west and contains Style 4 designs which are quite singular. Patination is C-stage with negligible obliteration. The fact that lichen are in some designs and not in others may indicate that some designs are older than others, although all are in the same Style 4 tradition. Dints are shallow to medium in depth, narrow to wide, with spacing variable but generally well placed. Rock background color is dark brown.

NA6826 petroglyphs have shallow broad dints, no lichen, some incising on anthropomorphs, and lack obliteration on the room interior. Outside the slump boulder room, obliteration is negligible, patination is C-stage, no lichen are in evidence, and the background color is light brown. The exterior faces east. Some of the outside designs have rectilinear shapes with patination, obliteration, and other weathering considerations in an advanced stage. Depending on the pottery, these designs may represent a transition from Style 5 to 4, or may be a holdover of Style 5 in sheep depiction. No lichen are seen on the south panel, but there are a considerable number on the west panel. The west panel has considerably deeper dints. Similar workmanship, broad shallow dints, and similar-appearing anthropomorphs face east outside the room. The designs include flute players, birds, and bird tracks. Room interior designs are rectilinear sheep and stick anthropomorphs, plus a narrow-line zigzag element. West of the room is a hunting shaft petroglyph terminating at a paw print.

NA6827 is 150m. east of the Navajo hogans. This panel is located upon a slump boulder and could be considered as transitional between Styles 5 and 4. This panel has an older look than do others in the immediate area. The panel, which is composed mainly of Style 5 designs, is nearly upside down, while the Style 4 designs occur right side up. It is possible that this slump boulder has toppled over. If so, Style 5 designs originally faced north. Dints are broad and shallow, patination variable, with background color varying from medium brown to pink-orange (raw rock). The panel now faces south.

NA7166 is directly across the San Juan River from Paiute Creek. It has three major petroglyph panels and several minor panels. Panel A faces east, lacks lichen, is stained by dirt and dung plastered on the panel by Navajos, and shows differential patination—the top of the panel has more patina than the bottom. All designs are in C-stage of patination, although the lower designs are more obliterated. Wide lines and broad dints which vary from shallow to deep characterize this panel. Designs are Style 4, with the exception of two questionable Style 2 representations. Background color is nearly metallic black.

Panel B is a slump boulder facing west and lacking patination except near the top. Obliteration is advanced and lichen are absent. Airborne abrasion has been extensive. Style 4 designs here are nearly identical with those of the petroglyph sites across the river. There are no distinctions between designs at the top or bottom of the panel and dinting is similar to that of Panel A. Some designs are buried below the present ground level.

Panel C faces east and is slightly sheltered from the wind. No patination differences are in evidence from the top to the bottom of the panel. Shallow broad dints with broad irregular lines are common. The background color is nearly metallic black. Style 4 dominates the panel.

STYLISTIC DEVELOPMENT

Changes through time are represented in Glen and San Juan Canyon petroglyphs. Whether or not such changes are in the indirect result of diffusion of ideas or whether they are the result of a natural evolution peculiar to the canyons will be discussed in the Distribution section. The development of petroglyphs, as represented only in the Glen Canyon region, will be presented here.

Evidence of borrowing and evolving from the past can be inferred at all five style horizons, including all the elements portrayed in Glen and San Juan Canyons with the exception of the flute player, blanket designs, mixed zoomorphic and anthropomorphic figures, clan symbols, and a highly questionable feathered serpent. These exceptions are seemingly

not the result of a natural evolution of elements and designs and will receive further attention later. Growth, evolution, and elaboration will constitute the theme of this section.

Prehistoric artifacts are but imperfect records of actions completed in the past. Regardless of their importance to the artisan or craftsman who manufactured them or the person who used them, their designs are seldom so critical that the exact course of events in which they were used can ever be completely reconstructed. Rather, details must be ascertained by comparable and ethnographic counterparts or by inference from associated and circumstantial evidence. Petroglyphs, like material culture items, can never be interpreted with the degree of insight

Site Number	Anasazi Branch	Culture Stage	Petrograph Style	Estimated Ceramic Occupation Dates and Total Ceramic Temporal Range	Pottery Types Present	Figure Reference
NA2681	Kayenta and Mesa Verde	P I-III	4,5	750-1300 Range A. Pre 1050 B. 1050-1275	Tusayan Polychrome Mesa Verde Corrugated Tsegi Orange Deadmans Black-on-red Tusayan Black-on-red Citadel Polychrome Wupatki Black-on-white McElmo Black-on-white Mesa Verde Black-on-white Tusayan Corrugated Moenkopi Corrugated Tsegi Red-on-orange	Figs. 61-73
NA2682	Kayenta and Mesa Verde	PII-IV	2 or 3,4	1050-1400 Range A. 1050-1200 B. Post 1300	McElmo Black-on-white Tusayan Black-on-red Mesa Verde Corrugated Jeddito Corrugated	Fig. 25
NA6258	Unrecognized	-	3,4	-	-	
NA6259	Kayenta or Mesa Verde	PII-III?	3,4	-	-	
NA6260	Kayenta	PII-III	1,3,4,5	900-1300 Range A. Pre 1050 B. 1050-1200	Black Mesa Black-on-white Sosi Black-on-white Dogoszhi Black-on-white Flagstaff Black-on-white Wupatki Black-on-white Medicine Black-on-red Tusayan Black-on-red Citadel Polychrome Tusayan Polychrome Tusayan Corrugated Moenkopi Corrugated Mesa Verde Corrugated	Figs. 6, 94
NA6261	Kayenta	PII-III	3,4,5	950-1300 Range A. 1050-1200	Sosi Black-on-white Dogoszhi Black-on-white Shato Black-on-white Wupatki Black-on-white Citadel Polychrome Tusayan Polychrome Tusayan Corrugated Moenkopi Corrugated	Figs. 12, 26
NA6262	Kayenta	PII-III	4	950-1300 Range A. 1100-1200	Dogoszhi Black-on-white Tusayan Black-on-white Tusayan Black-on-red Citadel Polychrome Tusayan Polychrome Dogoszhi Polychrome Tusayan Corrugated Moenkopi Corrugated	Fig. 51
NA6263	Kayenta	PII-III	4	950-1300 Range A. 1100-1200	Sosi Black-on-white Dogoszhi Black-on-white Flagstaff Black-on-white Wupatki Black-on-white Medicine Black-on-red Tusayan Black-on-red Citadel Polychrome Tsegi Red-on-orange Tusayan Polychrome Dogoszhi Polychrome Tusayan Corrugated Moenkopi Corrugated	
NA6266	Unrecognized	-	2,4,5	-	-	Figs. 35, 54, 88, 89, 100
NA6276	Unrecognized	-	4	-	-	

Table 9. Selected San Juan River petroglyph sites. This listing is restricted mainly to petroglyph sites with ceramic refuse in association; it does not include all sites having only petroglyphs. Range given is total ceramic inventory range, both surface and excavated material. Dates preceded by letters are estimated occupation periods based on sherd grouping.

NA6277	Kayenta	PII-III	4	1050-1275 Range	Tusayan Black-on-red Moenkopi Corrugated	
NA6278	Unrecognized	-	4	-	-	
NA6279	Unrecognized	-	3,4	-	-	
NA6280	Unrecognized	-	4	-	-	
NA6281	Kayenta or Mesa Verde	PII-III?	3,4	1050-1275 Range	Moenkopi Corrugated	Fig. 85
NA6282	Kayenta	PII-III	1,3,4	950-1275 Range	Tusayan Black-on-red Tusayan Corrugated	
NA6609	Unrecognized	-	3,4	-	-	
NA6610	Unrecognized	-	2	-	-	Fig. 40
NA6611	Unrecognized	-	4,5	-	-	Fig. 93
NA6800	Mesa Verde and Kayenta	PII-III	1,2,3,4,5	950-1600 Range A. Pre 1050 B. 1050-1250 C. 1200-1300 D. 1300-1400 E. Historic	Dogoszhi Black-on-white Flagstaff Black-on-white McElmo Black-on-white Mesa Verde Black-on-white Mesa Verde Polychrome Tusayan Black-on-red Citadel Polychrome Tsegi Red-on-orange Tusayan Polychrome Dogoszhi Polychrome Tusayan Corrugated Moenkopi Corrugated Mesa Verde Corrugated Jeddito Black-on-yellow Jeddito Corrugated	Figs. 17, 21
NA6814	Kayenta	Late PIII	3 or 4	1050-1300 Range A. 1250-1300	Tsegi Orange Tsegi Black-on-orange Moenkopi Corrugated Kiet Siel Gray Shato Black-on-white Dogoszhi Polychrome	Fig. 101
NA6824	Kayenta or Mesa Verde	PII-III	1,4	1050-1300 Range	Sosi Black-on-white Flagstaff Black-on-white McElmo Black-on-white Mesa Verde Black-on-white Medicine Black-on-red Tusayan Black-on-red Tusayan Polychrome Mesa Verde Corrugated Tusayan Corrugated Moenkopi Corrugated	
NA6826	Kayenta	PII-III	4,5	950-1300 Range A. 1050-1200	Dogoszhi Black-on-white Tusayan Black-on-red Tusayan Polychrome Tusayan Corrugated Moenkopi Corrugated	Fig. 99
NA6827	Unrecognized	-	3,4,5	-	-	Figs. 28, 95
NA7132	Kayenta	PII-III	4,5	950-1150 Range	Sosi Black-on-white Tusayan Corrugated Tusayan Black-on-red	Fig. 82
NA7134	Kayenta	-	4	950-1275 Range	Tusayan Corrugated	
NA7135	Kayenta	PII-III	4?	950-1300 Range A. 1050-1200	Sosi Black-on-white Medicine Black-on-red Tusayan Black-on-red Tusayan Polychrome Mesa Verde Corrugated Tusayan Corrugated Moenkopi Corrugated	
NA7147	Kayenta	PII-III	3,4	950-1300 Range A. 1100-1200 B. 1225-1300	Sosi Black-on-white Tsegi Red-on-orange Tusayan Corrugated Moenkopi Corrugated	Fig. 39

Table 9. (cont.) Selected San Juan River petroglyph sites.

NA7149	Kayenta	PII-III?	2 or 3,4	1050-1275 Range	Tusayan Black-on-red Moenkopi Corrugated	Fig. 50
NA7153	Kayenta	-	3,4	1050-1275 Range	Moenkopi Corrugated	Figs. 78, 79
NA7155	Mesa Verde	PII-III?	4?	1130-1200 Range	McElmo Black-on-white	
NA7157	Mesa Verde	PII-III	4	950-1300 Range A. 1050-1200	Mancos Black-on-white McElmo Black-on-white Tusayan Black-on-red Tsegi Red-on-orange Tusayan Polychrome Tusayan Corrugated Moenkopi Corrugated Mesa Verde Corrugated	Fig. 49
NA7164	Kayenta or Mesa Verde	PII-III	4	1050-1300 Range A. 1050-1200	Dogoszhi Black-on-white Shato Black-on-white Tusayan Black-on-red Tsegi Red-on-orange Mesa Verde Corrugated	
NA7165	Mesa Verde	PII-III	4	1130-1200 Range	McElmo Black-on-white	
NA7166	Kayenta and Mesa Verde	PII-III	2,4	950-1625 Range A. 1050-1200 B. Post 1300	McElmo Black-on-white Mesa Verde Black-on-white Tusayan Black-on-red Citadel Polychrome Tusayan Polychrome Mesa Verde Corrugated Tusayan Corrugated Moenkopi Corrugated Tsegi Orange Sosi Black-on-white Kiet Siel Gray Tusayan Black-on-white Sityatki Polychrome	Fig. 15
NA7167	Kayenta and Mesa Verde	PII-III	1,2,3,4	950-1600 Range A. 1050-1200 B. Post 1300	Morfield Black-on-gray Medicine Black-on-red Tusayan Black-on-red Citadel Polychrome Dogoszhi Polychrome McElmo Black-on-white Mesa Verde Black-on-white Tusayan Corrugated Moenkopi Corrugated Jeddito Black-on-yellow Awatobi Rough	Figs. 9,30,33, 75
NA7168	Kayenta	PII-III	4	950-1200 Range	Sosi Black-on-white Flagstaff Black-on-white Wupatki Black-on-white Tusayan Black-on-red Tusayan Corrugated Moenkopi Corrugated	
NA7169	Kayenta	PII-III	4	1050-1275 Range	Moenkopi Corrugated	
NA7175	Kayenta	PII-III	4	950-1300 Range A. 1050-1200	Sosi Black-on-white Dogoszhi Black-on-white Wupatki Black-on-white Tusayan Black-on-red Tusayan Polychrome Tusayan Corrugated Moenkopi Corrugated	
NA7176	Kayenta	PII-III	3	950-1275 Range A. 1050-1200	Sosi Black-on-white Dogoszhi Black-on-white Tusayan Black-on-red Citadel Polychrome Tusayan Corrugated Moenkopi Corrugated	Fig. 11
NA7177	Kayenta	PII-III	1,4	900-1275 Range	Black Mesa Black-on-white Citadel Polychrome Tusayan Corrugated	Fig. 24

Table 9. (cont.) Selected San Juan River petroglyph sites.

NA7179	Kayenta	PII-III	1,3,4	900-1300 Range A. 1100-1200 B. 1225-1300	Black Mesa Black-on-white Sosi Black-on-white Dogoszhi Black-on-white Shato Black-on-white Flagstaff Black-on-white Wupatki Black-on-white Tusayan Black-on-red Citadel Polychrome Tsegi Red-on-orange Tusayan Polychrome Tusayan Corrugated Moenkopi Corrugated	Figs. 13,22 46,47,48,76
NA7180	Kayenta	PII-III	3 or 4 (poor association)	900-1275 Range	Black Mesa Black-on-white Sosi Black-on-white Dogoszhi Black-on-white Flagstaff Black-on-white Tusayan Black-on-red Tusayan Corrugated Moenkopi Corrugated	
NA7181	Kayenta	PII-III	3 and 4 mixture	950-1300 Range A. 1175	Citadel Polychrome Tusayan Polychrome Tusayan Corrugated Moenkopi Corrugated	Fig. 20
NA7182	Kayenta	PII-III	3,4	950-1300 Range A. 1050-1200 B. 1225-1300	Sosi Black-on-white Dogoszhi Black-on-white Flagstaff Black-on-white Wupatki Black-on-white Medicine Black-on-red Citadel Polychrome Tsegi Red-on-orange Tusayan Polychrome Tusayan Corrugated Moenkopi Corrugated	Figs. 44,45
NA7238	Kayenta and Mesa Verde	PII-III	4	950-1300 Range A. 1050-1200	Tusayan Black-on-red McElmo Black-on-white Mesa Verde Black-on-white Tusayan Corrugated Moenkopi Corrugated	Fig. 14
NA7245	Kayenta	PII-III	4	900-1275 Range A. 1050-1200	Black Mesa Black-on-white Sosi Black-on-white Citadel Polychrome Tusayan Corrugated Moenkopi Corrugated	Fig. 41
NA7247	Kayenta	PII-III	1,3,4	900-1175 Range A. 1050-1200	Sosi Black-on-white Tusayan Black-on-red Tusayan Corrugated	Figs. 1,3,27, 42
NA7421	Unrecognized	-	4	-	-	Figs. 86,90
NA7667	Anglo	Historic	1	1915	-	Fig. 7
NA7668	Navajo-Paiute	Historic	1	Modern	-	Figs. 4,37
NA7669	Unrecognized	-	4	-	-	
NA7673	Unrecognized	-	4,5	-	-	

Table 9. (cont.) Selected San Juan River petroglyph sites.

that was in the mind of the creator. In other words, much of the importance and rich detail that were necessary to inspire the symbols on stone were lost when the artisan left the scene. They had significance only to him and his associates and now have become virtually mere curiosities, the total significance of which is lost or at best only guessed at. The thought which occurred when the design was executed is now impossible to recover. This is especially true for the ideographs, now several hundred years old. In more classificatory terms, petroglyphs are ideograms. They were, and still are, produced with the intent of con-

veying some thought. This thought may be realistic and self-explanatory, but it does not in itself give any explanation as to why it was produced. For this reason, an additional classification has been set up in an attempt to reconstruct past events in terms of central tendencies. Ideally, petroglyphs may be grouped into four interpretative subclasses: realistic, symbolic, iconographic, and abstract. Within each of the five style horizons a degree of expression of the four subclasses (Table 12) can be expected, dependent on the stage of stylistic development.

PETROGLYPH INTERPRETATIVE SUBCLASSES

Realistic expression includes all designs that convey some meaning to the viewer as being singularly representational. This can include all recognizable forms which have ethnographic, botanical, or zoological counterparts today. This would include hunting scenes, kachina forms, insects, birds, sheep, deer, sandal shapes, flowers, reptiles, and certain games (Figs. 33, 34, 35, 36). Interpretation of realistic forms probably will give as close a guess about actual meaning as is possible for any of the four subclasses. Elaboration and deformation of realistic forms is common and tends to remove the certainty of plausible interpretations. Thus, realistic designs should be considered solely as naturalistic and representational. An example is the depiction of the flute player. While he is often portrayed, he is not always shown as humped-back. Again, he is not always shown with genitalia, although many of the kachina figures are. Some, including the flute player, have the genitalia so grossly enlarged that naturalism gives way to stylistic representation. Thus, even on a single petroglyph more than one subclassification may be presented. In the case of the flute player both realistic and symbolic expression are evident.

Symbolic expression forms include hunting scenes, for instance, where only the tracks of the animal and tracks of a man are to be seen as they are traced onto a single stone or along a cliff face. This is symbolic of an event or intent of event—tracking or hunting. Other symbolic forms include stylized sheep with arrows attached, sheep horns, blanket designs, and perhaps the largest symbolic group—clan or tribal symbols (*see* Possible Motivations for Petroglyphs). Symbolism ranks high in the Glen Canyon region petroglyphs, probably because of the inability of Hopi informants to read into them any realistic meaning (Figs. 37-43).

Iconographic expression petroglyphs have little basis for meaningful interpretation since they are generally design motifs interrelated to form overall patterns. These include some blanket designs and sandals. Sandals, while realistic, have iconographic expressions; for example, when a design is recurrent within the outline of the sandal. Themes (iconographs) are seemingly impossible to interpret and whether or not a design has iconographic expression is chiefly guesswork. The only criterion available by which to judge is whether or not the design is repeated throughout the region. By using this criterion, several anthropomorphic designs can be said to have iconographic modality (Figs. 44-54).

