AGGRESSION AGGREGATION AND ABANDONMENT
IN SOUTHWESTERN PREHISTORY

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During the 12th and 13th centuries A.D., and especially during the latter part of this time period, the various populations of Pueblo Indians of the Colorado Plateau began a process of abandonment. Gradually, they withdrew from areas which had been inhabited by puebloan groups or their ancestors for hundreds of years. The San Juan drainage seems to have been among the first areas abandoned (Davis, 1965:353). The migrations followed a generally southeasterly route until the populations which had more or less completely occupied the Plateau area at 1050-1100 A.D. had removed to a small area in the upper Rio Grande drainage by 1500 A.D. The latter part of the Pueblo III (1050/1150-1300 A.D.) occupation of the Plateau is characterized by an extreme contraction of settled territory. All of southeastern Utah and much of northern Arizona and southwestern Colorado were abandoned (Jennings, 1968:311). However, leading up to the abandonment of the pueblos, during late Pueblo II and early Pueblo III times, there was an aggregation of population into fewer but significantly larger pueblos. The previous settlement pattern of small, fairly evenly dispersed communities was replaced by fewer but more densely settled locations. Large areas of Plateau land which had previously been the home of a number of small communities were given up in favour of the larger sites. Eventually, even the larger sites were quit, and the area was completely abandoned.

At the same time, there appears to have been an increasing concern for defense on the Colorado Plateau during Pueblo III. Lipe (1973:375) states that in many areas, people moved from open locations to shelters and ledges in canyon walls. The period
is characterized by a proliferation of "cliff-dwelling" sites for which access was often difficult, and defense appears to have been a concern of some importance with respect to site location.

The rise of defense, as reflected in Pueblo III architecture, site plan, and the increasing distance between sites, is suggestive of increasing anxiety among the pueblo occupants. It indicates a concomitant rise in conflict and aggression among Plateau groups. Archaeologists have had various ideas about the socio-cultural role of aggression in the prehistoric Southwest. Early authors such as Bandelier (1890), Fewkes (1919), and Linton (1944) held that conflict and aggression played a vital role in the life of pueblo groups, and was an important causal factor in the abandonment of the pueblos. Later archaeologists have tended to downplay the importance of aggression. In general, the subject has lacked the kind of systematic investigation which would assess the relative importance of aggression with respect to other factors in the process of aggregation and abandonment of the pueblos during Pueblo III.

The purpose of this paper is to explore the relationship between aggression and the phenomena of aggregation and abandonment in southwestern prehistory.

The study of conflict and aggression poses difficult problems for the archaeologist. The motivations for aggressive behaviour are often couched in ideology and ritual. Swadesh for example has noted the ceremonial aspect of warfare among the Nootka (Swadesh, 1948:84-86), and Chagnon (1967) and Hoebel (1960) have demonstrated similar evidence among the Yanomamo and the Cheyenne
respectively. Archaeologists have traditionally looked at warfare in association with certain economic causes (cf. Vayda, 1968:86, Service, 1968:163); the inherent problems in attempts to study prehistoric ideologies have often precluded any elaboration in the study of causes of primitive warfare. Problems have also been encountered in the examination of the nature of aggression. Questions related to the determination of the level of aggression - small scale raiding versus full-scale war - and the parties involved in conflict activities are often difficult to determine from archaeological evidence.

The most effective means which the archaeologist has for the study of the motivation and nature of conflict and aggression is through an examination of defensive systems. Defense is defined as any action that constitutes resistance against attack. It is limited to the influence that cultural responses to aggressive behaviour have on settlement patterns (Rowlands, 1972:447).

Aggression, Defense and Settlement

The military study of warfare has tended to stress the territorial and political importance of defense (cf. Montross, 1960, Lidell Hart, 1967, Hughes, 1975). However, among primitive groups, this scope should be broadened to include economic and ritual or ideological aspects. In a discussion of the aims of defense, Rowlands (1972:447-449) states that the economic importance of defensive systems is the protection of the minimum requirements to maintain life and prevent social disintegration. This may
include the protection of fields during the growing season, and the protection of stored food. It may also include the protection of tools, working areas and sources of raw materials. The territorial aims of defense pertain to the emotional and historical ties which a group may hold for a particular region. The political aims of defense are geared to the preservation of political autonomy, although this may involve the creation of alliances which generally result in the surrender of a certain degree of political autonomy in return for the benefits of mutual defense. The ritual aims of defense pertain to the identification of a group with particular sacred areas whose protection may be vital to the social well-being of the group.

