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Article Summary: This is one of a series of articles based on presentations at a mini-symposium "Toward Plains Caddoan Origins: A Symposium" held at the Smithsonian Institution in November, 1976. This article is concerned with the Pawnee whose villages were situated on the Loup, Platte, Blue and Republican Rivers.

AN ARCHEOLOGICAL VIEW OF PAWNEE ORIGINS

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The Pawnee and Arikara were prominent village tribes during historic times. Due to their linguistic affiliation it is generally believed that these people migrated into the Plains from the south and Pawnee-Arikara origins have attracted the interest of many scholars. The following discussion is primarily concerned with the Pawnee whose villages were situated on the Loup, Platte, Blue and Republican Rivers. The Pawnee were divided into the Skidi and South Bands, the latter being the Grand, Republican and Tappage. (See Figure 1 d.)

The direct historic approach identified Pawnee and Arikara sites (Strong 1940; Wedel 1936, 1938) for culture historical reconstruction in archeology. The Lower Loup Phase has been identified as proto-historic Pawnee (Wedel 1936, 1938; Grange 1968), extending archeological identification of the tribe from 1750 to about A.D. 1500. At a more remote time the thread of direct identification is lost but it has long been suggested (Strong 1935: 277) that sites of the Upper Republican culture may represent these Caddoan people in late prehistoric times. Deetz has reviewed in detail Strong's (1940) and Spaulding's (1956) discussions linking the Arzberger Site with the Arikara and, through ceramic similarities, to the Lower Loup and Upper Republican cultures of the Central Plains (Deetz 1965:22-3). A direct link between the Pawnee tradition and *specific* Central Plains Tradition sites or phases has yet to be demonstrated, but remains a continuing research goal.

Archeological reconstruction pales in conservative contrast with historical interpretations tracing tribal movements over long distances and time periods. Haines has recently postulated a Pawnee migration from the Red River to the Platte Valley in one or two month-long stages (Haines 1976: 16-25). He asserts that the Skidi split off during the original northward migration,

moved to the Ohio River valley, and later entered the Central Plains in company with the Omaha (Haines 1976:40-48). Haines' reconstruction appears to follow that of Hyde's *Indians of the Woodlands* (Hyde 1962).

Although he once postulated a northward migration for the Skidi (Hyde 1974:57), Hyde accepted a Skidi tradition of fleeing the headwaters of the Ohio to rejoin their Pawnee kin in Nebraska (Hyde 1962:14). Hyde identified the Skidi with the Lower Loup archeological phase (Hyde 1962:15, 210) and the Arzberger Site in South Dakota with Pawnee or Arikara, comparing the bastioned ditches at the latter with the Angel Site in Indiana (Hyde 1962:265). He asserted that Arzberger pottery closely resembled "the pottery of the Iroquoian tribes. . . and the Skidi Pawnees" (Hyde 1962: 265). Hyde's evidence apparently rested on some Iroquois sherds once erroneously catalogued as coming from Nebraska (Wedel: 1976 Mini-Symposium).

With or without the Iroquois sherds, Haines' and Hyde's interpretations stretch faint trait similarities into established chains of fact far more readily than archeologists would accept. There is no substantive archeological support for the Ohio valley migration origin of the Skidi Pawnee.

The details are too extensive to repeat here but the efforts of Blackman, Strong, Hill and Wedel resulted in the identification of numerous historic Pawnee sites in Nebraska (Grange 1968: 3-4). Sites in Kansas have been excavated by the University of Kansas and the Kansas Historical Society (Roberts 1978). Excavations by the Nebraska State Historical Society and the University of Nebraska (Grange 1968: 6) resulted in the delineation of the Lower Loup Focus, a group of sites identified as proto-historic Pawnee. Although there is a report by Dunlevy (1936) and Wedel's various publications, very little of the Pawnee and Lower Loup material has been described or interpreted in print. A comprehensive ceramic study (Grange 1968) is the basis for most of the following discussion of the archeological reconstruction of Pawnee origins.

Ceramic analysis has confirmed the hypothesis that historic Pawnee and proto-historic Lower Loup pottery types were temporal variations of a single ceramic tradition. Historical dates and stratified deposits were used as the framework for a seriation of sites and features within sites. The latter excavation unit

seriation demonstrated that many proto-historic sites had been occupied simultaneously rather than in sequence (Grange 1968: 106), and this parallels the overlapping occupations of historic Pawnee villages. These simultaneous occupations were due to the spatial separation of the four historic period divisions, the Skidi, Grand, Tappage and Republican bands.

Although the possibility that ceramic variations might differentiate historic Pawnee bands was recognized, the uniformity of the pottery discouraged earlier investigators (Strong 1935: 57) and the proposed (Wedel 1936: 63) detailed analysis had never been performed. Most earlier studies dealt with Lower Loup in the framework of the Midwestern Taxonomic Method, and variations among Lower Loup sites were not emphasized. Differences which were recognized were seen as evidence for the different taxonomic placement of the sites in question (Grange 1968: 27) or as evidence of chronological variation (Grange 1968: 132).