Within the Hopi pantheon only Kokopele approximates the form of the humped-back flute player petroglyph of Glen and San Juan Canyons and other parts of the Southwest. The story of Kokopele (Titiev 1939:91-8) indicates he is a kachina involved with reproduction through imitative sexual acts and not obscure symbolism. Hawley (1937:644-46) summarized the occurrences of archaeological flute players

often associated with erotic depictions, correlating them with Kokopelli (sic). I do not intend to question Hawley's deductions. Rather I wish to investigate the question relating to the inference that prehistoric humped-back flute players, with or without genitalia and performing or not performing erotic acts, are in the direct transitional evolutionary line terminating with what is regarded as Kokopele. My reasoning is based on four points.

(1) Many of the Glen Canyon region petroglyphs other than the flute player are shown with genitalia, performing obscure acts at times.

(2) If a direct evolutionary line existed between the humped-back flute player and Kokopele, what became of the function or sanction which required frequent depiction of the flute?

(3) Glen Canyon flute players are more often than not portrayed as reclining on their backs, legs crossed in the air, and appearing relaxed.

(4) Hopi informants (J. K. and W. C.) are reasonably positive that the Glen Canyon humped-back flute player petroglyphs are neither Kokopele nor the Dapopo Brothers, the Acoma equivalents of the mythological Kokopele, because:

Flute player is clan symbol (Fig. 94). Flute player came from north, far north, trying to warm up the country. But each year as people planted their crops they (the crops) didn't mature, they freeze up. So he (including the people) migrates back south. This flute clan came to Oraibi very late. Those people branch out from Oraibi, went north and had bad weather. Hunch-back is main leader in early times. (J. K.)

Also, the following statement was elicited from inspection of Fig. 13:

Kokopele was a regular man who did lots of good things and when he died was made into a kachina. He loves flowers, but now uses crackers, candy, and such things in the race. Kokopele means winged insect (humped-back insect), Kope is a lover or person interested in women. (J. K.)

Fig. 30 stimulated these remarks:

This clan "with this religion" went north and is supposed to warm up earth. Even playing flute all the time didn't help and those people had to turn back and when they get to Oraibi they put this religion up. Those people had lots of songs to make country warm. These clans *Patkimyam* (Water clan) and *Kokongyam* (Tit-mouse clan) have flutes, the Water clan has the gray flute players and the Tit-mouse clan has the blue flute players. The Spider clan came from north also. In Hopi travels they left people for seeds. (J. K.)

This picture (Fig. 30) not Kokopele, might be in early days, but nobody ever speaks of Kokopele being a flute player. Hukeuma came from north and was going back to his northern ruins (*Koyestema*) but the government stopped him. This ruin *Koyestema* is believed to be beyond Kayenta, Arizona. (W. C.)

It is possible that the humped-back flute player petroglyphs of Glen and San Juan Canyons are connected with the above stories since Glen Canyon lies

Site Number	Anasazi Branch	Culture Stage	Petrograph Style	Estimated Ceramic Occupation Dates and Total Ceramic Temporal Range	Pottery Types Present	Figure Reference
NA2689	Kayenta	PI-III	4,5	700-1275 Range	(see NA5371)	Figs. 83,92, 102
NA2692	Kayenta	PII-III	4,5	950-1275 Range	Tusayan Corrugated Moenkopi Corrugated	Figs. 5,38
NA3732	Kayenta	PII-III Historic	1,4	950-1300 Range A. 1050-1200 B. 1200-1300	Sosi Black-on-white Flagstaff Black-on-white Wupatki Black-on-white Shato Black-on-white Tusayan Corrugated Moenkopi Corrugated North Creek Gray North Creek Fugitive Red North Creek Corrugated Washington Corrugated Johnson Gray Johnson Corrugated Shinarump Brown Shinarump Corrugated Tusayan Black-on-red Citadel Polychrome Tusayan Polychrome Tsegi Red-on-orange Medicine Black-on-red	Fig. 2
NA3740	Kayenta	-	4	950-1275 Range	Tusayan Corrugated Moenkopi Corrugated	
NA3742	Kayenta	-	4	950-1275 Range	Tusayan Corrugated Moenkopi Corrugated	Figs. 31,32, 36
NA3744	Kayenta	-	4?	-	-	
NA5356	Unrecognized	-	4	-	-	
NA5358	Unrecognized	-	4	-	-	
NA5363	Unrecognized	-	4	-	-	
NA5369	Kayenta	PII-III	4	950-1275 Range A. 1050-1200	Sosi Black-on-white Dogoszhi Black-on-white Tusayan Black-on-red Tsegi Red-on-orange North Creek Gray Tusayan Corrugated Moenkopi Corrugated	
NA5371	Kayenta	PI-III	4,5	700-1275 Range A. Pre-1050 B. 1050-1200	Kana-a Black-on-white Tusayan Black-on-red Citadel Polychrome Tusayan Corrugated Moenkopi Corrugated Kiet Siel Gray	Figs. 83,92 102
NA6410	Unrecognized	-	3,4	-	-	
NA6415	Unrecognized	-	4,5	-	-	Figs. 53,81
NA6419	Kayenta	PII-III	3,4,5	950-1275 Range A. 1050-1200	Tusayan Black-on-red Tusayan Corrugated Moenkopi Corrugated	Figs. 29, 55-60
NA6420	Unrecognized	-	5	-	-	
NA6421	Navajo	Historic	1	-	-	
NA6423	Kayenta	-	2,4,5	-	Moenkopi Corrugated	Figs. 34,84, 98

Table 10. Selected Glen Canyon petroglyph sites. This listing is restricted mainly to petroglyph sites with ceramic refuse in association; it does not include all sites having only petroglyphs.

NA6424	Kayenta	PI-IV	1,2	700-1300 Range A. Pre-1050 B. 1050-1200 C. Post 1300	Kana-a Black-on-white Flagstaff Black-on-white North Creek Gray Johnson Gray Tusayan Corrugated Moenkopi Corrugated Jeddito Plain Tusayan Black-on-red	See NA6457
NA6426	Kayenta	PII-III	1,3,4,5	900-1300 Range A. Pre-1050 B. 1050-1200 C. 1250-1300 D. Post 1300	Black Mesa Black-on-white Sosi Black-on-white Dogoszhi Black-on-white Tusayan Black-on-red Tsegi Orange Tusayan Corrugated Moenkopi Corrugated Jeddito Plain	Fig. 91
NA6428	Navajo-Paiute	Historic	1	-	-	
NA6440	Unrecognized	-	4,5	-	-	
NA6457	Kayenta	PII-IV	2,4,5	900-1600 Range A. Pre-1050 B. 1050-1200 C. Post 1300	Black Mesa Black-on-white Tusayan Black-on-red Tusayan Corrugated Jeddito Plain Jeddito Black-on-yellow	Figs. 8,16, 19,4,77
NA6469	Unrecognized	-	4	-	-	
NA6480	Navajo-Paiute	Historic	1	1921,1927	-	Fig. 18
NA6482	Kayenta and Navajo Paiute	PII and Historic	1,4,5	-	Tusayan Polychrome	
NA6484	Kayenta	-	?	-	Jeddito Plain Jeddito Black-on-yellow Kiet Siel Gray Moenkopi Corrugated	
NA6497	Unrecognized	-	2 or 4	-	-	
NA6514	Unrecognized	-	4	-	-	
NA6534	Unrecognized	-	4,5	-	-	
NA6535	Unrecognized	-	3,5	-	-	
NA6884	Kayenta and Mesa Verde	PII-III	4 and 5 mixture	1050-1250	Chapin Gray Citadel Polychrome McElmo Black-on-white	
NA6886	Kayenta	-	3 or 4	-	Flagstaff Black-on-white	
NA6888	Unrecognized	-	4,5	-	-	
NA7136	Kayenta	PII-III	3,4,5	900-1300 Range A. Pre-1050 B. 1050-1200 C. 1250-1300	Black Mesa Black-on-white Wupatki Black-on-white Flagstaff Black-on-white Tusayan Polychrome Tsegi Orange Tusayan Corrugated Moenkopi Corrugated Kiet Siel Gray Kayenta Black-on-white	Figs. 10,43, 80,87
NA7370	Unrecognized	-	4,5	-	-	Fig. 96
NA7379	Unrecognized	-	4	-	-	
NA7409	Unrecognized	-	4	-	-	
NA7413	Unrecognized	-	4?	-	-	

Table 10. (cont.) Selected Glen Canyon petroglyph sites.

NA7414	Unrecognized	-	1,4	-	-
NA7418	Unrecognized	-	1,4	-	-
NA7421	Unrecognized	-	4	-	-
NA7619	Unrecognized	-	1,4	-	-
NA7620	Unrecognized	-	4	-	-

Fig. 23

Table 10. (cont.) Selected Glen Canyon petroglyph sites.

north of the Hopi villages and the humped-back flute player was identified as the clan symbol of the Spider clan. All humped-back petroglyphs are not necessarily either flute players or Kokopele. They could represent burden-carrying migrants (Nequatewa 1947:23) or traders (Cutler 1944:293-4). Thus, while to my mind the humped-back flute player is morphologically akin to Kokopele, evidence is lacking to demonstrate a direct transitional origin between the two, since there are qualities of fusional and replacement origins evident. "Humped back is the most characteristic feature. May carry a stick and rattle. Kokopolo appears in the Mixed Kachina Dance. He is identified with the Humped-back Flute Player when he borrows a flute from Lenang, the Flute Kachina." (Colton 1949:35.)

There is most certainly a resemblance between the humped-back flute player and Kokopele, but during the 10th and 11th centuries when he makes his first appearance in the Glen Canyon region he may not have had any association with any kachina and surely must have represented either mortal traders, migrants, or clan symbols. It should be conceded that the humped-back flute player petroglyph does not represent Kokopele in the Glen Canyon region, but it should be noted that this line of inquiry has brought out the fact that several of the Hopi clans can be inferred to have had some familiarity with the Glen Canyon region. These are the Spider, Water, Tit-mouse, and possibly the Reed and Snake clans. Voth (1905:24-5) recorded tales from Oraibi concerning the wanderings of the Hopi which indicates that, "The Snake Cult was brought to Oraibi by the Snake clan . . . and the Flute cult by the Spider clan. The Lizard, *which also arrived from the north-west* (italics mine) brought the Marau cult. . ." in subsequent pages Voth related the origin of the Oraibi Spider clan. After emerging from the *Sipapu*, this clan travelled north and arrived in nice country after four nights travel, although it was cold at their destination. Four unsuccessful years of planting and early frosts caused the people to return southward, taking several years, since they stopped and planted crops. Altogether, they stopped ten times. They were constantly harassed by the people along the water (Paiutes along the Colorado or San Juan Rivers?) and never planted more than one crop at any given spot.

By way of summary, it can be said that slight ethnographic evidence indicates that at least three of the present-day Hopi clans knew of the Glen Can-

yon region. These are the Spider, Water, and Tit-mouse clans. The Spider clan is directly involved because their clan symbol, the humped-back flute player, appears in petroglyphs and their time of occupation of the Glen Canyon region was between A. D. 1050-1250. Three major pueblo centers south of the Glen Canyon region (Cummings Mesa, NA7453, NA7456, NA7498; Navajo Mountain, NA4075, NA5815, NA2655, Redhouse; and Paiute Mesa, NA7713, NA7719, NA7755) were probably the source area of the river system petroglyph artisans and, as such, also were implicated in the clan migrations contained in the traditional lore.

Abstract expression petroglyphs are anthropomorphs, zoomorphs, and other realistic forms which have been reduced to a few basic elements such as heads, beaks, stick figures, and non-representational expressions of what must have been naturalistic items. Additional abstract petroglyphs are squiggle mazes; wavy lines ending in watchspring scrolls; patternless lines and dots (Figs. 55-73).

The four subclasses are thus partially based upon intrinsic interpretive quality of sets of petroglyphs. These subclasses are necessary for determining the overall style and placement in a continuum of evolutionary art forms. The assumption to be tested is that the earlier art forms are realistic, passing through time with increased numbers of non-representational styles and ultimately resulting in abstract or non-representational designs.

Examination of Table 12 tends to refute any postulation of a stylistic continuum of petroglyphs in Glen and San Juan Canyons. Assuming the continuum, we should expect an increase of abstract forms from Style 5 to Style 1. This is not the case. On this basis it is possible that the occupation within Glen and San Juan Canyons was not an indigenous one. Rather, differing peoples might have been coming in and applying designs which reflected the level of attainment in their homeland or tribal area. On the other hand, because of the relative occurrence of realistic forms, a case can be presented for a stylistic continuum in the Glen Canyon region.

With this almost conflicting data, I suggest that there was historical dependence on previous styles and that an overall style horizon continuum did exist in the Glen Canyon region—perhaps matching up with other culture items that have gone into the definition of the Anasazi culture. The frequency of realistic designs reflects the levels of attainment, traditions, or regional styles in vogue on the substratum level. This

Site Number	Anasazi Branch	Culture Stage	Petrograph Style	Estimated Ceramic Occupation Dates and Total Ceramic Temporal Range	Pottery Types Present	Figure Reference
NA4209	Kayenta	PII-III	3,4	950-1300 Range A. 1050-1200 B. 1250-1300	Moenkopi Corrugated Tusayan Corrugated Tsegi Orange Tusayan Black-on-red Flagstaff Black-on-white Dogoszhi Black-on-white Tusayan Polychrome	
NA7333	Kayenta	PII-III	1,4	950-1300 Range A. 1050-1200 B. 1250-1300	Tusayan Corrugated Moenkopi Corrugated Tusayan Polychrome Sosi Black-on-white Tsegi Orange Tusayan Black-on-red Kayenta Black-on-white Dogoszhi Black-on-white Kiet Siel Gray	
NA7523	Unrecognized	BMII ?	4,5	?	No Pottery	
NA7524	Kayenta	PII-III	4	950-1300 Range A. 1050-1250	Tusayan Corrugated Tsegi Orange Tusayan Black-on-white	
NA7529	Kayenta	PII-III	4	950-1300 Range A. 1225-1300	Moenkopi Corrugated Tusayan Corrugated Tsegi Orange Tusayan Gray Ware Tusayan Black-on-white	
NA7531	Kayenta	***	5	?	Tusayan Corrugated	
NA7568	Unrecognized	BM	1,5 (Pictographs)	?	None Present	
NA7580	Kayenta	BMII-PIII	1,4,5	950-1300 Range A. Pre-1050 (mainly) B. 1050-1250	Tusayan Corrugated Tusayan Polychrome Flagstaff Black-on-white	Fig. 97
NA7581	Unrecognized	BM	4 and 5 mixture (Pictographs)	?	None Present	
NA7598	Kayenta	PII-III	3 and 4 mixture	1050-1300 Range A. 1100-1200	Medicine Black-on-red Tsegi Orange	Fig. 52
NA7603	Kayenta	PII-III	3 or 4	950-1300 Range A. 1200-1300	Tusayan Corrugated Moenkopi Corrugated Tusayan Polychrome Tsegi Orange Flagstaff Black-on-white Kayenta Black-on-white	

Table 11. Selected Highland petroglyph sites.

***Petroglyphs indicate Basketmaker-Pueblo I occupation; trash has been completely washed away except for a single Tusayan Corrugated sherd.

level may correspond to tribe or clan social grouping regional styles. Symbolic and iconographic forms cannot be used by themselves to establish a continuum, but they do contribute one way or another to additional secondary evidence. Here, there is seemingly a decrease of symbolic and iconographic expression from Style 5 to Style 2, which adds to the argument against an indigenous Glen and San Juan Canyon population.

In the 1000 year period covered by this study, the art style continuum does not follow the assumption of realistic to abstract. In fact, the reverse seems

to be the case. How this corresponds with art forms in other areas of the world will not be investigated other than to say it may not be a unique phenomena of the Kayenta Anasazi. This is borne out by the distribution of the Glen Canyon petroglyph styles discussed in the following section.

DISCUSSION

One striking fact is noticeable when considering the petroglyph Style sequence with respect to a worldwide art continuum. There is an addition of elements,

	Style	1	2	3	4	5
Realistic		Abundant	Rare	Rare	Abundant	Abundant
Symbolic		Rare	Common	Common	Abundant	Abundant
Iconographic		Common	Rare	Rare	Abundant	?
Abstract		Rare	Rare	Abundant	Abundant	Common

Table 12. Relative occurrence of interpretative subclass expression.

embellishments, and elaborations of specific forms which seems to be the sequential order of events—from simplicity to complexity and back again to simplicity. While the early style is realistic, it is also static. Dynamic forms follow with the addition of elements in the elaboration phase represented by Style 4. This elaboration suggests a more dynamic society which is interested in “things” outside of itself.

Later, with the degradation of design (Style 3) presumably we see a withdrawal from the heartland Kayenta area, a decline in population, and what I feel to be “social morbidity” (see Opler 1940 for a case in point). This is highly speculative, but it is the impression derived from a detailed study of these petroglyphs weighed in the light of archaeological evidence compiled by previous investigators, including synthesized treatment of the prehistory of the Kayenta and Mesa Verde culture areas. Brew (1946), Colton (1939), Gladwin (1945, 1957), Haury (1945a), Reed (1946, 1952, 1955), and Wormington (1951) were used as works demonstrating a pattern analysis rather than minute specifics which are usually found in individual site reports. (Specific site reports were used in preference to generalized papers in the Distribution section.)

Certainly, during Pueblo II-III times, there was an expansion of the Kayenta Anasazi culture frontier.

There was exploration and aboriginal attempts to utilize lands outside of the Tsegi drainage area. Even more data would be ideal, but at present I know of no unified study relating to the interaction of art styles, cultural expansion, and motivation, with sociological stability, dynamics, and culture change. Again, at the risk of repetition, I feel that the changing art styles are because of an influx of different peoples or ideas diffusing into the Glen Canyon region. Thus, the change from Style 5 to Style 4 reflects the attitudes of the artisans during the more culturally dynamic Pueblo II-III times. There seems to have been an intrinsic awareness and the ability to put life and feeling into the petroglyphs. Although these are only a few lines pecked in the rock, they still convey more meaning which can be interpreted than do either Style 5 or Style 3. In some intangible manner the technique and resultant forms of the Kayenta Anasazi Pueblo II-III petroglyphs (Style 4) are reminiscent of the Mimbres anthropomorphic and zoomorphic forms on pottery. It is possible that this antithesis of social morbidity or dynamic phase of a culture’s evolution was prevalent in more of the Southwest than just the Kayenta Anasazi area. The distribution of Style 4 certainly is suggestive of this possibility.