The aims of defense should have direct impact on the cultural responses that a population implements to satisfy a need for security. Rowlands (1972:449) and Hughes (1975:Introduction) have suggested that the extent to which a particular defensive response could be realized would depend on a set of limiting factors which would influence or even play a selective role in the implementation of potential types of defense.

One important factor is environment. A naturally defensive environment will reduce the need for architectural features. The Yanomamo site their villages so that geographical barriers such as swamps, rivers and rugged hills will fall between them and an enemy village (Chagnon, 1967). Firth (1927:70) has stated that the concentration of "Pa Maori" hillforts on the north island, New Zealand is not so much indicative of intensification of warfare,
but of a limited frequency of naturally defended sites, suitability of soils for entrenching, and high population density. It should also be pointed out that certain environmental factors may mitigate against naturally defensible locations. Proximity to water sources and cultivable soils are two factors which often favour lowland site locations in areas that may be susceptible to attack (Rowlands, 1972:449).

Another factor influencing the manner of defense is technology and raw materials. The structures associated with defense, either separate from or integrated with a settlement, reflect an extension of the existing building technology of small-scale societies. The technical skills and materials used for the construction of habitations have a tendency to also be adapted for the needs of defense. Huron long houses utilized a vertical wood pole construction technique which was also adapted in the construction of pallsades and bastions (Wright, 1971). Hill-top fortification walls in the Peruvian Andes employed a quarried stone and chinking construction technique similar to that of dwelling structures (Coupland, 1979).

A third factor which could affect the manner of defense is subsistence economy. Defense involving the use of fortification structures is most common among sedentary agricultural groups. Conflict and aggression may be no less prevalent among hunting and gathering populations, however the generally small group size and high degree of mobility of such groups tends to limit the variety of responses possible for defense. In addition, the protection of fixed and often limited resources, such as water
supply, tends to favour the concentration rather than the dispersal of population for common defense (Trigger, 1968:69). The protection of fields, stored food and tools, and the greater complexity of economic and social life associated with permanent settlement, acts as an incentive and provides the capacity for the construction of large and elaborate defense structures (Rowlands, 1972:452).

Socio-political organization is another factor influencing the manner of defense. The structure of settlements may reflect the size of the group that will co-operate with each other against aggression. This need not represent the group that occupies the particular site. Large sites may act as temporary refuges for the occupants of smaller outlying settlements. The Maori "Pa" seems to have exemplified this function (Best, 1927:37-38). The ability of small groups, dispersed due to environmental and economic factors, to temporarily combine into larger units for defense implies an alliance based on the mutual agreement of disparate groups, or more commonly on the basis of affinal or consanguinal relationships. The formation of alliances provides a combined labour force for the construction of defensive systems, and at the same time may obviate the need to defend all members of all settlements. Among the Hopi, one of the allied villages situated on a mesa-top was considered a guard village, and was located to protect the rest (Dozier, 1956:176-179).

The incidence of warfare may also influence the manner of defense. Rowlands (1972:452-453) states that a tacit understanding often exists between hostile groups in small-scale societies as to when and when not to indulge in conflict. The recognition of "safe periods" and relatively dangerous periods would have a
direct bearing on what cultural resources would require defense. Among groups practising the same subsistence economy, the planting and growing season would be a relatively safe period and defense of storage facilities would be of prime importance. Greater insecurity and concern for defense will be found when raids are carried out by outside groups practising a different economic livelihood. The concept of safe periods likely will not exist, or will be of only minimal importance, in the case of conflict between nomadic raiders and sedentary agriculturalists. In this example, defense of fields, settlement and storage facilities may all be important.

A sixth factor affecting the manner of defense is the influence of weapons and military tactics. Among small-scale primitive societies, tactics often revolved around the possibility of surprise attack. Chagnon has stated that the Yanomamo relied on surprise attack by small groups for short durations of active hostilities as their main pattern of aggression (Chagnon, 1967: 112-113).