The new basis for comparison was dual control of chronology and band identification factors, and comparisons of dated Skidi, Grand, Republican and Tappage sites were coupled with an analysis of variation within the protohistoric Lower Loup pottery and sites. Sites were subdivided according to location within the Pawnee region. Two local sequences of Lower Loup sites were developed and linked with identified sites of the Skidi and Grand Pawnee of the historic period (Grange 1968: 131-138). Two of the historic bands do not appear to have proto-historic antecedents. No proto-historic sites are known in the Republican band locality and that group appears to be a recent offshoot of the Grand Pawnee. Little is known of the archeology of the Tappage band and no proto-historic sites are in the locality of the identified historic village on the Blue River. A Lower Loup component at the Ashland Site, far east of other proto-historic localities, could not be linked with the historic band either through location or ceramic similarity. The Ashland Site Lower Loup is a late component of a site with both Nebraska Phase and Oneota occupation features.

One locality on the Loup River (Figure 1 b.) includes several proto-historic Lower Loup sites as well as historic Skidi villages. Of these the Palmer Site contains ceramics while the remainder are later Skidi villages of the post-1840 period when the Pawnee no longer made pottery. Unfortunately, the Palmer Site has

never been excavated and only limited test and surface collections are available for comparative study. More data from this important site are needed to fully demonstrate the link between historic Skidi and Lower Loup sites in the Beaver Creek locality. Lower Loup sites here exhibit some distinctive ceramic traits. For example, Wright Collared Ware is relatively more frequent in these sites (Grange 1968: Figure 10).

A second locality in which distinctive Lower Loup ceramic frequencies were found is on Shell Creek, an eastern tributary of the Loup and nearby on Skull Creek and the south bank of the Platte River (Figure 1b, c). In the seriation study these sites were found to be slightly later than the Beaver Creek sites (Grange 1968: Figure 7). The Shell Creek sites (Dunlevy 1936) are relatively earlier than those on Skull Creek and south of the Platte. The latter are relatively late in the seriation and are in the same location as the early historically identified Grand Pawnee villages. It was in these sites that Butler Braced, a transitional ceramic type between Colfax Braced of the proto-historic period and Webster Collar Braced of the historic period, is most frequent. The Skull Creek and south Platte proto-historic sites are linked by location and ceramic seriation to the historic Grand Pawnee. A new component excavated in the Platte River locality has been identified as a transitional phase of A.D. 1725 to 1775 (Carlson and Jensen 1973: 57-80). Application of the ceramic formula dating method has been possible with Pawnee material (Grange 1974) and the new transitional site can be dated at 1747 by this method. That date represents the approximate mid-point of the occupation.

The best evidence for a transition from proto-historic to historic Pawnee is thus seen in the Platte River locality. To date the transition has only been studied through the ceramic evidence. The transition from proto-historic Lower Loup to historic Grand Pawnee parallels the postulated transition from Lower Loup to Skidi in the Loup River locality. Thus, both Skidi and Grand Pawnee can be traced into proto-historic times by the archeological evidence while the Republican and Tappage appear to emerge in the historic period. The Republican and Tappage most closely resemble the Grand Pawnee in ceramic traits and were probably derived from that division. Indeed, the Republican and Grand periodically shared the same village in historic times.