POSSIBLE MOTIVATIONS FOR PETROGLYPHS

Most Southwestern Petroglyphs have as a common denominator the need for simplification of elements and designs which was a result of the limitations of the medium of expression.

I feel that the most difficult question to answer regarding these rock drawings is: why did the prehistoric people in the San Juan and Glen Canyon regions incise, paint, and peck designs onto stone? Of the following groupings of inferences on the purposes of petroglyphs in the Glen Canyon region, the first is thought to be most important.

(1) To recall events in the winter homes (Fig. 74). This can be demonstrated in Navajo Canyon where, the greater the distance from the Highlands (winter homes), the more petroglyphs of kachinas are found. Upon reaching the Colorado River, the kachina has become a dominant form. The portrayal

of astronomical phenomena in petroglyphs has been suggested by Miller (1955) and LaPaz (1948). Through Hopi informants, Fewkes (1892:19-26) was able to identify specific petroglyphs near First Mesa. Some were “. . . mythological personages who were still to be seen in ceremonials then practiced.” Designs presented by Fewkes are also found in the Glen Canyon region and include: lightning snake; *Ho-bobo* (whirlwind); growing corn; *La-wa* (female phallus); symbols of *Co-tuk-i-nung* (star god); and friendship.

Of the illustrated clan symbols belonging to different Hopi phratries listed in Fewkes (1897:1-11), the *Patki* (waterhouse), *Tocua* (snake), and *Pakab* (reed) totemic symbols have the greatest similarity of designs with Glen and San Juan Canyon petroglyphs. While the designs shown in Fewkes’ article

are definitely Style 2, some (as mentioned above) also resemble Style 4 designs.

(2) Sympathetic magic concerning the hunt. The majority of zoomorphic designs are mountain sheep, often portrayed as being hunted or with hunting shafts attached to their backs (Fig. 75).

(3) The practice, creation, and remembrance of designs for blankets, sandals, pottery, basketry, and so forth. These design motifs may have had associated ceremonial connotations (Fig. 76).

(4) Teaching novitiates about the ceremonial side of the Anasazi world. This is analogous to the use of Hopi kachina dolls today (Fig. 77). Later Spanish influence may have caused petroglyph depictions of the Christian world. See Colton's (1944:129-34) discussion of the "Troy Town" at Shipaulovi.

(5) Clan symbols (Fig. 78) may have been carved and elaborated upon in order to delineate communal lands, record events, or mark trails. Voth (1905:23) recorded one aspect of the wanderings of the Hopi: "When the Spider clan arrived at Muenkapi they made marks or wrote upon a certain bluff, east of Muenkapi saying that this place should always belong to the Hopi, that no one should take it away from them, because there was so much water there." For a comparison of Glen and San Juan Canyon petroglyphs with actual clan signatures, see Fewkes (1879:1-11). Forde (1931:368) shows Hopi petroglyphs (Style 2) which actually were used to delimit clan lands. The clan symbols were applied to small upright slab boundary stones (*kalalni*) which were set up in the corners and junctions of different clan plots.

(6) Creative impulse may have motivated certain people to experiment with the stone (Fig. 79) in order to see how it could be manipulated (technique and "art for art's sake").

(7) Propitiatory gestures, "fetishistic" reverence, or fertility tokens may account for a large number of petroglyphs (Figs. 80-83).

(8) Idle hours—doodling (Fig. 84). Tanner and Connolly (1938:16) considered "Some of the better petroglyphs in the Southwest to be classed as art: more of it is the mere scribbling of passerby." Colton (1946:1-8) considered petroglyphs to be doodles, fetishes, and signatures. Hodge (1910:245) wrote:

. . . petroglyphs are not mere idle scrawls made to gratify a fleeting whim, or pass an idle moment, . . . although sometimes they are made by children in play or as a pastime. Nevertheless their significance is more often local than general; they pertain to the individual rather than to the nation, and they record personal achievements and happenings more frequently than tribal histories; petroglyphs, too, are known often to be the records of the visits of individuals to certain places, signposts to indicate the presence of water or the direction of a trail, to give warning or to convey a message. However important such records may have seemed at the time, viewed historically they are of trivial import and, for the greater part, their interest perished with their originators. Many of them, however especially in s. w.

United States, are known on the authority of their makers to possess a deeper significance, and to be connected with myths, rituals, and religious practices.

Steward (1929:225) wrote:

It has frequently been stated that petroglyphs and pictographs are meaningless figures made in idle moments by some primitive artist. The facts of distribution, however, show that this cannot be true.

I believe the present paper confirms Steward's opinion.

LOCATION

The petroglyphs found thus far have been located mainly on Wingate sandstone slump boulders (San Juan Canyon) or on the living Navajo sandstone (Glen Canyon). Both of these stones are relatively soft, free from surface defects, and often have a patinated surface on which the designs contrast strikingly. Panels of petroglyphs are associated with nearby structures, either habitation or ceremonial units such as kivas, or habitation refuse areas. Single petroglyphs are generally isolated, not connected with a structure or living area, although often located near potential agricultural land. Unless natural destruction of a habitation site has occurred, the following generalization can be expressed: the more petroglyphs present at a specific site, the larger is the trash refuse or number of structures. Petroglyphs have been recorded, in addition, at springs, trails, mouths of tributary canyons, associated with occupation areas and lithic workshops, and at fords, crossings, and natural barriers or boundaries.

THE ARTISAN

Many individuals were responsible for the manufacture of petroglyphs preserved in the Glen Canyon region. It is reasonable to assume that most were not petroglyph specialists, since we do not find any contemporary ethnographic counterpart. Some individuals could have been more talented in the craft than others, but had there been specialists we should expect different stone-working techniques to have developed at a specific time horizon. These might have included bas-relief forms, cameo, intaglio, and coelanaglyphic. Such is not the case, however, as only intaglio or very low relief (*stiacciato*) is represented. Fewkes (1892:12) reports that the petroglyphs around First Mesa very occasionally are done in bas-relief, but never in intaglio, at least regarding the "mythological subjects." This is contrary to my limited inspection of Hopi petroglyphs, which are generally done either as scratching or intaglio. The cameo concept may have been used on the occasional deeply-dented geometric negative designs, but this is not ascertainable. Admittedly, the material limits the technique, but it is uncertain why more forms of rock-carving were not attempted.

To judge from the wealth of human figures with various headdresses, the artisan certainly could have been among those individuals familiar with the cere-

monial traditions of his clan or tribe. That the majority of artisans were men can be inferred from the nature of interests portrayed, namely the hunt and kachina-like figures (Figs. 85-87). Ethnographically, such interests are still the province of Pueblo Indian men.

Common subjects portrayed in petroglyphic art were items of interest to the artisan, not only as an individual but also as a member of a group. This is evidenced by the great number of similar petroglyphs and the large distances separating them. Even considering the working material, which limits techniques more than does subject matter, we are confronted with a limited number of subjects. In order of decreasing number, these are: sheep; male figures; complex squiggle mazes; blanket or pottery motifs; sandal lasts; maize; sunflowers; and small numbers of elements lacking tangible interpretive significance. On the other hand, a host of subject matter was available but is not represented significantly. These include: women; fish; domestic activities; death; crops of cotton, beans, and squash; collecting endeavors; and birth. In other words, these are representations of subjects which perhaps were not in the male division of labor and interest, or they were taboo. For this reason of apparent division of labor, I feel that complex petroglyph designs are not pottery designs, which they resemble. Rather, I feel that they represent blanket or weaving designs, since weaving belongs to the male division of labor in contemporary Hopi society. I find it meaningful, in the light of contemporary drawings in public places and the use of fertility symbols in primitive cultures, that the female figure is seldom represented.

Compounding assumptions, then, petroglyphs were primarily the work of men and their interests so depicted centered about hunting (sheep), religion (kachinas), weaving (design motifs), and farming (maize and sunflowers). Conversely women did pottery making, basketry, and gardening. Apart from gardening, this division of labor, inferred from petroglyphs, is essentially the same as that found among the Hopi today. To go still further, it can be said that this division of labor has been a long-established tradition of at least some of the Hopi prior to their settlement on the Hopi Mesas. If traditions can last over 700 years, as suggested, a vital distinction can be drawn between the ethnic groups occupying the Glen Canyon region now and in the past. Namely, the Navajo now living in the Glen Canyon region bear no material cultural resemblances to the prehistoric Anasazi and, on the inferential level, the Navajo lack many non-material culture traits that were present during the 11th and 12th centuries.

It is certain that some of the artisans were more gifted than others because of the deftness and sureness in which certain designs were fashioned. That some petroglyphs were done by children, perhaps imitating their elders, is possible since many designs are positioned lower on a specific panel than are the majority and they are executed in an inferior manner—inferiority showing in poor representation, dis-

continuity of line, unfinished or non-joined lines, shallow dinting, and overall child-like appearance (Fig. 88, 89). That the artisan as an individual was in contact with other people is fairly certain from the limited nature and universality of subject matter found in the Glen Canyon region.

I suspect that traditions governed, in the main, what was portrayed and that this tradition had a limited distribution which, at present, seems to be inclusive of the Great Basin and less inclusive (at least stylistically and in content) of southern Arizona (*see* Distribution Section). It is interesting to note that today the Yokuts of central California (Gayton 1948: 113) fear all rocks with pictographs for it is believed that these painted rocks marked the location of a shaman's cache and, as such, are not to be approached for fear of illness or death that might ensue.

ART FOR ART'S SAKE

Many of the Glen Canyon region petroglyphs which defy interpretation of subject matter may represent a form of "art for art's sake." A meaningless jumble of lines wandering over a rock, or up and down a cliff, could have been done because the artisan merely wanted to achieve some obscure effect. As is the case with some modern abstract art, one "realizes" the whole of the subject, in effect "identifying" oneself with the creation without any outside influences. One knows that a painting is good and meaningful in itself and need not represent anything other than itself. Of course, familiar objects can be interpreted in abstract art, but this is up to the individual viewer. Similarly, the abstractions of music have little foundation in reality and are "viewed" for content alone.

Some individual petroglyphs, and two panels composed of several different designs both representational and non-representational, have "struck" me the way some abstract paintings have done. Though meaningless, they are to my mind as they should be—the composition fits the elements, the forms are compatible, the very nature of the stone reflects the artisan's choice, which, while possibly fortuitous, was an optimal selection (Fig. 90). Perhaps my "identification" with several petroglyphs supports a hypothesis that the Anasazi artisans were capable of art for art's sake.

ICONOGRAPHY

While it has been stated many times that the *works of artists reflect the tempo of their time*, perhaps another source for demonstrating this thesis outside of Western art is in the petroglyphs of the Glen Canyon region. While art does not have to tell a story or create an image, it often does so—Ash Can School, Expressionists, Impressionists, and so on. In Glen and San Juan Canyons, the most common supposedly religious story telling device is the head-dressed human figure and other mixed zoomorphic and anthropomorphic variants. While they are not always portrayed at any specific activity, neverthe-

less they seem to be part of a theme or recollection of the artisan as to how the figures were costumed, arranged, positioned, or ranked. Size of the petroglyphs may have had importance as well (Fig. 91). Iconographically, then, it can be said that the Glen Canyon region petroglyphs are austere because of the limited variation of this type of design. However, although limited in variation they are not restricted in number. Head-gearred anthropomorphs are perhaps the characterizing petroglyph of Glen and San Juan Canyons.

PETROGLYPHS AS A FORM OF MONUMENTAL STONE ART

The Glen Canyon region petroglyphs are considered to be a form of monumental stone art and represent the lowest level of expression on stone consistent with the stone-use pattern in Mesoamerica. In considering petroglyphs as a form of monumental stone art, two items should be kept in mind:

(1) The artisan does not need to know about more complex works on stone (like Mayan stelae) in order to make petroglyphs.

(2) The concept of monuments (any work, deed, or memory created or erected in thought of endurance) may be too restricted or stereotyped (Mt. Rushmore, Statue of Liberty, and so forth). I feel that many of the Glen Canyon region petroglyphs were fashioned with some thought of memorializing what is portrayed in the design or what the design may have stood for symbolically. Boundary markers, deeds, events, and so forth could fall within the category of monuments (Figs. 92-100).

Prehistoric stone monuments reach the zenith of achievement in Mexico and Central America and seem to decrease in importance, size, and quality as the Southwest is approached. On reaching the Northern Periphery, petroglyphs are virtually the last item that could be "forced" into a continuum of monumental stone art. There is little in the archaeological record of the Southwest that can fill the cultural element void of monuments if petroglyphs are discounted.

DISTRIBUTION OF THE FIVE GLEN CANYON REGION PETROGLYPH STYLE HORIZONS IN THE SOUTHWESTERN UNITED STATES

The range and frequency of any specific cultural trait in space and time can be considered as an indicator of the influence of that culture and is thus considered as a tradition. "A tradition is a socially transmitted form unit (or a series of systematically related form units) which persists in time." (Wauchope 1955:38.) Certainly, there are multiple facets of culture to consider in deciding its extent, but, like a population, which is an abstract notion of its reality, its members, culture too is an abstract of its reality, its traits.

In this paper petrographs are considered to have diagnostic status and will be used mainly by themselves to define style boundaries in space and time. There is every reason to believe that petrograph styles have significance in space and time, as determined by their relationship with other cultural traits from which their origins and qualities are at least partially derived. The frequency of petrographs will be considered as representing cultural intensity and will be used gradationally in order to seek out the cultural centers and the relationships between differing centers.

STYLE 1

Style 1 can be considered as having a fusional origin: (1) the tradition of petroglyphs existed in

Glen Canyon before the Navajo arrived and is visible to all, and (2) elements of Western civilization are portrayed—horses, cattle, and so forth. Style 1 has historical value because of the events registered on stone, but is not in the style-tradition line of evolution of Glen Canyon, even though there are Style 1 imitations of the other styles.

It should be pointed out that no early Navajo designs have been found. This indicates either that Navajo occupancy of the Glen Canyon region is a very late event, or that the tradition of rock drawing did not exist in early Navajo culture. This latter possibility is not borne out by the current work in the upper San Juan drainage area where early Navajo pictographs are quite numerous (Dittert, Hester, and Eddy 1961:238; Schaafsma 1963).

STYLE 2

Style 2 designs are concentrated in northern Arizona, especially in the Hopi country and near the present-day New Mexican Pueblos. They radiate out from these two centralized locations (Table 13). The center of Style 2 tradition is not in Glen Canyon. According to the published reports available to me, Colorado, Wyoming, and Nevada do not contain any Style 2 petroglyphs. In California, some are found near Santa Barbara and at Tilden Park and

Location	Author	Date	Figure Reference	Notes
Arizona				
Canyon del Muerto-				
Canyon de Chelly	Bernheimer	1929	Page 128	-
Willow Springs	Colton & Colton	1931	All	-
Inscription Point	Colton	1946	Fig. 2	-
Kinishba	Cummings	1940	Plate 34	-
Canyon de Chelly	De Harport	1960	Photographs	-
Hopi Mesas	Fewkes	1892	Plates I, II	Some Style 4
Ford House (Chinle Wash)	Guernsey	1931	Plate 37	-
Sierra Ancha	Haury	1934	Plates 1,82	-
Eastern Arizona	Martin and Others	1961	Figs. 79,80	Bowl with early Style 2 design
Willow Springs	M.N.A. Photo Files	-	-	-
Honanki	M.N.A. Photo Files	-	-	-
Inscription Point	M.N.A. Photo Files	-	-	-
Clear Creek	M.N.A. Photo Files	-	-	-
First Mesa	M.N.A. Photo Files	-	-	-
Second Mesa	M.N.A. Photo Files	-	-	-
Third Mesa	M.N.A. Photo Files	-	-	-
Tolchaco	M.N.A. Photo Files	-	-	-
Crack-in-Rock	M.N.A. Photo Files	-	-	-
Hartley Canyon	M.N.A. Photo Files	-	-	-
Awatovi	Smith	1952	All	-
Hopi Mesas	Turner	-	Personal Observations	-
California				
Tilden Park	Elsasser & Contreras	1958	Table 2	-
Carrizo Plains	Lathrap	1950	Fig. 1	Line Drawing, could be fortuitous
Santa Barbara	Steward	1929	Plate 54	
Colorado				
Las Animas District	Renaud	1932b	Plate II, Fig. 3	Questionable
New Mexico				
Kuaua	Bliss	1936	Cover	-
Eastern New Mexico	Ewing	1943	III	-
Kuaua	Fossnock	1935	Cover	-
San Cristobal	Gallenkamp	1955	Pages 16-18	-
Pajarito Plateau	Hewett	1953	Several Figs.	-
Ruidoso	M.N.A. Photo Files	-	-	Pictograph
Pueblo Largo	Nelson	1914	Page 71	-
Conant Springs	Prentice	1951	Page 90	-
North Central New Mexico	Renaud	1938	Several Figs.	-
Mixed New Mexico Sites	Sims	1948	Pgs. 303, 305	2 & 4
Galisteo Basin	Sims	1949	PI, PII	2 & 5 mixture
San Cristobal	Sims	1950	Plates I-XVII	*
Zuni (Great Kivas)	Watson	1961	Page 79	-
Texas				
Diablo Region	Gebhard	1960	Plates V, VIII	Strong likeness
El Paso County	Jackson	1938	Several Figs.	-
Hudspeth County	Jackson	1938	Several Figs.	-
Utah				
Glen Canyon Basin	Turner	-	This Report	-
Wyoming				
Eastern Wyoming	Renaud	1932a	Plate 4	Questionable

Table 13. Areal distribution of Style 2 petroglyphs. (Based on publications with petroglyph illustrations.)

* Denotes the fact that the choice of reproduction was unfortunate or printing was poor, making the designs difficult to visualize.

Carrizo Plains, New Mexico, Texas, and Utah also have some Style 2 representation. This grouping of Arizona, New Mexico, Texas, and Utah speaks for cultural affiliation, if not a continuous temporal-spatial culture area. It would seem more likely, on the basis of known accounts of trade and exchange between the Hopi and the New Mexican Pueblo Indians, that this cultural exchange can be pushed back into the 1300's, judging by petroglyph style similarity.