Finally, Rowlands (1972:454) states that tradition must be considered as a factor influencing the manner of defense. He suggests that traditional modes of defense may be maintained, although the original factors involved in arriving at these responses may have changed. There is the possibility that defensive patterns related to siting and structure of settlements may be retained long after conflict and aggression have been eradicated.

Ultimately, the cultural response to defense is based in part on the limitations and advantages of the above factors. The
primary concerns include site location, defense of settlement, and defense of territory. The determination of site location involves three important variables. One is the availability of natural defense such as high ground, rock outcroppings or dense vegetation. Another variable is the spacing of settlements. The sites of friends and allies should be in close proximity to each other, while the distance between or among settlements of enemies would be at a maximum. The third variable pertaining to site location is the relocation of settlements, often involving the concentration of population into larger settlements. Siddle (1968:47), in a study of war towns in Sierra Leone, has noted that one town in particular contained an aggregation of population that exceeded the carrying capacity of the immediate environment. Satellite villages, manned by slaves, had to be established to meet the food demands of the main settlement.

The defense of settlement, including the defense of dwelling, ceremonial and storage units may involve the defense of the settlement itself or the use of refuges and guard villages outside the immediate bounds of the settlement. Within the settlement, the layout of structures may conform to defensive needs. The irregular layout of structures in Sierra Leone towns created a defensive maze which deliberately served to impede the progress of intruders (Siddle, 1968:48). The opposite of this is the location of houses on the periphery of a settlement, facing in, so that the backs of the houses form a defensive wall around the settlement. Another method of defending settlement is seen in the erection of defensive walls or stockades built around the site. This would allow for greater flexibility of the dwellings inside the stockade, but at
the same time the erection and maintenance of a defensive feature circumscribing the entire site would require greater social organization for labour, and the availability of extra materials. The use of extra-site defense, such as defended refuges, is an adaptation which can be used for the temporary defense of individuals, or for the protection of valuable or sacred items or other non-combatant materials. Bernard (1931:16-17) has noted the use of communal granaries ("guelaas") in Algeria and Morocco, built by villages on high cliffs for storage after harvest.

The defense of territory of course assumes that the group in question recognizes ownership of a territory which it wishes to defend. This may pertain to the defense of resources and subsistence areas such as water sources and agricultural fields, or it may have a more direct economic function, such as the defense of lines of communication or trade routes (cf. Stein, 1964).

Finally, what is the direct influence of aggression on settlement patterns? Warfare and aggression may have significant effects on social structure. The concentration or aggregation of population into larger, less numerous settlements is one response which has already been discussed. A corollary to this is that in large settlements, warfare may impede the process of fissioning, in which case settlements could increase beyond their maximum size with respect to resources. An example of this was seen in the Sierra Leone war towns. However, Trigger has noted that warfare may contribute to the control of population growth (Trigger, 1968: 65-66). He suggests that the defense of a settlement in terms of available labour and resources may put limitations on its overall
Evacuation is another response to warfare. Small-scale raiding of short duration may result in temporary evacuation, however full-scale warfare can contribute to the break-up of social unity and eventually to the permanent evacuation of settlement (Rowlands, 1972:459).

Finally, warfare may place limitations on social activities and exchange through the break-up of communication and trade routes.

The purpose of the preceding section has been to discuss the relationship between conflict and defense, to outline the variables associated with the aims of defense and to suggest the natural and cultural factors which could in certain situations, affect the nature of defense. A group's choice of defensive systems should reflect the particular aims of defense, environmental and cultural constraints, and the level of conflict or aggression.

Defensive Systems of the Southwest

Evidence exists for the use of a variety of defensive systems for a period of long duration in Southwestern prehistory. Farmer (1957:249-250) has proposed a typology of defensive systems for the area which include pailsades, towers, forts, hillslope retreats, fortified villages and guard villages. Pallisades, defined by Farmer (1957:249) as enclosing walls surrounding a structure, group of structures or entire village, usually constructed of vertical logs or stone masonry, seem to have been an early development in the Southwest. Hall has noted the remains of a pallisade system
existing among the Rosa Phase sites of northwestern New Mexico, dating to Pueblo I, and perhaps as early as Basketmaker III (700-900 A.D.). Rohn (1975) has found definite evidence of palisading around a Basketmaker III site in southwestern Colorado. Evidence for palisading is virtually non-existent after 900 A.D., although Neily (1977:100-105) has found evidence of a wall encircling site Arizona D:11:356 in Black Mesa which dates to Pueblo III. The paucity of late evidence may suggest that the palisade system, incorporating upright logs interwoven with brush, reflected the building technology and use of raw materials at the time, and was dropped after the introduction of above-ground jacal and stone masonry structures. However, it may also represent the possibility that a change or intensification in level of aggression made the palisade system ineffective as a defensive mechanism.