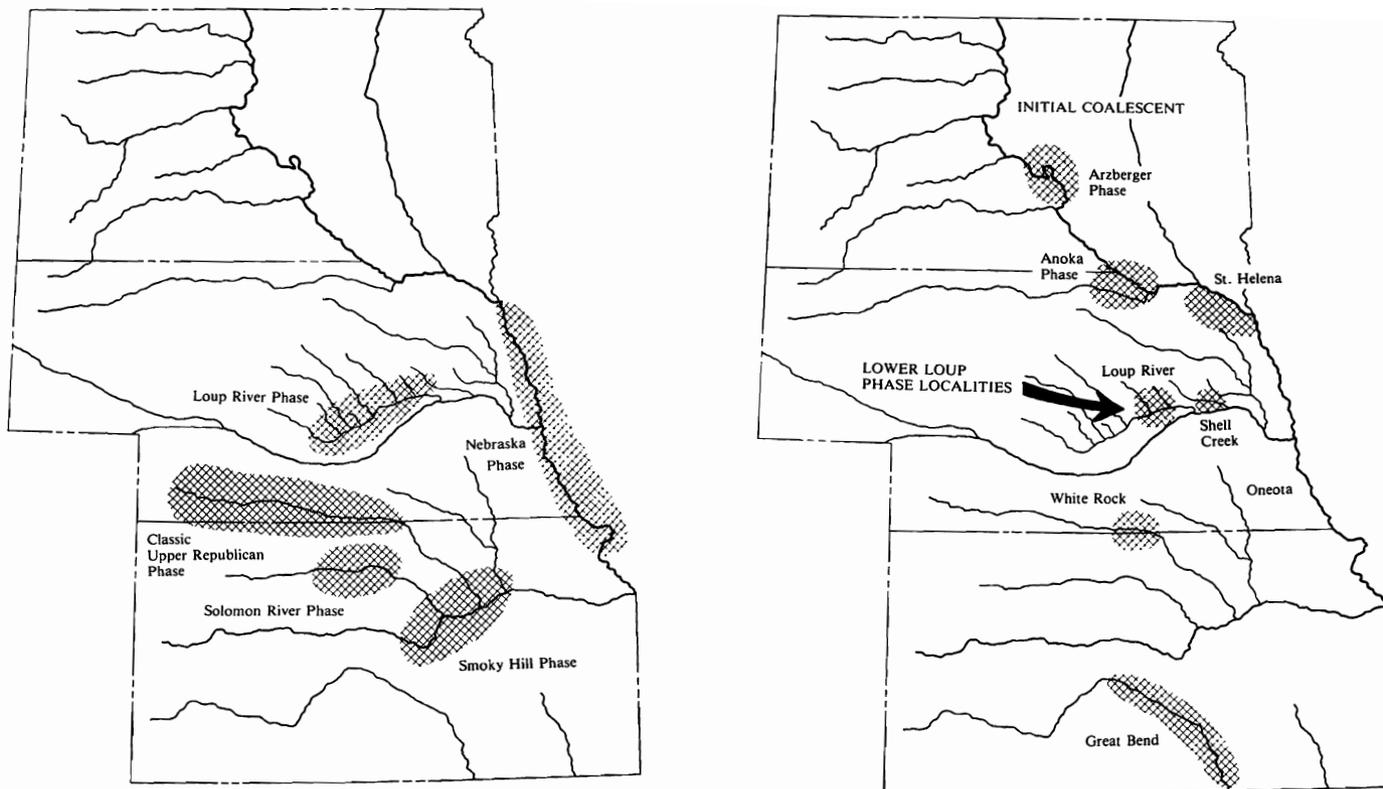


Figure 1. Locations of phases and cultures. A. 1000-1400 A.D. B. 1400-1550 A.D.

In summary, the proto-historic Lower Loup occupation began on the Loup River at Beaver Creek, later to become identified as the Skidi. Shortly thereafter villages were established in a second locality on Shell Creek to the east. While the Loup River occupation continued and expanded with the establishment of new villages on Beaver and nearby creeks, the Shell Creek habitation gave way to new locations on Skull Creek and south of the Platte River where these people became identified as the Grand Pawnee. This archeological reconstruction parallels Dorsey's reconstruction based on Pawnee traditions. He suggested that the Grand, Republican and Tappage bands represent offshoots of the Skidi through the single band called Kawarahkis (Dorsey 1906: 9). It is possible that the Shell Creek settlements of the proto-historic period may be the Kawarahkis but their location is a major problem. Dorsey places these events in the Nemaha area of southeastern Nebraska rather than in the area of the archeological data (Grange 1968: 143).

Identifying historic bands in the proto-historic period does not solve the problem of the ultimate origin of the Pawnee in the Central Plains. Links to the prehistoric period must be found.

An important issue is the dating of the proto-historic phase and one approach is through cross-finds of trade ceramics. Lower Loup sherds have been found in Great Bend sites and some Great Bend specimens have been found in Lower Loup sites. Wedel identifies the Great Bend culture of central Kansas as the one contacted by Coronado in 1541 (Wedel 1959: 585) or by Onate in 1601 (Wedel 1975) and these cross-finds tend to strengthen the identification of Lower Loup as the *Harahey* of that time. Thus a 1541 to 1601 date can be extended to the Lower Loup. The Great Bend specimens are present in both the early Loup River locality and the Shell Creek locality sites. Other cross-finds of pottery link the Lower Loup with Oneota and the White Rock Aspect (Grange 1968: 122). Figures 1 and 2 depict the spatial and chronological relationship of these and other cultures related to the Pawnee problem. It is notable that no ceramic evidence of contact between later Lower Loup sites and the Dismal River culture identified as Plains Apache of about A.D. 1675-1768 (Gunnerson 1968; Schlesier 1972) has been found although it was chronologically possible for such contacts to have taken place.