The eastern extension into Texas of Style 2 may represent Plains-Pueblo contact, demonstrable by

petroglyph design analysis, thus adding a small bit of corroborating evidence. The representation in Santa Barbara, California, is meaningful, and tends to corroborate the trade routes suggested by Colton (1941). Additional corroboration is supplied by the identification of the source of shell found in Arizona, originally coming from coastal California waters and identified by Brand (1938).

It is important to find that Style 2 designs are lacking in southern-central Arizona except at one site, Kinishba, a large and late pueblo ruin dated at

Location	Author	Date	Figure Reference	Notes
Arizona				
Davis Dam	Baldwin	1948	Figs. 26,27,71	3 & 4 mixture
NE Arizona, Cave 8	Guernsey & Kidder	1921	Plate 13	No Style 5
Ford House	Guernsey	1931	Plate 37	Style Questionable Plate not Sharp
NE Arizona	Kidder & Guernsey	1919	Plate 93	-
NW Arizona	McGregor	1951	Fig. 38	3 & 4 mixture
Eastern Arizona	Martin & Others	1961	Figs. 33,34	-
Turkey Tanks	M.N.A. Photo Files	-	-	-
Harkley Canyon	M.N.A. Photo Files	-	-	-
Picture Canyon	M.N.A. Photo Files	-	-	-
Crack-in-Rock	M.N.A. Photo Files	-	-	-
Second Mesa	M.N.A. Photo Files	-	-	-
Tappan Wash	M.N.A. Photo Files	-	-	-
Citadel	M.N.A. Photo Files	-	-	-
Black Point	M.N.A. Photo Files	-	-	-
Homolovi	M.N.A. Photo Files	-	-	-
Cedar Wash	M.N.A. Photo Files	-	-	-
Inscription Point	M.N.A. Photo Files	-	-	-
Hopi Country	Reagan	1932	Page 38	3 & 4 mixture
Mohave Rock	Schroeder	1952	Fig. 23	3 & 4 mixture
Painted Rock	Schroeder	1952	Fig. 30	3 & 4 mixture
Phoenix, south	Steward	1929	Fig. 76	3 & 4 mixture
Casa Grande	Steward	1929	Fig. 77	3 & 4 mixture
Betatakin Area	Wetherill	1935	Page 264	3 & 4 mixture
California				
Style 3 not Present				
Colorado				
Style 3 not Present				
New Mexico				
Min Kletso	Sowers	1942	Figs. 4,5	Questionable
Nevada				
Pueblo Grande de Nevada	Steward	1929	Plates 71,72	-
Lost City	Shutler	1961	Plate 16c	-
Texas				
Style 3 not Present				
Utah				
Deseret	Kelly, C.	n.d.	Photographs	Very questionable
Clear Creek	Kelly, C.	n.d.	Photographs	-
Mosida	Kelly, C.	n.d.	Photographs	Questionable; 3 & 4 mixture
Coons Canyon	Kelly, C.	n.d.	Photographs	3 & 4 mixture
Butler Wash	Prudden	1903	Plate 31	Variant
Molly's Nipple Canyon	Steward	1941	Figs. 57,58	-
Johnson Canyon	Steward	1941	Figs. 59,60	-
Glen and San Juan Canyons	Turner	-	This Report	Mainly Glen Canyon
Wyoming				
Style 3 not present				

Table 14. Areal distribution of Style 3 petroglyphs. (Based on publications with petroglyph illustrations.)

A.D. 1050-1350 (Cummings 1940:2). This concentration of Style 2 in northern Arizona, southern Utah, and New Mexico is indicative to me that the withdrawal of Style 4 artisans from the Glen Canyon basin, followed in turn by Style 3 withdrawal, is a continuous sequential process terminating at the Hopi and New Mexican Pueblo Indian villages.

In Glen Canyon, Style 2 is located most often at Pueblo II-III habitation and camp sites near river and canyon crossings. This suggests individual movement out of the Hopi country into surrounding areas that were already known to some or all Hopi and that traditional trails were followed for the purpose of trade, gathering, hunting, collecting, or other

reasons. One possible motivation agreed upon by Hopi informants was the frequent revisitation of Hopi shrines away from the Hopi villages. If this is true, there is all the more reason to believe that a direct cultural relationship exists between the Pueblo II-III inhabitants of Glen Canyon and the 14th Century Hopi Indians returning to the Pueblo II-III structures which they had abandoned but remembered. On Cummings Mesa and in the Highlands to the south of the river systems, Style 2 is almost entirely lacking. The distribution is thus a result of travel along already-established trails and routes within the Glen Canyon region and is not due to indigenous localized groups living at these fording and crossing stations.

This belief is further substantiated by the meager amounts of refuse attributable to Pueblo IV people.

STYLE 3

Style 3 designs are not always of diagnostic value (Fig. 101) since they resemble Style 4 in many respects. Nonetheless the distribution of recognizable Style 3 designs (Table 14) differs significantly from that of Style 2. The cultural center for this style seemingly moved to the west and south of the Glen Canyon region, with considerably more representation in west and north central Arizona and southern Nevada. The designs are also found in central Arizona in association with pueblo structures of the 1200-1300's (Table 14).

I consider this to be representative of the major movement out of the Kayenta area at this time into new areas peripheral to it and also consider these data as corroborating the archaeological data derived from excavation and survey. While the Kayenta area is not abandoned completely, the suggestion certainly exists that people were leaving the area, if only the misfits or population surplus seeking new horizons. Style 3 does not lend itself to precise definition and it is possible that the distribution may be in error through my inability to identify Style 3 designs with a high degree of accuracy outside of Glen Canyon sites that have not been inspected personally. Nevertheless, the distribution as presented does not disagree with the belief, already widely-held, that the area was abandoned except for communal life in large ruins such as Betatakin, Bat Woman Pueblo, Kiet Siel, and so forth. For additional discussion of the Kayenta culture area population shifts see Gladwin (1957) and Haury (1934). However, the influence of Style 3, if it really does represent movements out of the Kayenta area, was not felt in California, Colorado, Texas, or Wyoming. Kayenta Anasazi influence in California and Texas was withdrawn until after the 1300's when Style 2 was carried into these states.

STYLES AFTER LATE PUEBLO III TIMES

Valuable ethnographic data are available that shed considerable light on the above problem. The following legend related by an elderly Snake Clan member, given in V. Mindeleff (1891:17-8) has particular bearing on the Glen Canyon region:

At the general dispersal my people lived in snake skins, each family occupying a separate snake skin bag, and all were hung on the end of a rainbow, which swung around until the end touched Navajo Mountain, where the bags dropped from it; and wherever a bag dropped there was their home. After they arranged their bags they came out from them as men and women, and they then built a stone house which had five sides. (The story here relates the adventures of a mythic Snake Youth, who brought back a strange woman who gave birth to rattlesnakes; these bit the people and compelled them to migrate.) A brilliant star arose in the southeast,

which would shine for a while and then disappear. The old men said, "Beneath that star there must be people," so they determined to travel toward it. They cut a staff and set it in the ground and watched till the star reached its top, then they started and traveled as long as the star shone; when it disappeared they halted. But the star did not shine every night, for sometimes many years elapsed before it appeared again. When this occurred, our people built houses during their halt; they built both round and square houses, and all the ruins between here and Navajo Mountain mark the places where our people lived . . .

C. Mindeleff (1891:136) lists the Tusayan kivas including one at Hano, the Chief Kiva, called *Toko'nabi* or the Navajo Mountain Kiva. *Toko'nabi* or *Dokot'nabi* (JK) probably means "High Place" and is the Hopi place name for Navajo Mountain. Fewkes (1900:582) lists ten clans that are supposed to have come from the north in prehistoric or early historic times: Snake, Puma, Dove, Cactus, Opunita, *Nabovu*, Horn, Deer, Antelope, *Tcaizra* and specifically from the Navajo Mountain region the Coyote, and Burrowing Owl, although the latter two were not numerous and were late in arriving. Thus in the 1890's there was traditional lore among the Hopi that indicated societal relationship between the Navajo Mountain area (thus the Glen Canyon basin) and the present-day Tusayan Pueblos.

If a direct cultural relationship existed between the Glen Canyon region and the present-day Hopi Pueblos we would not expect any, or at most only slight, stylistic differences in the petrographic display. Such is not the case. Perhaps this can be explained by the influx of other peoples into the Hopi country besides those from the Glen Canyon region. Certainly the design styles between Styles 2 and 3 are dependent, historically, but the addition of new elements and the creation of new motifs makes it highly possible that Style 2 drew upon more than just the Style 3 designs of Glen and San Juan Canyons.

STYLE 4

Style 4, which is the peak of the Glen Canyon region petroglyph series, is represented in every state in the Southwest (Table 15). Centering in northern Arizona and southern Utah, it is found as far south in Arizona as Casa Grande and as far west as Santa Barbara on the coast of California. It is of extreme interest that the style also occurs with considerable frequency in Owens Valley, California, near Bishop, and southern Oregon. This suggests Pueblo II-III Kayenta Anasazi colonization in these desert basins. Close affiliation between the Mesa Verde and the Kayenta culture areas at this time is indicated by the fact that petroglyph designs are nearly identical in the two areas.

In Arizona the designs are very widespread, covering almost every major site in the northern half of the state. Utah, as well, has a very high frequency, with the distribution reaching as far north as Salt Lake City. There is even a possibility that petroglyphs

Location	Author	Date	Figure Reference	Notes
Arizona				
Davis Dam	Baldwin	1948	Figs. 26,27,71	3 & 4 mixture
Tse-a-Chong Canyon	Bernheimer	1929	Page 160,161	-
Canyon de Chelly -				
Canyon del Muerto	Bernheimer	1929	Page 132	-
Lower Gila	Breternitz	1957	Fig. 2	Questionable
Wupatki	Brewer, J. and S.	1935	Figs. 1-8	-
Inscription Point	Colton	1946	Fig. 3	-
Nitsin (Navajo) Canyon	Cummings	1953	Page 222	-
Petrified Forest	Cummings	1953	Page 223	-
Betatakin	Cummings	1953	Page 225	-
Springerville	Cummings	1953	Page 225	-
Canyon de Chelly	DeHarpport	1960	Photographs	-
Betatakin	Fewkes	1911	Plate 12	Diagnostic sheep
NE Arizona, Caves 3,8,14	Guernsey & Kidder	1921	Plate 13	-
Ford House	Guernsey	1931	Plates 21,37	-
Poncho House	Guernsey	1931	Plate 22	-
Segihatsosi Cave 4	Guernsey	1931	Plate 22	-
Sierra Ancha	Haury	1934	Plate 82, Fig. 26	Questionable
Painted Cave, NE Arizona	Haury	1945b	Fig. 15	-
NE Arizona	Kidder & Guernsey	1919	Plates 89-91,93,94,96	-
SE of San Francisco Mtns.	Mallery	1893	Figs. 5,6	-
Shinumo Canyon	Mallery	1893	Fig. 9	4 & 5 mixture
Red Lake Wash	McGregor	1951	Fig. 38	3 & 4 mixture
Canyon de Chelly	Mindeleff	1897	Plate 55, Fig. 77	-
Prayer Rock District	Morris	1959	Photographs	-
Willow Springs	M.N.A. Photo Files	-	-	-
Hopi Trail Canyon	M.N.A. Photo Files	-	-	-
Honanki	M.N.A. Photo Files	-	-	-
Partridge Creek	M.N.A. Photo Files	-	-	More like Calif. Desert Designs
Black Point	M.N.A. Photo Files	-	-	3 & 4 mixture
Homolovi	M.N.A. Photo Files	-	-	-
Cedar Wash	M.N.A. Photo Files	-	-	-
Inscription Point	M.N.A. Photo Files	-	-	-
Deadmans Canyon	M.N.A. Photo Files	-	-	-
Dove Tank	M.N.A. Photo Files	-	-	-
Second Sink	M.N.A. Photo Files	-	-	-
Clear Creek	M.N.A. Photo Files	-	-	-
First Mesa	M.N.A. Photo Files	-	-	-
Second Mesa	M.N.A. Photo Files	-	-	-
Third Mesa	M.N.A. Photo Files	-	-	-
Tappen Wash	M.N.A. Photo Files	-	-	-
Citadel	M.N.A. Photo Files	-	-	-
Crack-in-Rock	M.N.A. Photo Files	-	-	-
Walnut Canyon	M.N.A. Photo Files	-	-	-
Veit Ranch	M.N.A. Photo Files	-	-	4 & 5 mixture
Picture Canyon	M.N.A. Photo Files	-	-	3 & 4 mixture
Turkey Tanks	M.N.A. Photo Files	-	-	-
Hartley Canyon	M.N.A. Photo Files	-	-	-
Mohave Rock	Schroeder	1952	Fig. 23	3 & 4 mixture
Central Arizona	Steward	1929	Fig. 74	Questionable
South of Phoenix	Steward	1929	Fig. 76	-
Casa Grande	Steward	1929	Fig. 77	3 & 4 mixture
Northern Arizona	Steward	1929	Plate 84	-
Havasupai Canyon	Steward	1929	Fig. 74	-
Montezuma Castle	Steward	1929	Plate 86	-
Guijas Mtns.	Van Valkenburgh	1946	Pg. 17	Slight similarity
Navajo Canyon	West	1927	Figs. 15,16,38-41	-
California				
Alameda County	Elsasser & Contreras	1958	Table 1	Questionable
Inyo County	Johnson	1938	Pg. 21	Questionable Style 4 & 5
Owens Valley	Mallery	1893	Plate 4	4 & 5 mixture
San Bernardino and Riverside Counties	Smith, G. A. & Others	1961	Un-numbered Plates	Questionable-mostly California Desert Style
Mohave Desert	Smith, V.	1944	Pg. 6	Questionable Style 4
Bishop	Steward	1929	Plate 26	-
Owens Valley	Steward	1929	Plates 27-30,32-34 37,38	-
"Carissa" Rock" Southern California	Steward	1929	Plate 2	-
Colorado				
Mancos Canyon	Hayden	1878	Plates 42,43	-
Rio San Juan (below La Plata)	Hayden	1878	Plates 42,43	-
Companero Canyon	Prudden	1903	Plate 35	-
Colorado Springs-Pueblo District	Renaud	1931	Plate 4	4 & 5 mixture

Table 15. Areal distribution of Style 4 petroglyphs. (Based on publications with petroglyph illustrations.)

Apishapa District	Renaud	1931	Plate 7	Questionable
Las Animas District	Renaud	1932b	Plate III	4 & 5 mixture
Monte Vista District	Renaud	1933	Plate II	Style 4 similarity
Sieber Canyon	Wormington & Lister	1956	Fig. 69	-
Montana				
Fergus County	Secrist	1960	Pages 7-11	Questionable
New Mexico				
Upper Gila & San Francisco	Cosgrove	1947	Figs. 50b,56b	50b: 4 & 5 mixture
San Cristobal	Gallenkamp	1955	Pages 16-18	-
Mosquero District	Renaud	1936	Plates 6,7	-
Santa Rosa	Renaud	1936	Plates 6,7	-
Newkirk	Renaud	1936	Plates 6-9	-
North Central New Mexico	Renaud	1938	Several Plates	Style 4 dominant
North Central New Mexico	Renaud	1948	Plate 4	-
Chaco Canyon	Sowers	1942	Plate 1	-
Rattlesnake Peak	Trumbo	1949	Pages 13,15	4 & 5 mixture
Nevada				
Grapevine Canyon	Steward	1929	Fig. 52	4 & 5 mixture
Pueblo Grande de Nevada	Steward	1929	Plate 70	-
Southern Nevada	Steward	1929	Plates 71,72	-
valley of Fire	Heizer & Baumhoff	1962	Fig. 45	Styles 3,4,5
Atlalil Rock Site				
Lost City	Heizer & Baumhoff	1962	Fig. 63	-
	Shutler	1961	Plate 16c	-
Li.3, Li.5	Heizer & Baumhoff	1962	Fig. 81	-
East Walker River	Heizer & Baumhoff	1962	Fig. 91	Style 3 or 4
Katchina Rock Shelter	Heizer & Baumhoff	1962	Fig. 131	-
Oregon				
Fishers Ranch	Cressman	1937	Fig. 11	-
Picture Gorge	Cressman	1937	Fig. 16	-
Albert Rim	Cressman	1937	Fig. 22	-
Stone Bridge	Cressman	1937	Fig. 23	-
Watson	Cressman	1937	Fig. 38	-
Texas				
El Paso County	Jackson	1938	Several Figs.	-
Hudspeth County	Jackson	1938	Several Figs.	-
Reeves County	Jackson	1938	Plate 58	-
Finlay Mountains	Osburn	1941	Fold-out Plate	Line Drawings - Questionable
Utah				
Lower San Juan River	Adams & Adams	1959	Figs. 4,13,14,15	-
Southeastern Utah	Baldwin	1949	Plate 1A	-
Moab	Beckwith	1934	Fig. 1	4 & 5 mixture
Vernal	Beckwith	1935	Several Figs.	-
Southern Utah	Beckwith	1940	Page 4	4 & 5 mixture
Moab	Cummings	1953	Page 225	-
Comb Ridge on San Juan R	Cutler	1960	Photographs	-
Butler Wash on San Juan R	Cutler	1960	Photographs	-
Glen Canyon	Foster	1954	All Figs.	-
Desolation Canyon	Gaumer	1937	Figs. 1,2	Some 4 & 5 mixture
Glen Canyon	G.C.P., Univ. Utah	-	Photographs	-
Indian Canyon	Henderson	1946	Pages 12,15	1 & 4
Heiroglyph Canyon	Judd	1926	Plate 4	-
Cottonwood Canyon (Kanab)	Judd	1926	Plate 60	-
Dry Fork Canyon	Kelly, C.	1950	Pages 11,12	-
Capital Reef	Kelly, C.	n.d.MS ¹	Line Drawings	Fremont Designs Style 4 variants
Clear Creek	Kelly, C.	n.d.MS ²	Line Drawings	-
Vernal	Lipe	1959	Fig. 2	-
Colorado River	Mallery	1893	Figs. 82-88	-
Benjamin	Maynard	1911	All Figs.	Style 4 variants
Fremont River	Morss	1931	Several Figs.	-
San Juan R at Butler Wash	Prudden	1903	Plate 31	-
Grand Gulch	Prudden	1903	Plates 33-35	-
Ashley & Dry Fork Valleys	Reagan	1931	Fig. 2, 3-6,7	3,4 & 5 mixture
Nine Mile Canyon	Reagan	1932	Pages 38,41	-
Utah Basin	Reagan	1932	Pages 43,44	4 Or 5
Northern Utah	Steward	1929	Plate 80	-
Fruita	Steward	1929	Plates 81,82	-
Moab	Steward	1929	Plate 83	-
Connor's Spring (N. Utah)	Steward	1937a	Plate 9	Variant
Vernal	Steward	1937b	Plate 3	-
Clear Creek	Steward	1937b	Plate 9	-

Table 15. (cont.) Areal distribution of Style 4 petroglyphs.