Towers are usually tall, cylindrically-shaped structures constructed of stone and chinking. They seem to have been elaborately used throughout the Southwest beginning about 1000 A.D. and carrying on into the historic period (Jeancon, 1929; Mesa Verde, Mcelmo, Hovenweep; Jeancon, 1922:8, Piedra area; O'Bryan, 1952:156, Mesa Verde; Hibben, 1948:33-36, Callina area; Keur, 1944; Largo-Blanco and Governador drainages). However, the use of towers as strictly defensive structures is questionable. In many cases, towers were connected to kivas by underground tunnels (cf. Roberts, 1930:168) which suggests a partly ceremonial function. More recently Dick (1976:17-18) and Whiteaker (1976) have suggested that towers were used as storage facilities. However, at least in some cases, towers seem to have functioned in a defensive capacity.
Lancaster and Pinkely (1954:53), for example, have noted a possible parapet on the top of a tower at Site 16 in Mesa Verde National Park, suggesting use of the tower during time of attack.

Forts, defined by Farmer as single, large structures located in or near villages may have been used as habitations or only during time of attack. They are often found on hilltops, associated with fortification walls on the lower slopes. The use of forts in the Southwest seems to have been a middle to late Pueblo II development which saw continued and more extensive use during Pueblo III. Most known forts are in the "four corners" area. Farmer (1957:254) reports a rectangular fort with thick stone walls, associated with the Medicine Valley Focus of the Cohonina of northern Arizona. It dates to about 1000 A.D. Another fort has been reported by Colton (1946:81-84) near Flagstaff. This is a large hilltop fort (16 metres by 11 metres), dated to between 900 and 1070 A.D. Other possible hilltop forts have been noted in the Verde Valley (Schroeder, 1947), and the Long House Site in Marsh Pass in northeastern Arizona (Kidder and Guernsey, 1919). The latter is a long, narrow building with high, thick walls, a roof, and a possible parapet. Farmer (1957:254) states that similar structures are noted from Hovenweep, Black Mesa, and Kaibito in northern Arizona.

Hillslope retreats incorporate one or more walls built on the slopes of hills and were used during time of attack. They are not extensively reported in the literature, possibly because of their general lack of association with other cultural remains. Those which have been noted in southwestern Colorado and south-
eastern Utah may be associated with the Fremont Culture (Wormington, 1955).

The fortified village or town system was a major defensive type on the Colorado Plateau. In this case, it is the arrangement of the village layout which forms a defensible unit. The system was first used in the Chaco Canyon during Pueblo II (Farmer, 1957: 254), and reached its full extent in the Anasazi area during Pueblo III. The large enclosed or semi-enclosed town, seen in Chaco Canyon (cf. Judd, 1964, Vivian, 1970) was but one form of the fortified village. Another form, typical of Pueblo III, was the "cliff-dweller" village, such as Double House, Mug House and Cliff Palace in the Mesa Verde area. In addition, numerous, small isolated, fortified villages were built on mesa tops or mesa points. Outside of the four corners area, large-walled, fortified pueblos associated with Pueblo III and IV are known from Cebolleta Mesa, west of Acoma (Dittert and Ruppe, 1952). Hohokam villages of the late Soho and Civano Phases (c. 1275-1400 A.D.) were often surrounded by a compound wall (Schroeder, 1953).