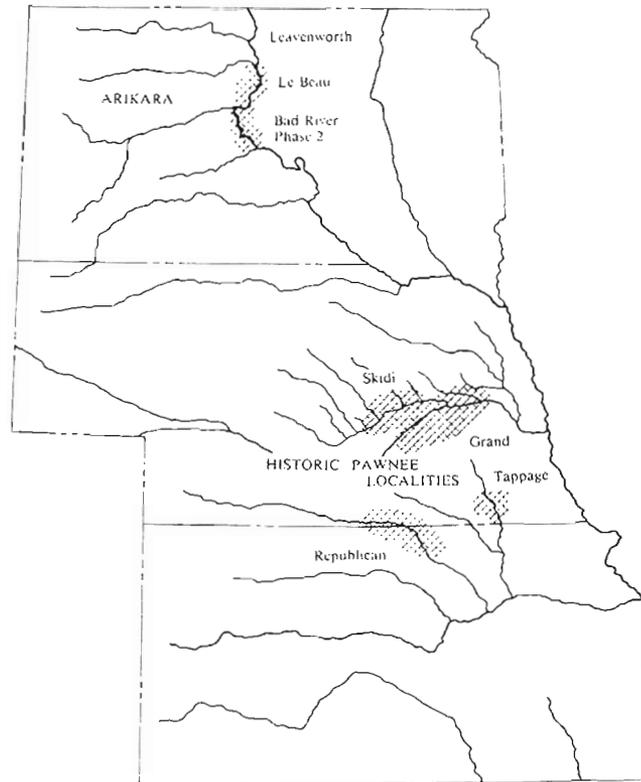
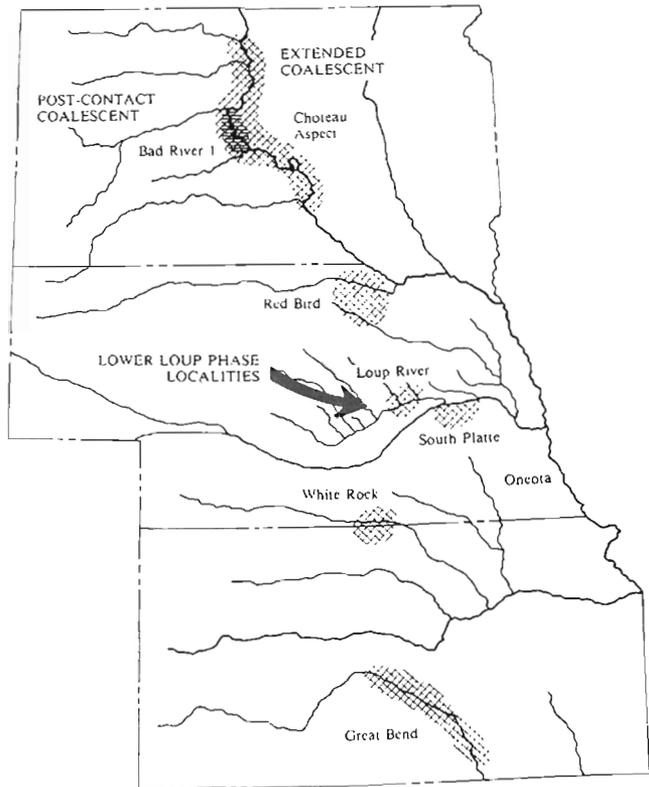


Figure 1. Locations of phases and cultures. C. 1550-1750 A.D. D. 1750-1875 A.D.

Two radio-carbon dates for the Lower Loup Phase are available, both from sites in the Loup River Locality. One from the Burkett Site (25NC1) was expected to fall within the early to middle portion of the phase seriation while the other, from the Wright Site (25NC3) was expected to be later. These dates are A.D. 1630 (M-1368: 320±100) and A.D. 1680 (M-1369: 270±100) respectively (Grange 1968: 129). Calibrated in the same manner Lehmer used for Middle Missouri dates (Lehmer 1971: 58), these dates can be expressed as A.D. 1560 and A.D. 1580. Coupled with the ceramic cross-find information an estimate of about A.D. 1500 to A.D. 1550 for the *beginning* of the Lower Loup Phase is reasonable. The end of the proto-historic phase is marked by the historic Pawnee period of ca. 1750-1876 (Grange 1978: Table 3). Ethnohistorical identifications could push the historical period into the late 17th and early 18th century (Grange 1968: 120-21; Wedel, M. 1976 and this volume).

An initial date of about A.D. 1500 is consistent with suggestions that the prehistoric antecedents of the Pawnee are to be found among the Central Plains Tradition sites of the period from about A.D. 900 to A.D. 1500 or later (Lehmer 1971: 109; Deetz 1965: 9-10). Strong's opinion was that there was evidence of a transition from square to round earthlodges, citing particularly an intermediate type structure at Sweetwater (Strong 1935: 176). He also interpreted generalized ceramic traits of collar, rim and handle forms and decoration as evidence of this cultural transition which he felt was incompletely known at the time (Strong 1935: 277). Now called the Loup River Phase (Ludwickson 1978: 95) these sites may fall at the chronological juncture of late Upper Republican and the Lower Loup Phase (Ludwickson 1978: 103). Ludwickson has defined a more extensive territory for the Loup River Phase which overlaps the Lower Loup-Pawnee region (Ludwickson 1975: 96) adding sites to the original total. He also notes an increase in the number of circular house floors (Ludwickson 1975: 101) although the smaller size of the houses might imply patrilocal residence. The changing house form would be consistent with transition to Lower Loup and Pawnee.