Kanab	Steward	1937b	Plate 9	-
Salt Lake City	Steward	1937b	Plate 9	-
Molly's Nipple Canyon	Steward	1941	Figs. 57,58	-
Johnson Canyon	Steward	1941	Figs. 50-61	-
Clark Canyon	Steward	1941	Fig. 63	-
White Canyon	Steward	1941	Figs. 72-75	-
Moab	Steward	1941	Figs. 76,77	-
Grapevine Canyon	Train	1941	Page 10	4 mainly, questionable 3 & 5
Glen Canyon Basin	Turner	-	This Report	-
Westwater Creek	Wormington	1955	Fig. 52	-
Zion National Park	Park Files	-	Photographs	-
Washington				
Vantage I	Cain	1950	Fig. 35, Items d,w	-
Vantage II	Cain	1950	Fig. 34, Items b,k,l,n	-
Vantage	Hamerstrom		(Personal Communication)	-
Buffalo Rapids, Snake R	Hamerstrom		(Personal Communication)	Questionable
Wyoming				
Dinwoody	Gebhard & Cahn	1950	Several Figs.	Questionable
Eastern Wyoming	Renaud	1932a	Plate 14, Fig. 1	4 similarity
Twin Creek Site	Renaud	1936	Plates 10,11,13	Questionable

Table 15. (cont.) Areal distribution of Style 4 petroglyphs.

found in Wyoming and Montana can be attributed to Style 4 influence.

Style 4 times (A.D. 1050-1250) thus represent the peak of the Anasazi culture with its traits reaching out to all of the Southwest. On the basis of petroglyphs, I visualize a culture area during the Pueblo II-III time period which included all of the southwestern United States, with the southern boundary starting approximately in southern Arizona. To some extent the style continues sporadically after A.D. 1200. There seems to be a qualitative difference in style characteristics from the Mogollon slope southward and relationships in design and composition are distinctly different from designs in northern Arizona. This delineation of the southern Style 4 boundary does not conflict with the evidence set forth by archaeological research, although the style horizon lacks sensitivity for additional subdividing, which can be done with other cultural units such as house types, pottery wares, stone typologies, and so forth. However, the culture area as defined by the distribution of the petroglyph style does indicate that the northern half of Arizona, portions of eastern California, southern Nevada, most of Utah, New Mexico, portions of Texas, Colorado and southern Oregon, and possibly Wyoming and Montana, are the areas wherein the influence of the Pueblo II-III Anasazi was most keenly felt, at least with respect to petroglyph depiction traditions.

The southern boundary of Style 4 is interesting in still another respect. Colonial and Sedentary periods at Snaketown have design elements (Gladwin and others 1937:227) which do not appear in the Kayenta culture area until 200 years later. These forms, which are found on Colonial and Sedentary pottery, include scrolls, keys, terraced figures, life forms of lizards, birds, repeated anthropomorphs, flute players, sunbursts, and insects. Even though the designs are to be found mainly in nature (excluding the flute player) they *do not* appear in the Kayenta area petroglyphs until after A.D. 1050. Thus I feel that the elaboration of the Style 4 designs takes its origin (both fusional and replacement) from the Hohokam culture to the south, since no other source

for these designs exists in the Southwest at this time. An exception is found in the Mogollon culture. Unfortunately, because of a lack of published accounts on petroglyphs, there is a lack of convincing substantiating data, with the exception of the Mimbres pottery designs which are in the Style 4 tradition.

The majority of the Fremont culture petroglyphs can be considered as belonging to Style 4. The Fremont designs do present local variations which differ from the heartland Kayenta Anasazi and, as such, should be considered as local expressions of Style 4. It is significant that face-on anthropomorphs and circular elements dominate the Fremont designs. However, on the basis of design analysis, the Fremont culture petroglyphs must be considered definitely as northern Anasazi manifestations and thus linked with the Pueblo II-III occupation further south.

Wormington (1955:190) in a concluding remark states: "One thing at least seems certain, the culture of the Fremont people cannot be regarded simply as an attenuated peripheral manifestation of that of the San Juan Anasazi." This leads me to believe that the petrographic manifestations in the Fremont area are thus the result of tribal elaborations of the designs that had been added to the Kayenta area from southern Arizona, and, presumably, further south in Mexico at an even earlier date. These were added to the element and design inventory already in existence in the Desert Culture area. It is interesting to note that the Fremont culture disappears after about A.D. 1200-1300 (Jennings 1957:8), which is the same time that Style 3, the degenerative or imitative

Perhaps the "abandonment" of the Chaco region influenced and was partially responsible for the elaboration in Style 4 times, in that new traditions were brought into the Kayenta area. Gladwin (1945:152) wrote: "If the people of the Chaco did not stage an exodus—and if they were not wiped out in war—I revert to the explanation that they began to decrease in numbers soon after 1100 A.D., and that this decline continued until the remnant died out or was absorbed by some other group." Could the "other group" have been the aboriginal Kayenta culture area population?

It is interesting to note that Style 4 appears near Bishop, California. Even more important is the occurrence of Style 4 in southern Oregon and central Washington. This is a considerable distance from the Glen Canyon region and the heart of the Kayenta Anasazi culture area. I know of no theory explaining why the Athabascan-speaking peoples entered the Southwest. It seems unlikely that a group of people would travel such a distance without reason. I should like to suggest that this study of petroglyphs may have brought to light their reasons. If the petroglyphs in southern Oregon and central Washington are really examples of Style 4 and can be substantiated by archaeological research, it is possible that there may have been either an actual cultural contact by Anasazi,

or contact through traits being transmitted via the northern Paiute along the California-Nevada border to Athabascan-speaking peoples of the northwest coast of the United States. With knowledge of the pueblos to the south, interest could have been stimulated, resulting in reciprocal population movements. If this is shown to be correct, at least this paper will have offered a clue to Athabascan-Anasazi contact, in that it is highly possible that Anasazi traits were first in reaching the Athabascan area and that the Athabascan "migration" was the secondary effect.

STYLE 5

Examination of Table 16 should reveal immediately that this style occurs almost everywhere

Location	Author	Date	Figure Reference	Notes
Arizona				
Tse-a-Chong Canyon	Bernheimer	1929	Pages 160,161	-
Canyon de Chelly	Dellarport	1960	Photographs	-
Segihatsoi (Tsegi) Cave 4	Guernsey	1931	Plates 21,22	-
Poncho House	Guernsey	1931	Plate 22	-
Painted Cave NE Arizona	Haury	1945	Plates 34,35	-
NE Arizona	Kidder & Guernsey	1919	Plates 89-91,96-97	4 & 5 mixture
SE of San Francisco Mtns.	Mallery	1893	Fig. 5	-
Shinumo Canyon	Mallery	1893	Fig. 9	-
Prayer Rock District	Horris	1959	Photographs	-
Veit Ranch	M.N.A. Photo Files	-	-	4 & 5 mixture
Deadmans Canyon	M.N.A. Photo Files	-	-	-
Partridge Wash	M.N.A. Photo Files	-	-	4 & 5 mixture--more like Calif. Desert Designs.
California				
Hidden Canyon	Leadabrand	1956	Pages 27,28	Questionable
San Luis Baja Calif.	Steward	1929	Fig. 81	-
San Marcos, Baja Calif.	Steward	1929	Fig. 82	-
San Jose, Baja Calif.	Steward	1929	Fig. 82	-
Owens Valley	Steward	1929	Plates 27-30,32-34, 37,38	-
Site Iny-281	Heizer & Baumhoff	1962	Plate 18	Style 3 & 5
Colorado				
Mancos Canyon	Hayden	1878	Plates 42,43	-
Rio San Juan (below La Plata)	Hayden	1878	Plates 42,43	4 & 5 mixture
Colorado Springs-Pueblo District	Renaud	1931	Plate 4	4 & 5 mixture
Idaho				
Statewide	Erwin	1930	Whole	4 & 5 mixture, very questionable
New Mexico				
Huerco & San Francisco Mosquero District	Cosgrove	1947	Fig. 52b	Questionable
Santa Rosa	Renaud	1936	Plate 6,7	-
Newkirk	Renaud	1936	Plate 6,7	-
Newkirk	Renaud	1936	Plates 6-9	-
North Central New Mexico	Renaud	1938	Several Figs	-
Nevada				
Grapevine Canyon	Steward	1929	Fig. 53	-
SE Nevada	Steward	1929	Plate 65	-
Spanish Springs	Steward	1929	Plate 66	-
Pueblo Grande de Nevada	Steward	1929	Plate 70	-
Southern Nevada	Steward	1929	Plates 71,72	-
Cane Springs	Heizer & Baumhoff	1962	Fig. 61	-
Christmas Tree Pass	Heizer & Baumhoff	1962	Fig. 68	-
Texas				
Hudspeth County	Jackson	1938	Several Figs.	-
Culterson County	Jackson	1938	Plate 44	-
Finlay Mountains	Osburn	1941	Fold-out Plate	Line Drawings Questionable

Table 16. Areal distribution of Style 5 petroglyphs. (Based on publications with petroglyph illustrations.)

Utah				
Moab	Beckwith	1934	Fig. 1	4 & 5 mixture
Glen Canyon	Foster	1954	Figs. 2,3,6,10,13,15	-
Glen Canyon	G.C.P., Univ. Utah	-	Photographs	-
Cottonwood Canyon	Judd	1926	Plate 60	-
Heiroglyph Canyon	Judd	1926	Plate 4	Questionable
Clear Creek	Kelly, C.	n.d.	Photographs	-
Yampa	Kelly, C.	n.d.	Photographs	4 & 5 mixture
Grand Gulch	Prudden	1903	Plates 33,34	-
San Juan R at Butler Wash	Prudden	1903	Plate 31	-
Moab	Steward	1929	Plate 83	Questionable
Molly's Nipple Canyon	Steward	1941	Figs. 57,58	-
Wildcat Canyon	Steward	1941	Fig. 58	-
Johnson Canyon	Steward	1941	Figs. 59-61	-
Oak Canyon	Steward	1941	Figs. 62,63	-
Clark Canyon	Steward	1941	Fig. 63	-
White Canyon	Steward	1941	Figs. 72-75	-
Moab	Steward	1941	Figs. 76,77	4 & 5 mixture
Zion National Park	Zion Park Files	-	Photographs	Questionable
Glen and San Juan Canyons	Turner	-	This Report	-
Wyoming				
Dinwoody	Gebhard & Cahn	1950	Several Figs.	Questionable

Table 16. (cont.) Areal distribution of Style 5 petroglyphs.

that Style 4 does throughout the southwestern United States, again excepting southern Arizona, but including Baja California. This division is significant and I believe represents a specific cultural boundary that includes the San Juan, Northern Peripheral, Rio Grande, Eastern Peripheral, Little Colorado, Upper Gila, and Mimbres culture areas, as well as many others. The Lower Gila and Chihuahu Basin should be excluded on the basis of petroglyph design distribution and incorporated in the southern culture area, at least in the pre-1050 A.D. time horizon. Portions of the Patayan and Mogollon represent an overlap between this southwestern culture and the Mexican culture area to the south, to which the Hohokam designs seemingly belong.

Specifically, petroglyph designs infiltrating into the northern area include the feathered (horned) serpent, the hump-backed flute player, and probably many other elements and designs that do not occur in Style 5 times, but are found in Style 4 times. On the basis of obliteration and weathering considerations, seemingly there is a long cultural tradition for the designs in Style 5 which are abruptly added to, elaborated upon, and, to some extent, still traditionally maintained in Style 4 times. The most likely origin of these embellishments is southern Arizona and northern Mexico and the closest foreign sources are, naturally, the Hohokam and Mogollon culture areas. Pottery from Snaketown (Gladwin

1957:88) indicates that the southern Hohokam culture had reached a far more complex material culture life at an earlier date than had the northern Anasazi. Style 5 should be considered as the base level on which the southern traits are built and may equate culturally if not temporally to Jennings's Desert Culture. While Style 5 petroglyphs have not been found in the La Plata district, the elements on Basketmaker III pottery (Morris 1939, Plates 199, 200, 206) are much like Style 5.

Table 17 has been included in this report to show that in a *limited number* of cases the lack of published reports has not determined the boundaries of the petroglyph style distributions. Rather, it is an actual difference of style or lack of petroglyphs in the varying locales lying outside the differing spatial-temporal boundaries. Admittedly, some of the references cited are far removed from the Glen Canyon region. They have been chosen to delimit the route of design travel and namely to show that Southwestern designs are derived from Mexico. Australian and Alaskan references reduce the possibility of both overseas and Bering Strait sources during the time period considered.

A considerable amount of valuable cultural material can be surmised as lost in order to estimate the beginnings of Style 5. This can readily be seen in Fig. 102 where the petroglyphs are now stranded very far from reach.

CONCLUSIONS

Five styles of petroglyphs (Table 1) are recognized in the Glen Canyon region.

These styles have been dated by two techniques: (1) pottery association and (2) degree of obliteration by various weathering mechanisms.

The distribution of petroglyphs in California and adjoining states as defined by Steward (1929: 220, Map D) accords with Map 2 of this report, with the exception of southern Arizona. Steward's Area B has approximately the same distribution as Styles 4 and 5. His Area A extends into southern Arizona where Styles 4 and 5 do not. Both Steward and this author recognize a petroglyph style boundary (and presumably also a cultural boundary) along the Arizona-California border area and there are style differences in the vicinity of Salt Lake City Utah (see Map. 2).

On the basis of surface survey, Steward (1941: 354) concluded that Glen Canyon was "... a kind of no-man's land which had been very slightly settled by outposts from both Mesa Verde and Kayenta and which had come into contact with the Northern Periphery but had not strongly influenced it. Farther south, however, toward the Arizona border, the sites increasingly resemble those of the Kayenta district and of the Johnson Canyon-Paria River district, to which they are geographically contiguous." Petroglyphs and pictographs in Glen Canyon partly influenced his thinking and this study of petroglyphs would tend to corroborate his conclusions. How-

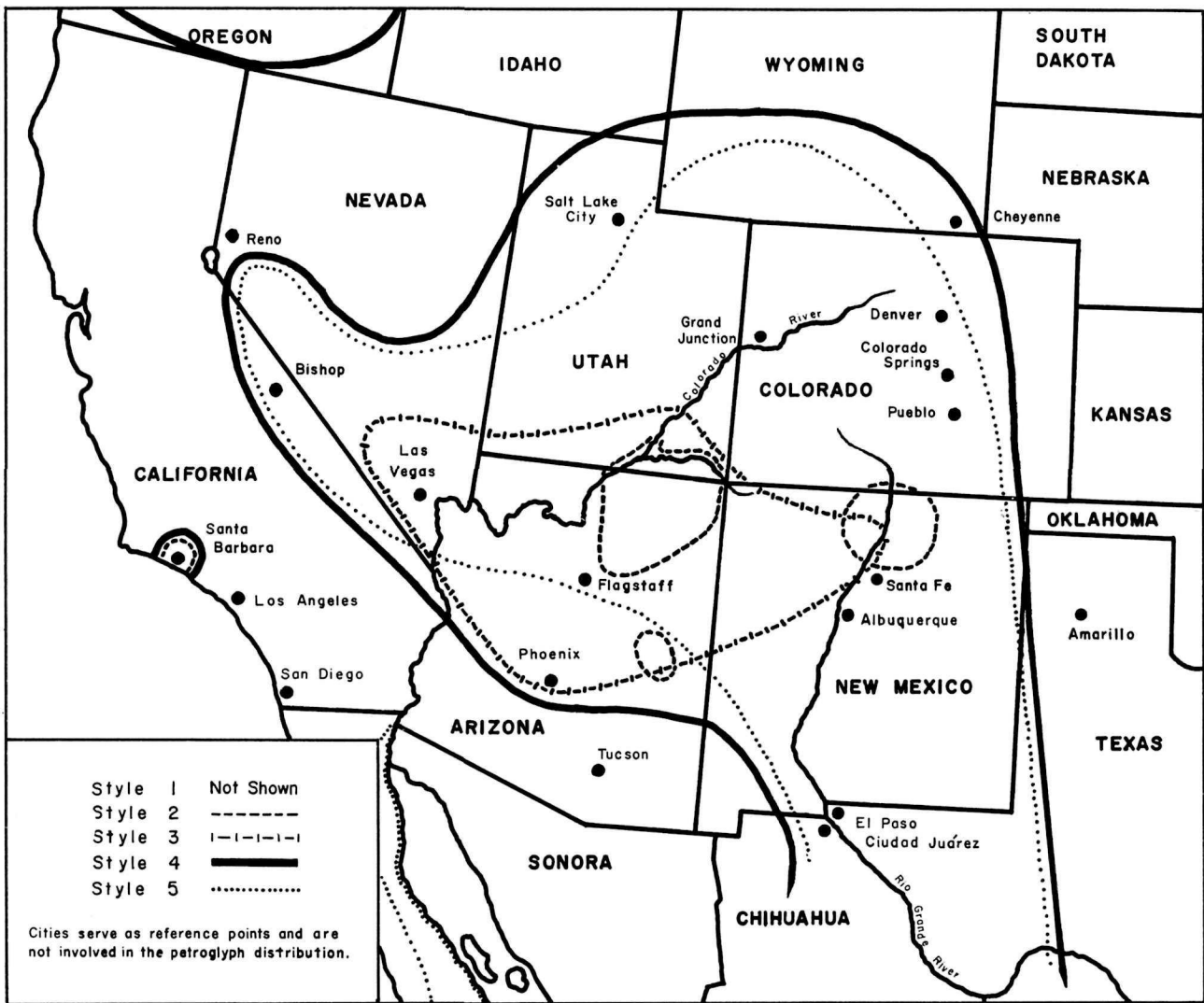
ever, it would be highly desirable to determine the common denominator between the Mesa Verde and Kayenta branches of the Anasazi culture that caused the monostylous Style 4 which spread so widely throughout most of the Southwest.