Guard villages have been known in the Southwest from the ethnohistoric period among the Hopi (Dozier, 1956: 176-179), however, evidence as reported in the literature for their existence archaeologically is minimal. This may simply reflect a lack of interpretation or recognition on the part of investigators. Dean et al (1978: 33), for example, do not make direct reference to defense but state that of the five Tsegi Phase habitation clusters in Long House Valley, northeast Arizona, four are located on the valley floor, and one overlooks Tsegi Canyon at the confluence
of Long House Valley wash and Laguna Creek. These latter sites may have served a guard village function. In addition, Dean et al. state that visual communication among the central sites of each valley floor cluster was established so that each had a clear line of site of the other. The presence of guard villages in Lake Canyon in the Red Rock Plateau during the Horsefly Hollow Phase (1210-1260 A.D.) is also suggested by Lipe (1967:351):

"Community integration in Lake Canyon was nevertheless sufficient to maintain special storage, assembly, and defensive sites serving all or most of the canyon's many small residence units".

In addition to the list of defensive features suggested by Farmer, Lipe (1967:351) has noted that residential site size may have been a function of defensive need. He states that the Red Rock Plateau's largest pueblos occur in the canyon's with the smallest and most vulnerable populations. Matson and Lipe (1978:10) also report defensive features at Cedar Mesa which include walls barring access along a ledge, and doorways flanked by walls pierced with loopholes. The access-barring wall concept was also noted by Wasley and Johnson (1965:63, Fig. 38) at Arizona T13:8, a Classic Hohokam site in southwestern Arizona. In this case, the wall spans a ledge, dissecting the site. The structures at the end of the ledge are protected by steep cliff-faces on three sides and the wall on the fourth side, suggesting use as a fort complex or refuge in time of attack.

The evidence suggests that throughout the Colorado Plateau, defense was a concern of ever-increasing importance prehistorically, beginning at a point quite early in time, and culminating in the
eventual abandonment of the area. From scattered pallisade structures, dating to late Basketmaker III and Pueblo I to the large, internalized pueblos, fortified smaller villages, "cliff-dweller" sites, guard villages, and extra-site storage facilities of Pueblo III, the need for defense became more and more a factor of life among the pueblos as population continued to grow and competition for available resources became more intense. Evidence for defense prior to Pueblo III exists, but it is minimal. It suggests that raiding between groups may have been practised, but probably not to the extent that it would have had a serious influence on settlement. The connection of so-called "defensive towers" to kivas by means of an underground tunnel during Pueblo II suggests that conflict and aggression at this time may have been associated with ceremony and ritual, rather than having a definite economic function. This is a possibility which Hauley (1951) has elaborated ethnographically for the Hopi and Zuni with respect to the "war cult". Bunzell (1932:525) states that pueblos were probably never aggressive warriors and that the war cult was most important in the ritual and ceremonial life of the pueblos, and Egan (1950:250) would seem to agree with this. He states that the role of the war leader and his assistant was to protect the village from external, internal and supernatural enemies.

Previous Hypotheses for Aggregation and Abandonment

Pueblo I and Pueblo II formed a period of relative cultural stability during which time, Lipe (1978:370) states, the Anasazi reached their maximum geographic distribution and probably their
population peak. This growth may have been abetted by a fairly stable climate (Schoenwetter and Eddy, 1964, Paerris and Bryson, 1965), and the introduction to the Plateau of a heartier highland maize (Galinat and Gunnerson, 1963). However, by about 1100-1150 A.D., as population growth continued, competition for available land and storage security became increasingly important. It was during this time that population aggregation took place on the Plateau, and this coincided with a marked increase in the occurrence of defensive features associated with settlement.

The hypothesis most commonly advanced to account for population aggregation during Pueblo III is that of Lipe (1978) and Longacre (1968). They contend that population growth took place during Pueblo I and II under favourable environmental conditions. However, when these environmental conditions, and especially the rainfall pattern became more variable, there occurred a convergence of population, combining small, single lineage villages into larger, multi-lineage communities. Their arguments hinge on the notion of environmental and climatic decline during Pueblo III, but the evidence for this deterioration is not conclusive. Moreover, there is no reason to believe that environmental deterioration, if it did occur during Pueblo III, would have lead to an aggregation of population. An alternative hypothesis to account for Pueblo III population aggregation is that population concentration into large, multi-lineage pueblo communities represented a particular defensive adaptation among certain groups.