The link between Upper Republican cord roughened ceramics and the simple stamped pottery of the proto-historic and historic periods predicted 40 years ago by Strong (1935: 277) is a necessary part of the evidence which would permit tracing the Pawnee into prehistoric times.

There is some evidence supporting Strong's prediction. The detailed analysis of Pawnee and Lower Loup ceramics revealed some previously unrecognized sherds in the earliest features at the Burkett Site in the Loup River Sequence where cord roughened surface treatment is present on 1.9 percent of the total bodysherd sample. In some deposits such sherds are 20 to 30 percent of the ceramics present. Cord roughened sherds are also found in 25NC3 and 25PT13 in the Loup River locality and at 25CX1 and 25CX2 in the Shell Creek locality, although amounting to less than 1 percent in each of those sites (Grange 1968).

At the Burkett Site (25NC1) the associated rim sherds of these types, Burkett Collared and Burkett Cord Roughened, are present as part of the ceramic assemblage in four houses. They range from 4 to 29 percent of the house pottery and in three cases are in excess of 20 percent of the pottery from the structure. It is interesting that one of these houses has 6 center posts, a structural feature more characteristic of later Pawnee sites. One of these four houses has four double center posts, a pattern found in some cases in sites containing a mixture of Upper Republican and Nebraska Culture traits. Such houses, sub-type B, are found at Walker Gilmore, Wiseman, Champe and Schrader sites (Wood 1952: Table I). Sites with these mixed traits also include some pottery with "decorations nearly identical with that found on some protohistoric Pawnee sherds" (Wood 1952: 11). The houses Wood was classifying were all square with rounded corners while the Lower Loup structures are all circular houses. Thus at Burkett the cord roughened ceramics are associated with circular houses having 4, 4 double or 6 center posts. The remainder of the ceramic content of these houses is typically Lower Loup and simple stamped. It was suggested at the time of the ceramic study that there was an early sub-phase of occupation at the Burkett Site (Grange 1968: 63-64, 104).

The presence of cord roughened pottery as an integral part of the Lower Loup ceramic complex constitutes some evidence of the required ceramic transition which would link the protohistoric sites with the late prehistoric period and thus to extend the identification of the Pawnee into prehistoric times. Further excavation of those parts of the sites where these early ceramics have been found would probably be helpful in the clarification of this problem.

The cord roughened specimens have both flaring and collared rims. Decorations on the collared rims include cross-hatching, horizontal parallel lines and parallel diagonal incised lines which are similar to the form and surface treatment of pottery in many Upper Republican and some Nebraska Aspect sites (Strong 1935; Champe 1936; Hill and Cooper 1935; Wedel 1934). There are also striking similarities in these ceramic traits with materials from the St. Helena Focus and the Lynch Site in northeastern Nebraska and the Arzberger Site in South Dakota (Grange 1968: 125). At Arzberger these rim forms and decorative motifs are associated with both cord roughened and simple stamped surface treatments (Spaulding 1956: 135). Ludwickson (1978: 100) sees comparative significance in the diversity of ceramic decoration in the Loup River Phase and the St. Helena Phase.

It is important to note that these ceramic similarities link the earliest sub-phase of the Lower Loup sequence with both Central Plains Tradition sites in Nebraska and Initial Coalescent Variant in the Middle Missouri (Lehmer 1971: 111-15). That variant represents a Central Plains intrusion into the Middle Missouri (Lehmer 1971: 115) in a sequence which ultimately leads to the historic Arikara (Deetz 1965: 9-23; Smith 1977: 152, 155-156; Kivett and Jensen 1976: 77-78; Lehmer and Jones 1968: 80, 84). The Anoka Phase Lynch Site should be distinguished as a separate phase or subphase (Lehmer 1971: 115; Kivett and Jensen 1976:78).

The Burkett Collared and Cord Roughened wares in the Lower Loup assemblage are found in the same features which contain the far less frequent Great Bend, Oneota and White Rock Aspect sherds thought to represent intermittent trade contacts. The period in which these exotic wares overlap the St. Helena and Initial Coalescent pottery types which are similar to Burkett Cord Roughened and Burkett Collared is between A.D. 1500 and 1550 as shown in Figure 2. The remainder of the associated pottery in these features at the Burkett Site (25NC1) is typical Lower Loup material. This constitutes part of the evidence that initial Lower Loup dates to this period and it also indicates that Lower Loup was established by the latter part of the A.D. 1400 to 1550 period which saw the development of the Initial Coalescent Variant in the Middle Missouri. If this is correct Lower Loup, and therefore the Pawnee, were already distinct by this time.