The distribution of the petroglyph styles recognized in the Glen Canyon region has been traced on Map 2. The resultant patterns have been interpreted as follows: From an *estimated* 100 B.C. to A.D. 1050 there existed in the Southwest, with the exception of southern Arizona, a widely dispersed group of people having a style of petroglyph design in common. Their petroglyphs are found in Baja California, but not in the northern Mexican states of Chihuahua, Coahuila, or Sonora. This may be owing to the presence of another culture, the Hohokam of southern Arizona, which had pottery and petroglyph designs entirely different from the petroglyphs to the north in Style 5 times.

Between A.D. 900 and 1050 a transition from Style 5 to Style 4 begins. This is accompanied by new elements and designs that certainly are traceable to the Hohokam culture area and probably the Mogollon culture area as well. Style 4 lasts for nearly 200 years during which the northern extent of the Anasazi culture area expanded to include all of Utah. Definite examples of Style 4 are found on the California coast, but none occur in Baja California. This indicates a "centering" of Style 4 traditions in the Four-Corners, or Anasazi culture area, with trade to the west coast.

Location	Author	Date	Figure Reference	Notes
Green River, Sierra Nevadas	Bruff	1873	Figs. 1, 2	Line Cuts*
Brewster Co., Texas	Coffin	1932	Several Figs.	No similarity
Western Australia	Davidson	1952	Several Figs.	No resemblance
Baja California	Davis	1949	Page 25	No similarity
Flathead Lake, Montana	Elrod	1908	Several Figs.	No similarity
Southeastern Alaska	Emmons	1908	Several Figs.	No similarity
Southern Arizona	Fast & Caywood	1936	Plates I-V	No similarity
Northern Mexico	Fay	1960	Personal Communication	?
Santa Barbara, Calif.	Grant	1961	Whole	Questionable Style 2-3 similarity
Lower Colorado River Region	Harner	1953	Fig. 1	Possibly Mohave Style
Ventana Cave, Arizona	Haury, et. al.	1950	Figs. 111, 112	No similarity
SW Kodiak Island, Alaska	Heizer	1947	Several Plates	No similarity
Southern Arizona	Henderson	1940	Page 10	No similarity
Sapinero, Colorado	Hurst & Hendricks	1952	Whole	No similarity
Umcompahgre Plateau	Huscher, B. & H.	1940	Whole	No similarity
Idaho	Irwin	1930	Whole	Almost no similarity
Pecos River, Texas	Kelly, J. C.	1950	Figs. 32, 33	Plains like
Texas	Kirkland	1939	Pages 11-39	No resemblance - Historic Designs
Arroyo Grande, Lower Calif. North		1908	Fig. 73	Either Style 5 or Calif. Desert Designs (Mohave)
Eastern California	Read	1960	Page 264a	California Desert
Russell Site, Kansas	Richards, A. & D.	1960	Pages 18-21	No similarity
British Columbia	Smith, H.	1927a	No Figures	No way of telling
British Columbia	Smith, H.	1927b	Fig. 1	No resemblance
NW Coast	Smith, M.	1946	Pages 306-22	No similarity
Arizona	Taft	1913	Pages 140-145	Questionable
Texas	Kirkland	1939	Pages 11-39	No resemblance Historic designs

Table 17. Petroglyph references wherein Glen and San Juan Canyon petroglyph styles are absent, or very questionable. * Denotes the fact that the choice of reproduction was unfortunate or printing was poor, as designs were difficult to visualize.



Map II. The areal distribution of the five styles of petroglyphs recognized within the Glen Canyon region. This distribution is based on publications and photographs of petroglyphs within *and* without the outlined areas.

At A.D. 1200 in the Glen Canyon region a third style appears, Style 3, poor in quality and quantity compared to Style 4. This style seems to center in southern Nevada and northwestern and central Utah, which indicates a withdrawal of cultural forces in Utah, Colorado, California, western Nevada, and most of New Mexico. This withdrawal continues after 1300 with the introduction of Style 2 and terminates at the villages of the present day pueblo Indians.

The possibility of associating Style 3 with Paiute culture, if not Paiute people, can only be suggested at this time, but the association would seem promising on the basis of the currently recognized distribution of Style 3. Without examining the actual petroglyphs and collecting any associated pottery remains, the Style 3-Paiute correlation must be recognized as only a suggested hypothesis.

The causes of the style change around A.D. 1050 is attributed to the Hohokam (and possibly the

Mogollon), who in turn could have received their petroglyph and pottery designs from sources even further south. The other style changes are attributable to the postulated population shifts that accompanied climatic fluctuations.

Tracking the petroglyph elements and designs to their original Mexican source has not been attempted for three reasons: (1) it is beyond the scope of this paper; (2) it is not economically feasible to do the required field examinations; (3) the literature on northern Mexico is limited and practically devoid of petroglyph references. Nonetheless, I feel that presentation of the distribution as it now stands should eliminate further duplication in seeking origins of southwestern petroglyph designs to the north, east, and west. This leaves only the south towards which future efforts need be concentrated. Definite indicators of southern influence are certainly apparent, the hump-backed flute player and its numerous variants, the feathered serpent, elaborations on

kachina forms, and certain specific design motifs.

On the basis of the present distribution of Style 5, I feel a definitive petroglyph style area designation is warranted. Fortunately, one has already been suggested. This is the Desert Culture (Jennings 1957) which, on the basis of petroglyphs, has its southern boundary in southern Arizona and breaks through along the Colorado River into Baja California where it spreads out in this northern Mexican state. I acknowledge that this use of the Desert Culture Concept does not entirely fit the original concept. But (1) the distribution of the petroglyph styles has been based on the inspection of published illustrations and not actual field observations and (2) I see no need to introduce another term to the already numerous array of labels for the prehistoric southwestern culture areas. Admittedly, the distribution of the five Glen Canyon region petroglyph styles is modifiable after renewed and additional study.

Defined on the basis of the distribution pattern, there are two routes by which design travelled out of Mexico into southern and central Arizona. These are via the Colorado and Rio Grande Rivers. The Rio Grande seems to have been the major route.

The concept of anthropomorphic deification existed in the Anasazi culture area prior to A.D. 1050. After this date it was elaborated upon highly. Those who believe the Kachina complex or other Mexican

traits moved out of the south (Central Mexico or Central America?) should seek the origin of movements prior to A. D. 1050. (See especially Dockstader 1954:54-5; Fewkes 1900; Lister 1960:118-24; and Voth 1905:15-63 for discussion of Hopi migrations or Mexican influence in the Southwest.)

Through Hopi informants, written records of Hopi traditions, and study of the Glen Canyon region petroglyphs, a conclusion was reached that the Spider, Water, Tit-mouse, and possibly the Reed and Snake clans could have been familiar with the occupation of the Glen Canyon region between A.D. 1050-1200. These clans are implicated with the prehistoric occupation remains, both within the major river canyon systems and the pueblo centers in the southern Navajo uplands and adjacent river canyon mesas. It is not felt that these clans were involved solely in the more recent Pueblo IV revisitation of Glen and San Juan Canyons.

Style 4 petroglyphs occurring in southern Oregon and central Washington are considered evidence of diffusion of Anasazi culture traits towards the area of the Athabascan-speaking peoples. This took place either directly or through the northern Paiute and this contact, originating with the Anasazi, stimulated directly or indirectly the Athabascan migrations into the Anasazi culture area.

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Fig. 1. NA7247, Middle Cha Canyon. Style 1. No composite obliteration, not chalked in, no patination, and no informant recognition.

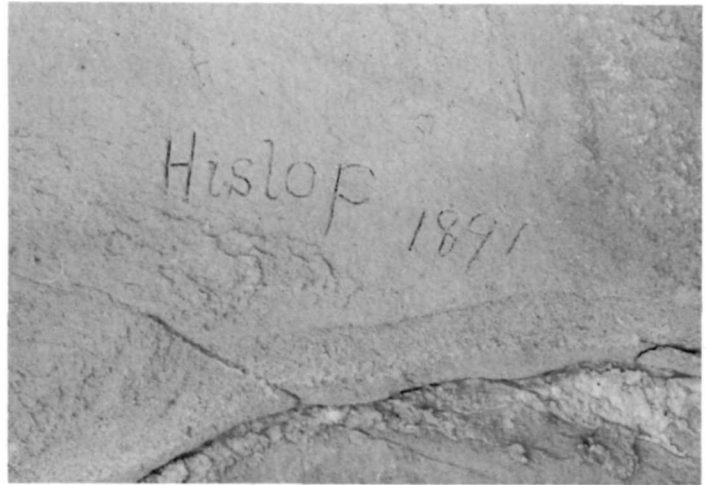


Fig. 2. NA3732, Forbidding Canyon mouth. Style 1. Slight Composite obliteration, charcoal in lines of design, no patination, and no informant recognition.



Fig. 3. NA7247, Middle Cha Canyon. Style 1. No composite obliteration, not chalked in, no patination, and no informant recognition.



Fig. 4. NA7668, San Juan River. Style 1. No composite obliteration, not chalked in, no patination, and no informant recognition.



Fig. 5. NA2692, Glen Canyon. Style 1 (left) and 5 (right). Composite obliteration advanced on sheep, no obliteration on anthropomorph. Chalked in for photography. Patination slight on sheep, negligible on anthropomorph.



Fig. 6. NA6260, Paiute Creek mouth. Style 1 (incised designs in center and right side) and Style 4 (pecked designs on extreme left). Composite obliteration slight on Style 4 shields, none on remaining Style 1 designs. Not chalked in, no patination on Style 1, slight on Style 4. Informant recognition: Left designs are similar to old religious shields used at Oraibi, rayed circle in lower right is like the Navajo sun symbol.



Fig. 7. NA7667, Copper Canyon. Style 1. No obliteration, not chalked in, no patination, and no informant recognition.



Fig. 8. NA6457, West Creek Canyon. Style 2 (lower panel), 4 (small sheep and flute player), and 5 (rectangular designs at top). Composite obliteration advanced on upper portion of panel, unknown on lower designs. Informant recognition: Style 2 figure with line bisecting face is the Germination Kachina although it lacks horns. Figure holding rattle and bow and arrow is the Snake Warrior God (*Pekemop*). Heart is drawn as this was on deer and antelope petroglyphs around Oraibi.



Fig. 9. NA7167, Trail Canyon mouth. Style 1 (left), 2 and 3 (in shadow). No composite obliteration, not chalked in, and no patination. Informant recognition: Mask (in shadow) is the Whipper Kachina (*Hu Kachina*).



Fig. 10. NA7136, Oak Canyon mouth. Style 3 and 5 (?). Composite obliteration slight to moderate. Not chalked in, patination slight, and no informant recognition.



Fig. 11. NA7176, Cha Canyon mouth. Style 3. Composite obliteration none to slight. Not chalked in, patination slight, and no informant recognition.



Fig. 12. NA6261, Paiute Creek mouth ("Newspaper rock"). Styles 3 (?) and 4. Composite obliteration none to moderate. Not chalked in. Patination varies from very slight to moderate. Some lichen in Style 4 designs. Informant recognition: The spiral ended swastika is a symbol meaning friendly or peace making. Symbol is also found at Kiyo Kokoli.



Fig. 13. NA7179, Lower Cha Canyon. Style 4. No composite obliteration, not chalked in, and very slight patination. Informant recognition: The geometric design is still embroidered on white robes and used to a small degree on pottery. Anthropomorphs are "Warrior Gods" since they are wearing helmets with the single feather sticking up. Flute player is not Kokopele. Note the similarity of sheep design to Mimbres pottery sheep designs. Scale 25 cm.



Fig. 14. NA7238, San Juan River. Style 4. No obliteration, not chalked in, and slight patination. Informant recognition: "Running like everything, person running a race."



Fig. 15. NA7166, San Juan River opposite Paiute Creek. Style 4. Panel lacks lichen and is stained by mud and dung. Panel has differential obliteration and patination, since there is more obliteration and less patina at the bottom. All designs in C sage patination. Background color purple-black. Not chalked in, no informant recognition.

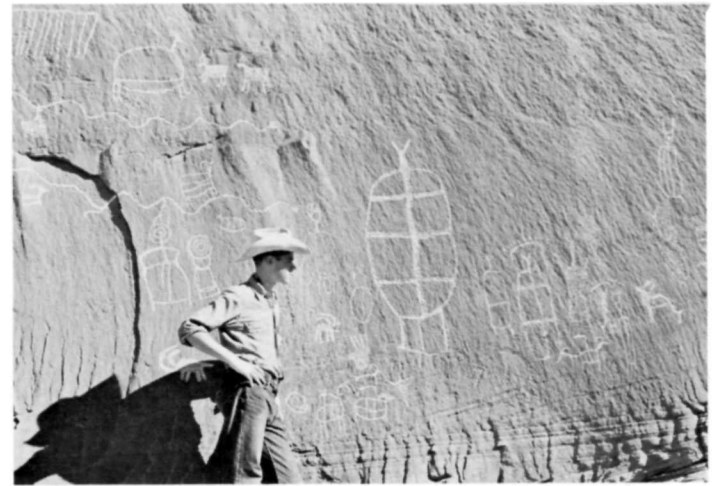


Fig. 16. NA6457, West Creek Canyon. Mainly Style 5. Extensive composite obliteration. Chalked in for photography. Complete patination (E stage) since designs have same patina as the background rock. No informant recognition.



Fig. 17. NA6800, Castle Creek Panel E. Style 4 (mainly) and 5. Slight composite obliteration on Style 4 and moderate on Style 5. Not chalked in. Patination ranges from slight (B stage) on Style 4 to extensive (D stage) on Style 5 (lower right corner). Lichen on this and most other petroglyph panels tends to grow on north exposures more than any other direction. No informant recognition.



Fig. 18. NA6480, Face Canyon. Style 1. Composite obliteration apparently slight. Not chalked in. Unknown patination situation since site was not personally inspected. No informant recognition.



Fig. 19. NA6457, West Creek Canyon. Distant view of entire panel and cliff base environment. Style 5 (upper) and Style 2 (lower and very fine). Extensive composite obliteration on upper part of panel but unknown on lower section. Chalked in for photography. Patination E stage on upper designs. Informant recognition follows Fig. 8.



Fig. 20. NA7181, Lower Cha Canyon. Style 3 and 4 mixture. Composite obliteration very slight. Not chalked in. Patination slight to moderate. Informant recognition: The rectangular scrolls are a design used in "early days." "Navajos use this design, Hopi used it too, but not anymore." Scale 25 cm.



Fig. 21. NA6800, Castle Creek Panel D. Style 4 (readily visible) and 5 (difficult to see). None to slight composite obliteration. Not chalked in. Patination slight (B stage) on Style 4 and complete (E stage) on Style 5 designs. No informant recognition.



Fig. 22. NA7179, Lower Cha Canyon. Style 4. No composite obliteration. Not chalked in. Very slight patination. Informant recognition: "Lower part of design is what is on wedding robe and pottery. Maybe it is a mask, don't know. Ear design makes me think this way." Note the lichen in the lower left corner of design. Scale 25 cm.



Fig. 23. NA7620, Cliff Canyon. Style 4. Extensive composite obliteration on this pictograph and petroglyph panel. Not chalked in. Patination seems to be slight (site not personally inspected). No informant recognition.



Fig. 24. NA7177, Lower Cha Canyon. Style 1. No composite obliteration, not chalked in, no patination, and no informant recognition.



Fig. 25. NA2682, San Juan River. Style 2 or 3 (sheep and design below site number) and Style 4. Composite obliteration slight on Style 2, more so on Style 4. Not chalked in, slight patina on Style 4 designs, no informant recognition.



Fig. 26. NA6261, Paiute Creek mouth. Styles 3, 4, and 5. Style 5 obliterated the most (rectangular sheep above the watchspring scroll), Style 4 intermediate, least on Style 3 (lizard forms in upper portion of panel). Not chalked in. Patination greatest on Style 5 sheep, least on Style 3 lizards and watchspring scroll. Informant recognition: Watchspring scroll is symbol of Cyclone or Cyclones home. Note lichen covering the lower designs.

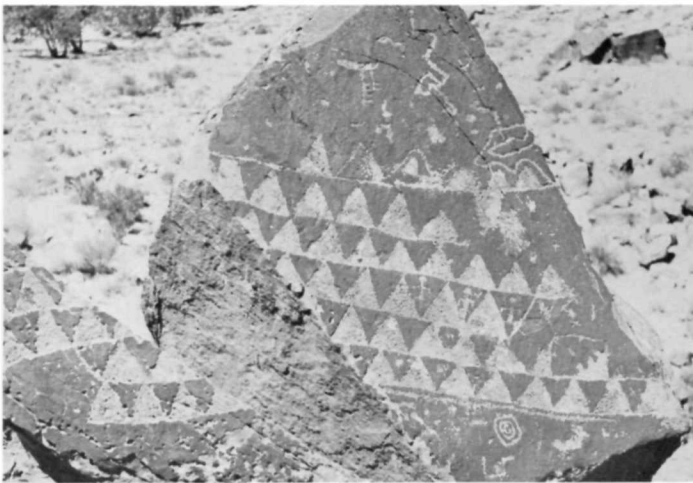


Fig. 27. NA7247, Mid Cha Canyon. Style 4. Very slight composite obliteration, not chalked in, and very slight patination. Informant recognition: Rock from Turkey Tanks similar to this design. Informants always counted repeated elements.



Fig. 28. NA6827, Paiute Creek mouth. Style 4. Slight to moderate composite obliteration, not chalked in, moderate patination, and no informant recognition. Scale 50 cm.