Dean (1970) has argued that a shift from localized to non-localized lineages and clans coincided with the development of multi-lineage communities. However, Aberle (1970) has suggested
that dispersed clans may have existed long before the beginning of aggregation. One possible reason which he suggests for this is the utility of dispersed clans in creating strong inter-community bonds (Aberle, 1970:219-220). Given a predilection for conflict and aggressive behaviour beginning as early as Basketmaker III, dispersed clans may have served an active and useful role in the formation of alliances among mono-lineage villages. With an increase in conflict and aggression as seen in the rise of defensive architecture during Pueblo III, a shift in settlement from allied mono-lineage communities to multi-lineage communities for reasons of increased security would be in order.

Numerous hypotheses have been advanced to account for abandonment of the Plateau. They have been revived by Jett (1964) and Lipe (1978). Among the problems with these various hypotheses has been a) a lack of recognition of the importance of conflict in Plateau abandonment, and b) an over-emphasis of the role of aggression. The "Great Drought" hypothesis of Douglass (1929), and the "arroyo-cutting" hypothesis of Bryan (1941, 1954) are examples of the former problem. They stress climatic factors in the question of relocation to the virtual exclusion of any cultural constraints. Moreover, the Great Drought, as perceived by Douglass, occurred in the late 13th century, after the abandonment of much of the Plateau. Bryan's arroyo-cutting hypothesis does not explain why Canyon de Chelley was abandoned, where arroyo-cutting did not take place (Jett, 1964:281), and why mesa tops were abandoned where rainfall farming was practised. The "hostile nomads" hypothesis, supported by Jett (1964), is an example of the over-emphasis of
conflict. He favours the idea that Athapaskan raiders, using guerrilla tactics, caused the abandonment of the pueblos, but Hester (1962) suggests that Athapaskans did not enter the area until after 1300 A.D. Interpueblo warfare, as suggested by Linton (1944), would seem to be the most reasonable hypothesis to account for the build-up of defensive features among the Pueblo III pueblos and smaller villages. Jett (1964) has argued that internecine warfare, based on small-scale raiding, is unlikely as the sole cause for pueblo abandonment. However, an analysis of defensive features among Pueblo III sites in the Cedar Mesa area of southeastern Utah indicates that interpueblo warfare may have played a significant role in the rise of defensive architecture, and in the ultimate abandonment of the area.

Defense on Cedar Mesa

The analysis of sites from Cedar Mesa concentrated mainly on cliffside sites or sites located on rocky promontories on or near mesa tops. All sites were dated to late Pueblo II or Pueblo III. It should be noted here that this does not reflect a general frequency that all defensive sites in the Cedar Mesa area date to Pueblo III. Rather, the survey of sites from which this data were obtained concentrated on upland locations where Pueblo III sites are most likely to be found. Data from lowland locations, where possible Pueblo II (or earlier) defensive sites existed were not available. The selection of sites for analysis was based on their location. Only sites incorporating "defensible locations" were studied. A total of 39 sites were considered, of which 19 were thought to exhibit some concern for defense. The purpose of
the Cedar Mesa study was to determine the aims and methods of defense in a defined area of the Southwest. The determination of the aims of defense incorporated a basic assumption that the cultural features most frequently associated with defensive systems were those features which were considered by the inhabitants most important to defend. Thus, if kivas, for example, were found to be most commonly associated with defensive features, then it could be inferred that the occupants of the sites considered the defense of kivas and ceremonial structures to be of primary importance, and that the aims of defense would be ceremonial and possibly socio-political in nature. The determination of the method of defense was simply to delineate all possible features which were considered to have a defensive function. This included such features as non-structure walls (walls which did not form part of a dwelling, storage or ceremonial unit), in-wall features such as loopholes, defensive structures (lookouts, bastions), restricted access or features which would control access, and site location incorporating natural defensive features.