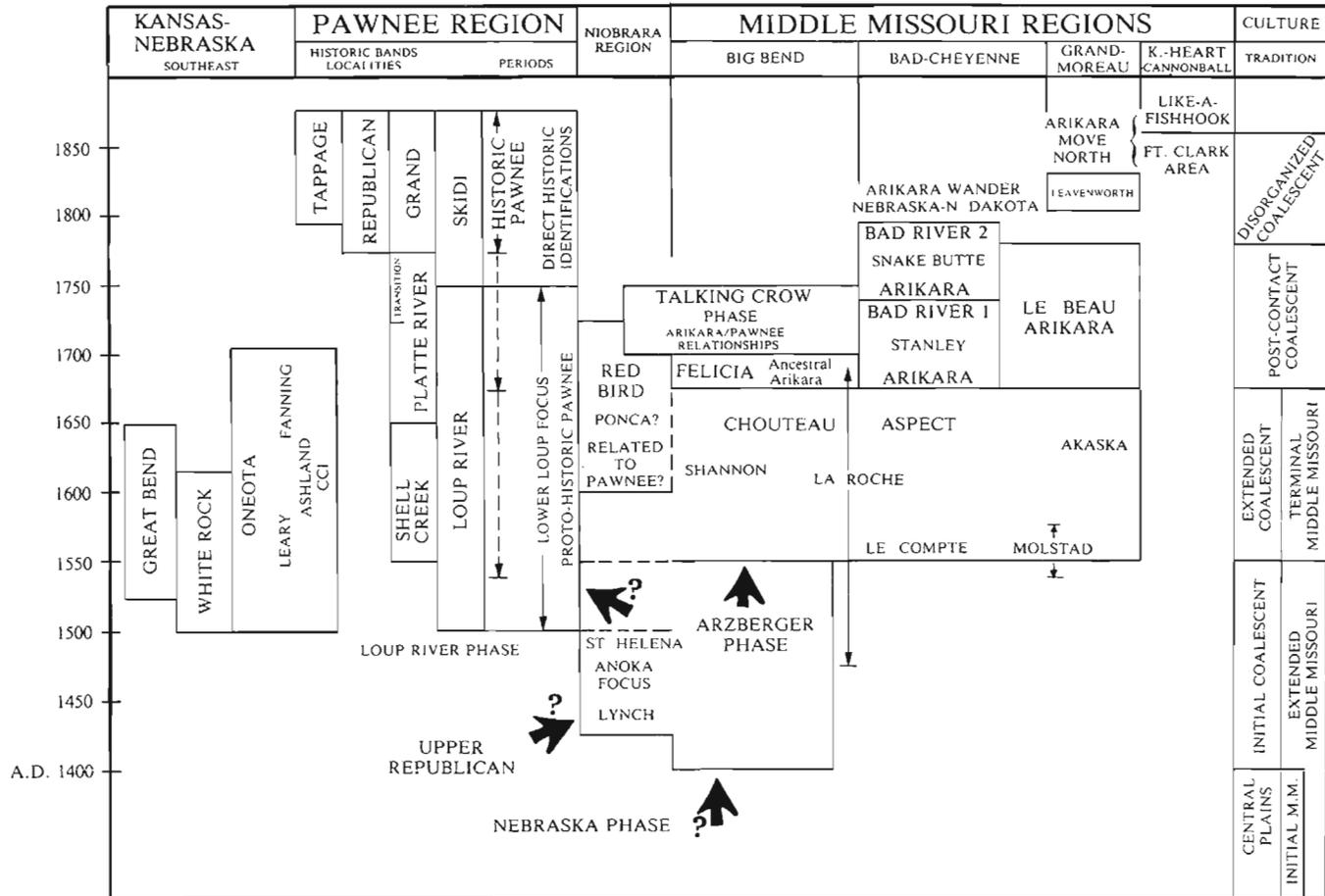


Figure 2. Chronological relationships of phases and cultures.

The excavations which recovered the cord roughened Lower Loup ceramics were carried out in the 1930s but it was not until 1962 that the materials were intensively studied and there has been little utilization of these data since their initial publication in 1968. The information is important because it links the proto-historic Pawnee with both the Central Plains Tradition and the Initial Coalescent ancestors of the Arikara. The latter association is better understood since Initial Coalescent has been described and synthesized systematically. Just which of several possible Central Plains Tradition sites represent specific Pawnee ancestral complexes is less certain.