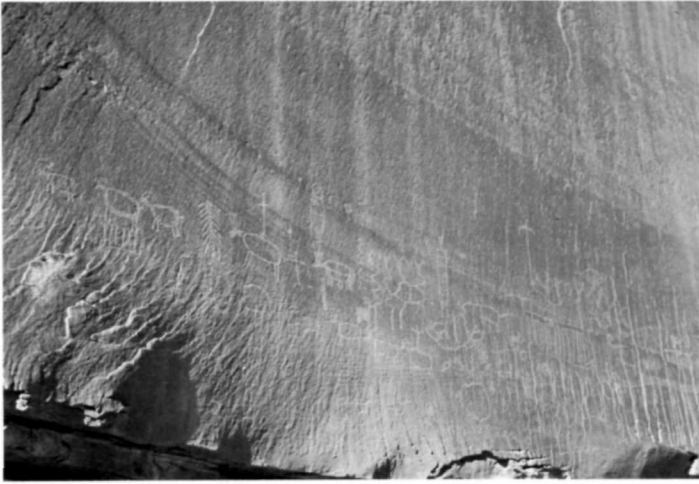


Fig. 29. NA6419, Colorado River. Style 5. Composite obliteration extensive. Not chalked in. Patination complete (E stage) and same color as background. No informant recognition. Note: design shows slight transition from Style 5 to Style 4.

Fig. 30. NA7167, Trail Canyon mouth. Style 4. No composite obliteration, not chalked in, and no patination. Informant recognition: Dotted designs are like those on Hopi kilts. Note the use of incised lines in the layout. Panel is on the underside of a slump boulder and completely protected from all weathering. See discussion of Kokopele in the Iconographic section.



Fig. 31. NA3742, Spring Canyon Bar. Style 4. Very slight composite obliteration, not chalked in, no patination, and no informant recognition.

Fig. 32. NA3742, Spring Canyon Bar. Style 4. Very slight composite obliteration, not chalked in, and no patination. Informant recognition: Rectangular designs are "weaving work." "Reed clan draws huge hand because they used to be biggest people (six feet tall or more). There is no clan symbol of a small hand."



Fig. 33. NA7167, Trail Canyon mouth. Style 1. No obliteration, not chalked in, no patination, and no informant recognition.

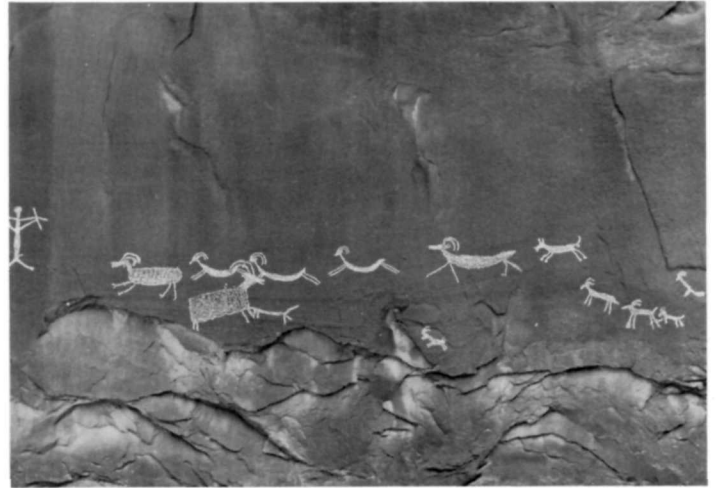


Fig. 34. NA6423, West Creek Canyon. Style 4 (curvilinear), and Style 5 (rectangular). Composite obliteration advanced, chalked in for photography, advanced patination. Informant recognition: "Man shooting (bow and arrow) and dog or wolf chasing. Could be chasing animals into a drive corral. There is a game corral about 15-20 miles above Oraibi. Don't ever use it for firewood because you would get animal disease although others have used the wood and not get disease."



Fig. 35. NA6266, Lower San Juan River. Style 2 (upper) and Style 5 (lower). Obliteration absent on upper designs and moderate on lower petroglyphs. Not chalked in. Patination slight on upper designs and extensive on lower ones. Informant recognition: "One figure looks like a Hopi maiden, looks like a dance scene. Large figure looks like *Hu Kachina*. Zig-zag design is like the Lagunas make it." Note the deeper dinting of the Style 5 designs.

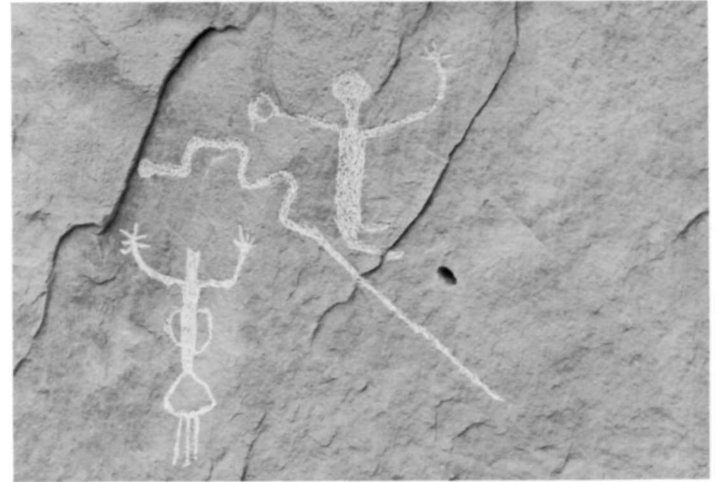


Fig. 36. NA3742, Spring Canyon Bar. Style 4. Slight composite obliteration. Chalked in for photography. Slight patination. Informant recognition: "Game scene of woman and man. Fingers are up and trying to catch something." Note the similarity between this design and the Hopi hoop and pole game.



Fig. 37. NA7668, San Juan River. Style 1. No composite obliteration, not chalked in, no patination, and no informant recognition.



Fig. 38. NA2692, Glen Canyon. Style 1 and 5 (anthropomorph). Anthropomorph considerably obliterated although it has the characteristic deep dinting of Style 5. Style 1 mostly incised and not obliterated. Chalked in for photography excepting the Wetherill signature. Patination is moderate on Style 5 anthropomorph. No informant recognition.



Fig. 39. NA7147, Paiute Creek. Mainly Style 4. Slight composite obliteration. Some lichen over designs but not over the profile of a man in upper left which is Style 1. Not chalked in, slight patination, and no informant recognition.



Fig. 40. NA6610, San Juan River. Style 2. No composite obliteration, not chalked in, and no patination. Informant recognition: "Looks like water antelope (*Paathivio*) which is drawn on back of Hunter (*Kihila*) or Rabbit Kachina mask as well as the Sehoemis and Blackhead Kachina mask." Note: this design considered as Style 2 because of the manner of pecking the feet, the lack of obliteration, and dissimilarity with all Style 1 designs having comparable obliteration consideration.



Fig. 41. NA7245, Middle Cha Canyon. Style 4. Moderate composite obliteration, chalked in for photography, and heavy patination. Informant recognition: The circle of dots with parallel lines looks like a corral. If it didn't have an opening it could be water or House of Knowledge.



Fig. 42. NA7247, Middle Cha Canyon. Style 4. Moderate composite obliteration. Chalked in for photography. Moderate to abundant patination. Informant recognition: "Landmark, not a clan symbol. When all settled at Oraibi and people can't go any place else those people sent strong youngsters out to make landmarks."



Fig. 43. NA7136, Oak Canyon mouth. Style 4 (Style 4 and 5 mixture in the sheep). Slight composite obliteration (designs mostly incised). Chalked in for photography. Slight patination. Informant recognition: "Mother of Animals (*Tekeowati*) on right. Usually just the head sticks up. It is sometimes seen in the night dressed all white and pecking out and looking for you. Mother of Animals seen today as vision when thinking about game animals."



Fig. 44. NA7182, Lower Cha Canyon. Style 3 and 4. Advanced composite obliteration, chalked in for photography, and extremely patinated. Informant recognition: "Upper designs are called *tiovipi* (diamond) and are similar to designs on the oldtime shirts. These designs copied from potters' designs."



Fig. 45. NA7182, Lower Cha Canyon. Style 4. Moderate obliteration, not chalked in, and extremely patinated. Informant recognition of diamonds same as Fig. 44.



Fig. 46. NA7179, Cha Canyon mouth. Style 4 (reverse side of rock shown in Fig. 13). Not chalked in, slight patination. Informant recognition: Upper designs "used to be embroidered on white robes but are still pottery designs."

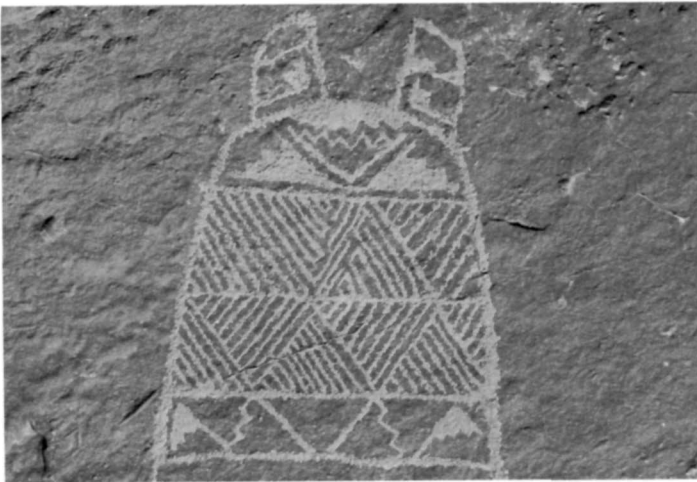


Fig. 47. NA7179, Cha Canyon mouth. Style 4. No composite obliteration, not chalked in, and slight to moderate patination. Informant recognition: "Possible a kachina mask."

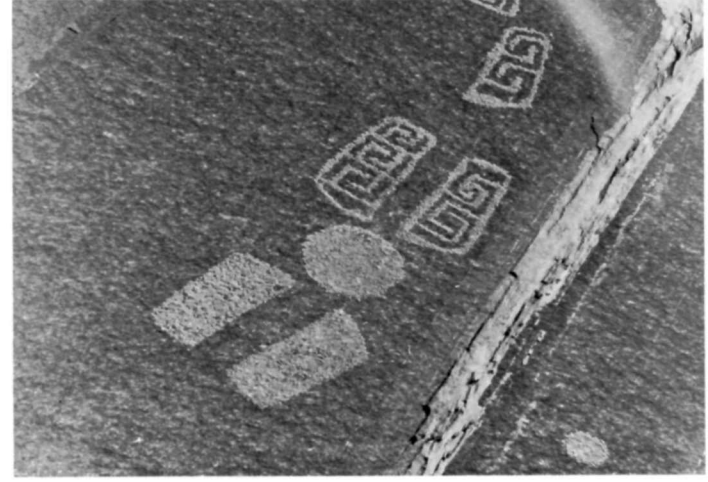


Fig. 48. NA7179, Cha Canyon mouth. Style 4. Very slight obliteration, not chalked in, heavy patination, no informant recognition.



Fig. 49. NA7157, San Juan River. Style 4. Slight composite obliteration, not chalked in, heavy patination, and no informant recognition.



Fig. 50. NA7149, San Juan River. Style 2 or 3 (background) and Style 4 (foreground). Slight composite obliteration, not chalked in, and moderate patination. Informant recognition: "Figure in background looks like the Buffalo Horn Kachina. Flute player is a clan symbol."



Fig. 51. NA6262, Paiute Creek mouth. Style 4. Moderate composite obliteration, lichen in some of the designs, not chalked in, moderate to heavy patination. Informant recognition: "Main design looks like a textile design. Concentric circles are not shields, could be Cyclones home. Rectangular design (on right) is pottery design."



Fig. 52. NA7598, Desha Creek Highlands. Style 3 and 4 mixture. Slight obliteration, not chalked in, slight to moderate patination and no informant recognition.



Fig. 53. NA6415, Twilight Canyon mouth. Style 4 and 5. Slight composite obliteration. Chalked in for photography. Moderate to heavy patination. Informant recognition: "Long-necked bird could be crane clan (*Atoko*)."
Style 5 out of reach in upper left.

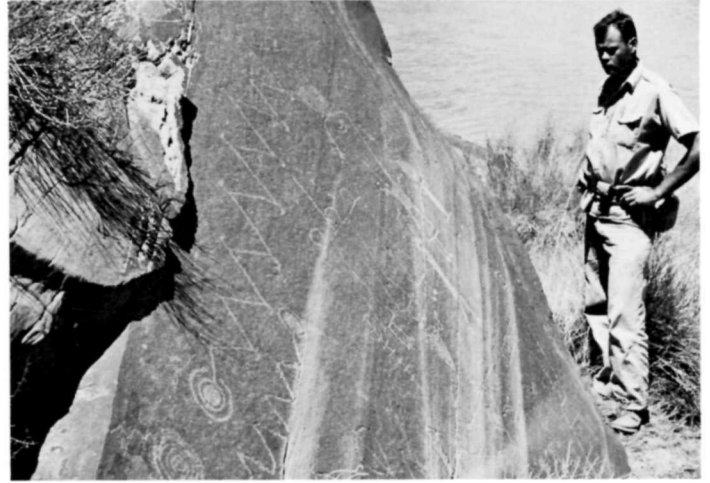


Fig. 54. NA6266, Lower San Juan River. Style 2 (left) and 5 (right). This view shows entire panel, see Fig. 35 for data.



Fig. 55. NA6419, Colorado River. Style 5. Composite obliteration is extensive on entire panel. Chalked in for photography. E stage patination (see Fig. 29 for unchalked view). No informant recognition. Section one of six sections.

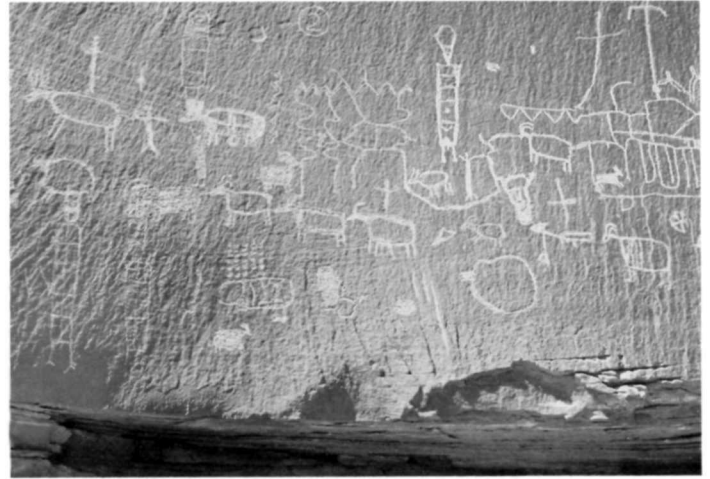


Fig. 56. NA6419 continued; section two of six sections.



Fig. 57. NA6419 continued; section three of six sections.



Fig. 58. NA6419 continued; section four of six sections.

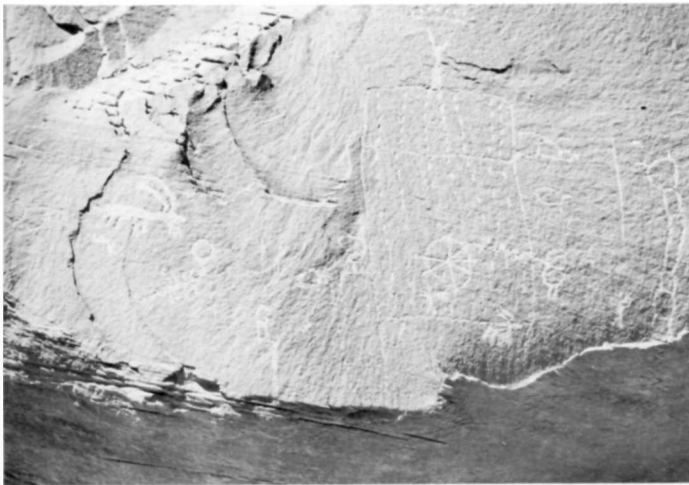


Fig. 59. NA6419 continued; section five of six sections. Style 3 sheep on left and Style 4 spoked circle over Style 5 anthropomorph in center.



Fig. 60. NA6419 continued; last of six sections. Style 4 anthropomorph in extreme upper left corner.



Fig. 61. NA2681, San Juan River. Style 4 and 5 mixture. Abundant composite obliteration on all designs, chalked in for photography. Stage E patination. Informant recognition: Connected four circles in center right is similar to *keptevipi*, a religious device used in the Niman ceremony for purifying the earth. Section one of thirteen sections.

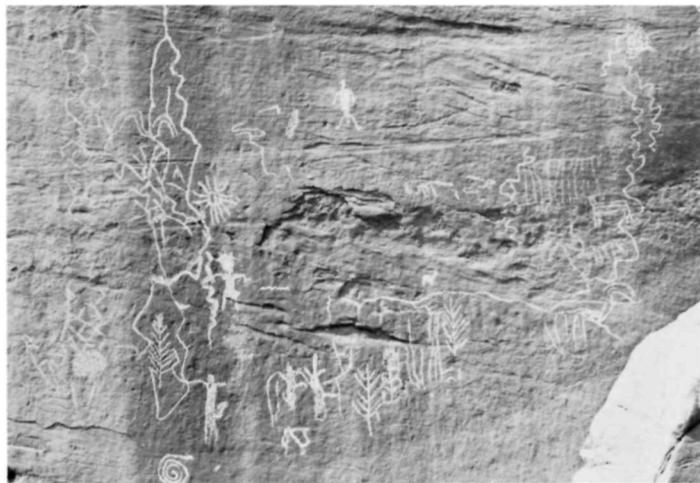


Fig. 62. NA2681 continued; section two of thirteen sections. Watch-spring scroll is Style 4.



Fig. 63. NA2681 continued; section three of thirteen sections. Several petroglyphs in this section have not been chalked in since they were too faint to follow.



Fig. 64. NA2681 continued; section four of thirteen sections.



Fig. 65. NA2681 continued; section five of thirteen sections.



Fig. 66. NA2681 continued; section six of thirteen sections.



Fig. 67. NA2681 continued; section seven of thirteen sections.



Fig. 68. NA2681 continued; section eight of thirteen sections.



Fig. 69. NA2681 continued; section nine of thirteen sections.



Fig. 70. NA2681 continued; section ten of thirteen sections.



Fig. 71. NA2681 continued; section eleven of thirteen sections.



Fig. 72. NA2681 continued; section twelve of thirteen sections. Bird-bodied sheep on left are Style 4.



Fig. 73. NA2681 continued; last of thirteen sections. Excepting the Style 5 deer at top this section is entirely Style 4.