The incorporation of natural defense appeared to be the feature most commonly associated with site defense. This was of course due in large part to the fact that the sites selected for study were chosen on the basis of their defensible locations. However, it was noted that the sites which incorporated natural defensive features such as rock shelter overhangs and steep cliff faces tended to be the same sites which incorporated structural defensive features, such as walls and loopholes; that is the strongly defended sites which utilized man-made fortification features also tended to incorporate natural features as a manner of defense. It was
found that sites whose defensible location was questionable, such as canyon bottom sites, or sites where access was easy and from more than one direction, generally did not incorporate any structural defensive features. (The possible exception to this rule was WJ-C3-1, a streamside site which may have incorporated a wall partially encircling the site). The natural defensive features utilized by the Cedar Mesa sites were of two types. The most common type was the use of a steep cliff or canyon face for site location. Of the 19 sites which were thought to have incorporated some manner of defense, 16 were located under rock shelters on cliff or canyon walls. In many cases, the cliffside location of these sites was the only discernible defensive feature. The next most common type was the use of a rocky promontory or hilltop for site location. Two sites (WJ-C9-4 and HS-C12-5) exemplified this type. WJ-C9-4 was a fortified village on a hilltop for which access was from a single direction along a narrow ridge. Two walls cross-cutting the ridge controlled the access route. The site incorporated other defensive features such as encircling walls and loopholes. The use of fortification walls and controlled access suggests that WJ-C9-4 may have functioned as a refuge for other sites in the area (although exact distribution of sites was not known, and therefore precludes any definite conclusions). HS-C12-5 was located on a rocky promontory which provided excellent natural defense. Fortification walls located below the site also helped to restrict access.

Definite evidence for man-made or structural defensive features was found at only some of the Cedar Mesa defensive sites. Part of the problem encountered here was in determining whether walls,
which were often found in poor states of preservation, were originally part of dwelling, storage or ceremonial units or whether they functioned defensively to restrict access. In addition, in-wall defensive features such as loopholes could only be discerned in walls that were still standing. Fallen walls could easily erase evidence of defensive features. It should also be noted that walls that did not form part of a dwelling, storage or ceremonial unit did not necessarily have a defensive function either. For example, free-standing walls along the edge of ledges of cliff-dwellings may have been built as a safety precaution to keep occupants in rather than to keep intruders out. Free-standing defensive or fortification walls would most likely be found at the point of access to a site and would tend to restrict access into the site. This pattern was noted at the two hilltop or rocky promontory sites, WJ-C9-4 and HS-C12-5, and also among the cliffside sites in Grand Gulch (GG12.1, GG23.1, GG3.1).

Free-standing walls could also be assumed to have served a defensive function if they were situated in a manner that would provide protection or concealment for a room or block of rooms. This pattern was noted at Site GG13.1, a cliffside site in which Feature Q, a non-structure wall running a length of 30 metres, passed in front of rooms R, S, and T, providing protection for these rooms. Feature T, a non-structure wall at Site GG23.1, was situated in a similar manner in front of a block of rooms on the upper ledge of the site.

In conclusion, the use of a defensible location with difficult access was the most frequently occurring method of defense noted among the Cedar Mesa sites. This generally involved the use of a
rockshelter or protected ledge in a steep cliffside or canyon wall. It was often the case that these sites would occupy two ledges, upper and lower, for which access to the upper ledge was most difficult. This was noted among a number of the Grand Gulch sites (GG12.1, 13.1, 23.1, 3.1) and also at Sites Tl.2, M1 and M3. The general pattern observed here included the location of kivas and dwelling units (as suggested by the presence of hearths and ash pits) on the lower ledges, and smaller room structures (dwellings and storage) on the upper ledges. Man-made or fortification defensive features usually involved the construction of freestanding walls which tended to impede access to the site or portion of the site, and which in some cases were situated to protect or conceal blocks of rooms. At one site, Tl.2, two unspecified "defensive structures" were located along the main access route to the site.

It is tentatively suggested that the main aim of defense among the Cedar Mesa sites was of an economic nature. This conclusion is based on the apparent association of defensive features with storage facilities rather than ceremonial or quasi-ceremonial features. This association is most notable among the "two level" cliffside sites in the Grand Gulch area. The upper levels of these sites, which were more inaccessible than the lower levels, and which generally incorporated man-made defensive features such as freestanding walls, were typically associated with storage. Kivas were generally found on the lower levels where concern for defense was less strong. It was also noted that among sites where large-scale storage facilities were not present concern for defense was also minimal, as reflected in the general lack of environmental
or architectural defensive features. Many of these sites were identified as habitation sites which included kivas or quasi-ceremonial structures. There was no evidence of defense among the Cedar Mesa sites which did not include probable storage units.