Wood (1969) proposed a number of phases for Upper Republican site groups and a sequence leading from the Solomon River Phase to Classic Upper Republican Phase to Loup River Phase. The latter now encompasses part of the Lower Loup Phase location (Ludwickson 1975;1978). The ceramics in the original Sweetwater sites include cord impressed designs unlike the incised decorations found on the early pottery at the Burkett Site so that ceramic transition is difficult to demonstrate, and Ludwickson does not deal with these at a detailed level (Ludwickson 1975: 104).

A few ceramic similarities are not enough to show the needed developmental connection. Many Central Plains Tradition sites exhibit some ceramic similarities. For example, 25FT80 in the Red Willow Reservoir (Grange 1979) includes a few sherds strikingly like the Burkett wares and even one vaguely like historic Pawnee pottery with parallel diagonal incised lines above a series of pendant tabs on a collared rim. The site was only tested so that house form remains unknown but a radiocarbon date of A.D. 1476 indicates a potential for relationships with proto-historic Pawnee. A wide scale and detailed ceramic comparison will be necessary to ferret out a specific Pawnee forerunner in the prehistoric period. Renewed interest in the problem of the Central Plains Tradition (Blakeslee 1978) is encouraging.

At a more general level the northward movement of the Central Plains people beginning with the Smoky Hill Aspect (Wedel 1959: 564-565) has been supported by Wood (1969) and Roper (1976), while more detailed settlement pattern analyses have begun (Lippincott 1978). The archeological evidence of slow northward spread of these people is in accord with a general Caddoan origin hypothesis. Wedel (1959: 564-566) has reviewed

the possible southward connections of the Smoky Hill Aspect into Oklahoma. That appears to be the direction in which to seek ultimate Pawnee origins.

Pawnee relationships with the Arikara of the Missouri River Valley are worth additional comments. The relationship in early times to the Initial Coalescent has already been discussed. At later time levels ceramic trade items in Lower Loup sites include examples of Stanley Cord Impressed (Grange 1968:69), a pottery type of the historic Arikara Bad River Phase (Lehmer and Jones 1968). These trade sherds in a Loup River locality, site of the Skidi sequence, may represent archeological evidence of the traditional Arikara-Skidi relationship. Lower Loup sherds are also known from the Talking Crow Site (Grange 1968:121, 130; Smith 1977: 59-60), further indicating contacts with the Arikara during the 18th century.

The generalized ceramic similarities with materials typical of the Choteau Aspect have long been recognized and some have interpreted Choteau as ancestral Pawnee. Hoffman suggests this for the La Roche complex (Hoffman 1968: 75) and that the inhabitants of the Molstad village "specifically were ancestors of the modern Arikara and Pawnee" (Hoffman 1967:64). This may well be true of the Arikara but, since Lower Loup and Choteau are contemporary (See Figure 2) and there is evidence that initial Lower Loup is coeval with late Initial Coalescent, it seems unlikely that Lower Loup could be derived from Choteau. It is more likely that Choteau represents a stage in the development of the Arikara, and the sequence from Arzberger to Choteau to Arikara (Deetz 1965: 8, 15, 23) may well summarize Arikara origins.

New lines of evidence have also been developed. Parks (1978, and this volume) has developed a reconstruction of the linguistic development of northern Caddoan. In it he hypothesizes that South Band and Skiri dialects have been separate from 200 to 300 years, or since about 1650 to 1750 A.D. The estimate correlates very well with the archeological estimate of the formation of the Platte River sequence identified as the Grand Pawnee (Grange 1968: 142). Parks also estimates some 500 years of separation of Pawnee and Arikara. That linguistic distinction may thus date to about A.D. 1450 which correlates well with the Initial Coalescent Variant or the appearance of the Central Plains Tradition in the Middle Missouri area between A.D. 1400 and 1550 (Lehmer 1971: 114).

It is also significant that the analysis of skeletal materials provides parallel evidence (Jantz and Ubelaker 1978, and this volume). It is especially important that "overall, St. Helena shows the greatest similarity to the various Arikara series, reaffirming their role in the Origin of the Arikara." (Jantz, Owsley and Willey 1978:54). This conclusion could be used to associate the St. Helena archeological complex with Arikara cultural development and to distinguish it from Pawnee-related late prehistoric assemblages. Derivation of Pawnee from St. Helena might still be possible but in the light of this evidence it is difficult to see the 1550-1650 date Choteau complex as the point of origin for Pawnee culture. Linguistic and biological distinction of Pawnee from Arikara was probably well underway by A.D. 1500 or earlier. In addition, the historical data of the Coronado-Onate entradas, through Great Bend-Lower Loup ceramic cross-finds, imply the Pawnee were in existence in the 1541-1601 period, again contemporary with the Choteau Aspect. Although other alternatives are possible the present data indicate Pawnee origins should be sought in the Central Plains.