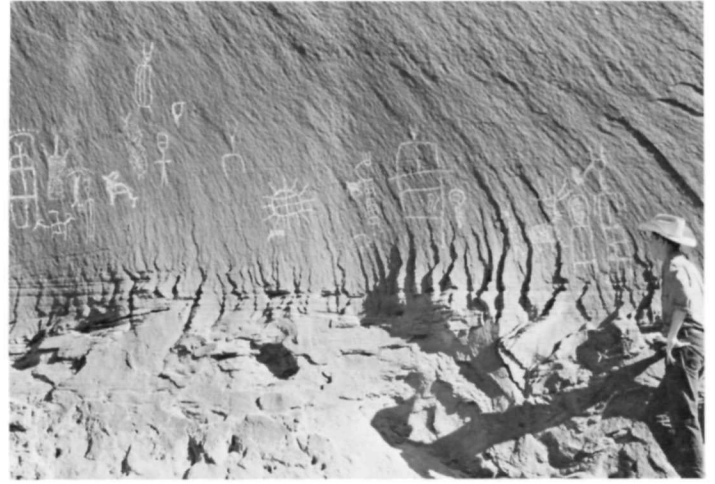


Fig. 74. NA6457, West Creek Canyon. Style 5. Extensive composite obliteration, chalked in for photography, heavy patination, and no informant recognition.



Fig. 75. NA7167, Trail Canyon mouth. Style 4. Moderate composite obliteration with some lichen in design lines, not chalked in, patination varies from light to moderately heavy, and no informant recognition.



Fig. 76. NA7179, Cha Canyon mouth. Style 3 and 4 mixture. Very slight composite obliteration with lichen in right-hand designs. Not chalked in, slight patination, and no informant recognition. Scale is 25 cm.



Fig. 77. NA6457, West Creek Canyon. Style 5 (upper designs) and Style 2 (lower left). Extensive composite obliteration, chalked in for photography, heavy patination in Style 5 petroglyphs. Informant recognized Style 2 figures as Snake Warrior God.



Fig. 78. NA7153, Paiute Creek. Style 3 and 4 mixture. Slight to moderate composite obliteration with lichen in some of the design lines. Not chalked in. Patination varies but is moderately heavy in upper designs, no informant recognition.



Fig. 79. NA7153, Paiute Creek. Style 3 (?). Slight obliteration, not chalked in, no patination, and no informant recognition.

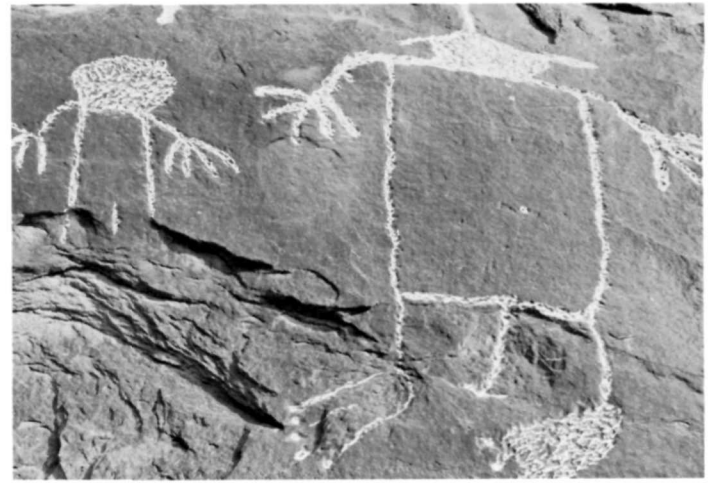


Fig. 80. NA7136, Oak Canyon mouth. Style 4 and 5 mixture. Extreme obliteration, but remaining on account of extreme dinting characteristic of Style 5. Chalked in for photography, patination is very heavy (E stage), and no informant recognition.



Fig. 81. NA6415, Twilight Canyon mouth. Styles 4 and 5 (dominant). Obliteration varies from slight to moderately advanced, heavier painted designs chalked in for photography, patination varies from slight to heavy, no informant recognition.



Fig. 82. NA7132, San Juan River. Style 5 mainly with Style 4 sheep at top. Composite obliteration advanced on Style 5 designs. Not chalked in. Patination heavy on Style 5, slight on Style 4. No informant recognition. Scale 25 cm.



Fig. 83. NA2689, Rock Creek mouth. Style 5. Advanced composite obliteration. Chalked in for photography; however, some of the designs are not chalked in because it has been a policy to chalk in only those designs which can be followed with certainty. Patination is E stage. No prompt informant recognition.



Fig. 84. NA6423, West Creek Canyon. The chalking procedure which requires considerable exactness and time shown in progress. See Fig. 98 for finished panel and data. Note cliff scar at waist level indicating a previous ground surface.



Fig. 85. NA6281, San Juan River. Style 4. Slight composite obliteration, not chalked in, slight patination, and no informant recognition.



Fig. 86. NA7421, Desha Canyon mouth. Style 4. Slight composite obliteration, not chalked in, slight patination, and no informant recognition. Note: this scene approximates a successful kill or hunt depiction as complex as any known for the Glen Canyon region. Scale is 25 cm.



Fig. 87. NA7136, Oak Canyon mouth. Style 4 and 5 mixture. Advanced composite obliteration. Chalked in for photography. Heavily patinated. Informant recognition: "Must be plenty of mountain sheep. Mass of lines looks like altar (right center). Man's headdress looks like sticks or bunches of grass. Old time kachinas made with grass and things. Drooping nose on sheep could be whiskers. Sometimes the youngsters just draw anything."

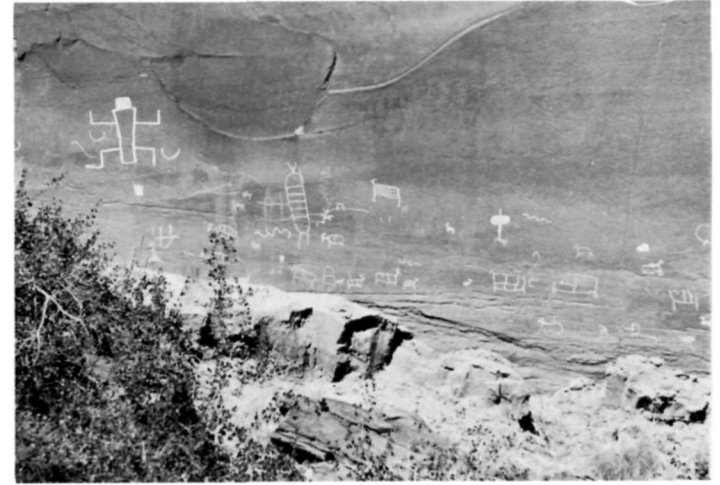


Fig. 88. NA6266, Lower San Juan River. Style 5 excepting for large Style 4 zoomorph on left. Highly obliterated, chalked in for photography, slight to moderately heavy patination, and no informant recognition.



Fig. 89. NA6266 continued. One style 4 sheep on right.



Fig. 90. NA7421, Desha Canyon mouth. Style 4. Slight composite obliteration, not chalked in, patination slight to moderate, and no informant recognition.



Fig. 91. NA6426, Colorado River. Style 5. Abundant composite obliteration. Chalking in progress for photography. Note cliff scar about one meter above present ground surface. Advanced patination. No informant recognition.



Fig. 92. NA2689, Colorado River. Style 4 and 5 mixture. Advanced composite obliteration. Only partly chalked in, because some designs were too faint for accurate chalking, advanced patination, and no informant recognition.

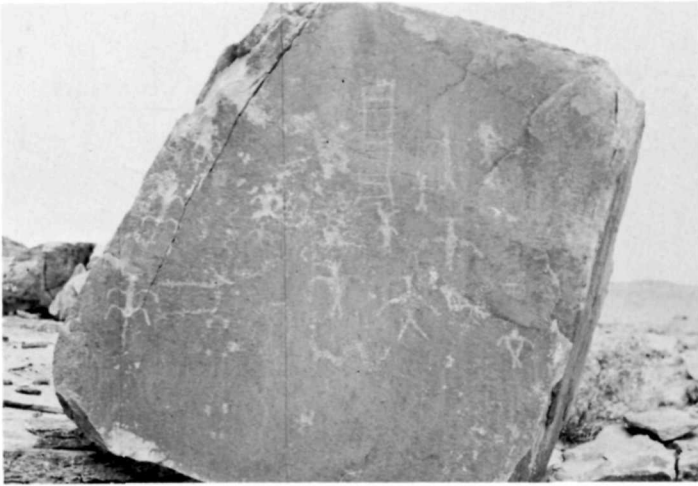


Fig. 93. NA6611, San Juan River. Style 4 and 5. Composite obliteration not known, not chalked in, moderate patination, and no informant recognition.



Fig. 94. NA6260, Paiute Creek mouth. Styles 1, 3, and 4. Composite obliteration greatest but moderate on Style 4 (majority of designs), very slight on Style 3 (small "lizard-man" at extreme middle right) and totally lacking on Style 1 (deer, goat, signature, and wavy lines near top). Not chalked in. Patination follows composite obliteration. Informant recognition: Hump-backed flute player is not Kokopele.



Fig. 95. NA6827, Paiute Creek mouth. Style 4 and 5 mixture. Composite obliteration extremely variable. Lichen in many of the design lines. Chalked in faint lines by unknown party, patination extremely variable, and no informant recognition.



Fig. 96. NA7370, Navajo Creek. Mainly Style 5. Advanced composite obliteration, chalked in for photography, E stage patination, and no informant recognition.



Fig. 97. NA7580, Desha Creek Highlands. Style 5 mainly. Solid pecked figures are Style 4. Composite obliteration abundant, chalked in for photography, E stage patination, and no informant recognition.

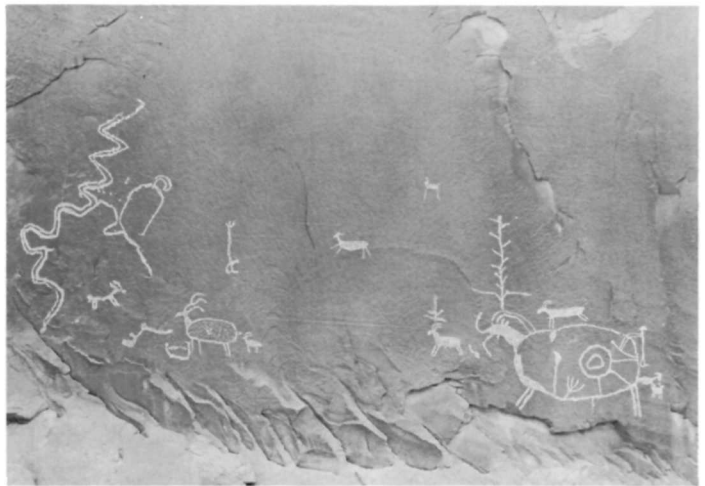


Fig. 98. NA6423, West Creek Canyon. Style 4 (solid pecked) and 5 (openwork). Advanced composite obliteration, chalked in for photography, and abundant patina on both styles. Informant recognition: Squiggled line on left could be a trail to "waterplace or whatever is good there. Maybe drawing of canyon. Wherever trail comes to there it directs them. Trail markers followed by rockpiles." Right center plant was said to be either reed or bamboo. Note possible atlatl depiction at right.

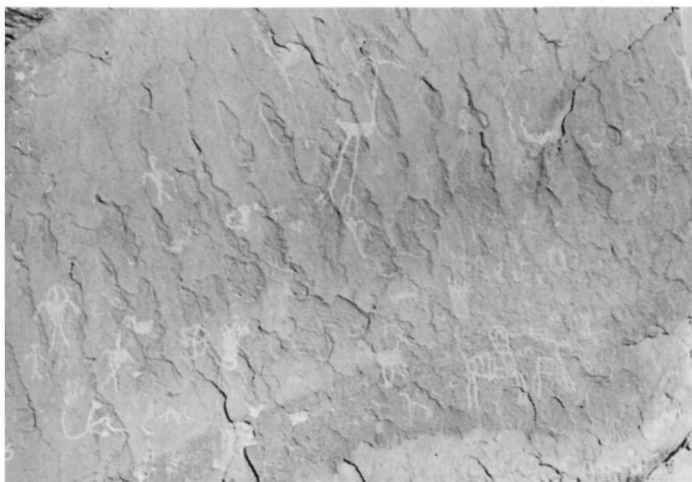


Fig. 99. NA6826, Paiute Creek mouth. Style 4 (upper) and 5 (lower). Composite obliteration more advanced on Style 5 rectangular sheep, not chalked in, patination moderate on both styles, and no informant recognition.



Fig. 100. NA6266, Lower San Juan River. Style 5 showing Style 4 influence. Close-up view to show detail of deep dinting and advanced composite obliteration. Not chalked in, E stage patination, and no informant recognition.



Fig. 101. NA6814, Nakai Canyon. Style 3 or 4 pictograph. Completely protected, and no informant recognition.



Fig. 102. NA2689, Rock Creek, Glen Canyon. Style 5 petroglyphs. Highly obliterated and patinated. No informant recognition. Photograph plainly shows the "stranded" positioning of many Style 5 designs with the removal of the cliff-base talus and associated cultural debris.

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MAP I BASE MAP OF GLEN CANYON BASIN

Showing sites and locations of principal drainages and highlands.

PETROGRAPH SITES ARE INDICATED BY M.N.A. SURVEY NUMBERS.

NAMES OF HIGHLAND AREAS (SHADED) ARE SHOWN IN ITALICS.

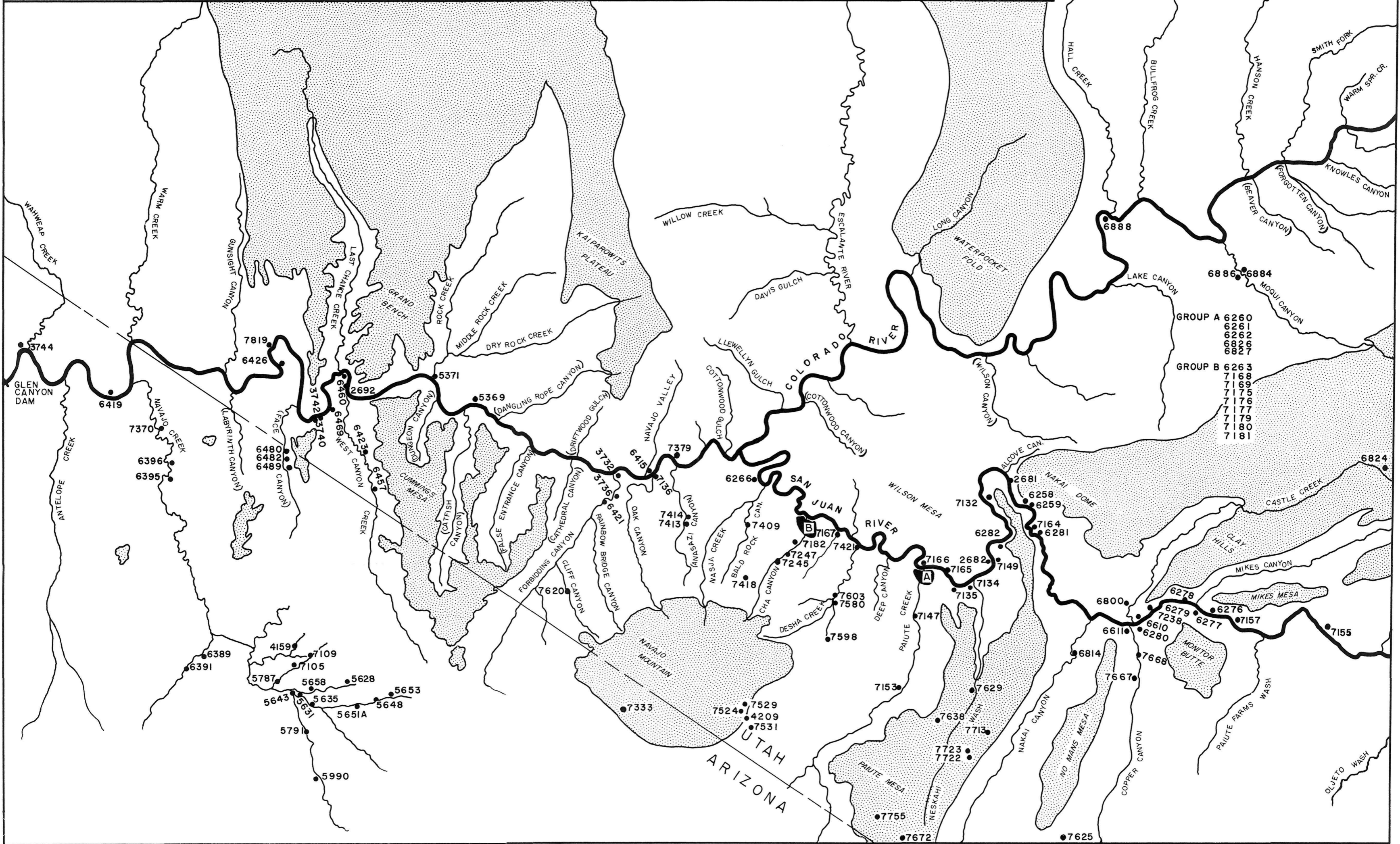
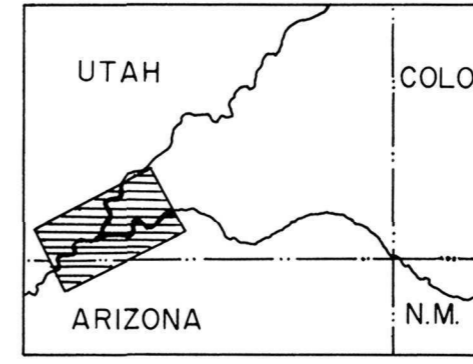
NAMES OF CREEKS AND CANYONS AS SHOWN ON U.S.G.S. TOPOGRAPHIC MAPS ARE IN CAPITALS.

NAMES OF CREEKS AND CANYONS NOT SHOWN ON U.S.G.S. TOPOGRAPHIC MAPS ARE IN PARENTHESES.



0 1 2 3 4 5 6 7 8 9 10 MILES

0 1 2 3 4 5 6 7 8 9 10 KILOMETERS



- GROUP A 6260
- 6261
- 6262
- 6266
- 6267
- GROUP B 6263
- 7168
- 7169
- 7175
- 7176
- 7177
- 7179
- 7180
- 7181

UTAH
ARIZONA