Nonetheless, the conclusion that defense of storage was the primary concern of the occupants of the Cedar Mesa sites must remain tentative. Three sites (NR-C17-2, UGG-C10-1, and BU-C6-1) contained storage facilities, but no evidence of defensive features. Moreover, the identification of features as storage facilities is based primarily on small room size and lack of associated hearth features or ash pits which would suggest other domestic activities. The distinct possibility exists that some of the rooms identified as storage facilities were in fact associated with other functions.

The evidence from the Cedar Mesa survey also indicates that defense of settlement, rather than defense of territory was the primary concern of the occupants. Structural defensive features were associated with features within sites. There is no evidence of defensive features existing outside of sites, such as around agricultural fields. Numerous isolated "towers" exist on small, but high plateaus, but these apparently fell outside survey areas because such towers were considerable distances from canyons.

Summary and Conclusions

The analysis of the literature pertaining to defense and defensive sites in the Southwest, and a more intensive analysis of defensive sites in the Cedar Mesa area, has brought into focus a number of key points.

The association of defensive features with storage facilities among the Cedar Mesa sites, and the lack of association of defensive features with agricultural fields tends to provide support for
Linton's (1944) hypothesis that the nature of conflict in the Southwest was small-scale raiding among pueblo groups rather than raiding by hunters and gatherers from outside the Plateau area. It was previously stated that groups practising a similar subsistence economy would be more likely to observe "safe" periods such as the growing season when aggressive behaviour would be curtailed. Groups practising a different subsistence economy, such as hunting and gathering, would probably not observe safe periods, and would conduct raids for food on fields as well as storage facilities.

The defense of storage, and the lack of defense of fields indicates that safe periods were observed, suggesting that pueblo groups were primarily concerned with defense against other pueblo groups.

It was also noted that environmental and architectural defensive features were most commonly associated with "medium-size" sites (eg. - GC231, WJ-C9-4); that is, sites which were large enough to practise community storage, but smaller than the large-scale pueblo towns which developed in late Pueblo III and were most notable during Pueblo IV. The inference which may be drawn here is that medium-size sites were most susceptible to attack. The smaller sites which did not practise large-scale community storage had little fear of attack. The large pueblo towns did practise community storage, but in their case, population concentration acted as a deterrent to aggression. Among medium-size sites, where population concentration was not as big, other means of defense had to be implemented.

The smaller sites at Cedar Mesa (eg - WJ-C27-2) often showed little evidence of storage of any kind. This indicates the
possibility that members of the smaller communities stored their food at the larger, more heavily defended sites. This further suggests the possibility that alliances existed among sites for reasons of refuge and greater storage security. This possibility is supported by Aberle's (1970) concept that dispersed clans, which would probably form the basis of an alliance, had a long history in the Southwest, dating back to at least Pueblo II.

Finally, the evidence pertaining to the rise of defense during Pueblo III indicates that conflict and aggression became a significant factor in Plateau prehistory and ultimately played a vital role in the aggregation of population and eventual abandonment of the area. Population aggregation, in the form of large pueblo towns, was found to be most evident in the sparsely populated valleys and canyon bottoms, as noted by Lipe (1967:351). These areas were environmentally least suited to defense. Thus, large-scale aggregation of population among canyon bottom dwellers for mutual protection became one response to the need for defense. The relationship between aggression and aggregation is also demonstrated by the strongly defended medium-size sites noted in the Cedar Mesa study. In this case, population aggregation was on a smaller scale than the large pueblo towns, but the combination of aggregation and environmental and architectural features provided suitable security for food storage which was the primary defensive concern among the puebloan groups.

The exact relationship between aggression and abandonment of the Plateau remains unclear. It is clear, however, that aggression
increased significantly during Pueblo III, and the main reason for this increase seemed to be the lack of availability of food. It is therefore reasonable to suggest that as the availability of food became more and more restricted among pueblo groups, the incidence of conflict and aggression rose concomitantly. Ultimately, the mechanisms utilized to defend against aggression, including population aggregation and the use of environmental and architectural defensive features, became insubstantial in stemming the escalating conflict, and abandonment of the Plateau became the only solution.
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