The relationship of the earliest Lower Loup materials to the Initial Coalescent of the Middle Missouri on the one hand and to the Anoka Phase, St. Helena, the Loup River Phase and other Upper Republican sites in Nebraska becomes crucial for future research. There are several alternatives. In one, both Pawnee and Arikara could have developed from the Initial Coalescent or Arzberger-like base. Alternatively the Initial Coalescent could lead only to Arikara while a parallel development of the Pawnee through Lower Loup from some unidentified Central Plains Tradition complex took place. The latter hypothesis is favored here. If St. Helena were already identifiable as Arikara, as biological data might imply, there must be a late pre-historic equivalent of Pawnee, but whether it is the Loup River phase or some other is uncertain. The geographical distribution of the Loup River Phase is surely a point in favor of Ludwickson's hypothesis, but a much more detailed study of pottery and other materials is needed.

Another line of research on Plains Caddoan archeological assemblages was that undertaken by Deetz (1965) in which he related stylistic changes in Arikara ceramics to changing household residential patterns although Hoffman (1977: 23) does not agree with Deetz' reconstruction of Arikara organiza-

tion. That discussion is too lengthy to review here but it reflects new archeological interests which need to be applied to the Pawnee as well.

Wood, utilizing Deetz' arguments and data concluded that the hamlets "of the Central Plains sub-area Tradition comprised matrilineal, matrilocal groups composed of polygynous (sororal) families" (Wood 1969: 107). He noted data to test the hypothesis were lacking but later studies have been made and Lippincott has suggested a matrilocal post-marital pattern for Solomon River Republican sites (Lippincott 1978: 93), based on the floor area of houses.

Such reconstructions imply continuity of family and household organization from prehistoric to historic times. There is some supportive evidence in the stability of house sizes but during this period there was also a significant increase in village size (Wedel 1956: 89-91) and community or village organization must have altered in this process.

The earliest studies of the Pawnee were directed at defining the archeological culture in taxonomic terms. Later local variations within the archeological culture were seen as tribal subdivisions corresponding to historic bands (Grange 1968). New approaches (Deetz 1965; Longacre 1964) show that intra-village variability should be examined and the following is a discussion of some preliminary results of such study.

Only the major elements in an ethnographic model can be reviewed here. Pawnee villages were endogamous (Weltfish 1965: 19, 20, 50) with endogamous moieties for council, ceremonial and camp circle activities (Driver 1961: 301; Driver and Massey 1957: 411, 413, 414, Map 158). The Skidi had matrilocal post-nuptial residence (Weltfish 1965: 16, 20). According to Dorsey and Murie (1940: 101), initial post-nuptial residence was matrilocal and was followed by a period of residence in the husband's parental lodge, after which a new residence was prepared. Sororal polygyny (Dorsey and Murie 1940: 84) and matrilocal residence would be factors favoring the development of a high degree of household patterning in the production and decoration of pottery as Deetz (1965: 93, 99) has shown in his Arikara study.

Under these conditions some expectations about the distribution of ceramic design attributes can be outlined. Endogamous villages might be expected to result in some evidence of com-

munity variation in ceramic style, and sites would be expected to exhibit such variation if this residence pattern was present.

The presence of endogamous moieties, coupled with matrilineal residence, could result in residential clustering *within* villages and we might therefore expect to find two groups of houses characterized by distinctive patterns of ceramic decoration.

Finally, if most households were primarily matrilineal, we might expect individual ceramic productivity to fall into a household pattern so that a comparison of house associated pottery would reflect such a residence rule. Sororal polygyny would tend to reinforce this pattern and to counteract the effects of other residential alternatives.

In his Arikara study Deetz was concerned with temporal change. Murdock classified the Pawnee as having a Matri-Fox sub-type of social organization (Murdock 1949: 234) and derived that pattern from Matri-Hawaiian (Murdock 1949: 341). Deetz (1965: 24-31), following the Schmidts, argued for change in the opposite direction from Normal Crow organization, a derivation Murdock recognized as possible though improbable. Deetz concluded that greater variability in Arikara ceramics through time resulted from change from the earlier Crow-type social structure to a generationally based system (Deetz 1965: 101) in response to a greater involvement in trade. He noted that the Pawnee were not subject to the same contact pressures during the 18th century (Deetz 1965: 101). In fact, the Pawnee were obtaining increasing amounts of trade materials during this period (Grange 1968: 110-112) and by the 1840s the Pawnee had ceased production of native pottery. A ceramic design study is not possible for the 19th century sites and the analysis must be confined to the protohistoric period.

One indication of apparent residential stability from the protohistoric to the historic period is in house sizes. Although historic period houses tend to have 6 to 10 center posts in contrast to the 4 to 6 center post pattern of the protohistoric period, house dimensions remain about the same. A sample of 13 historic period houses (those containing some aboriginal pottery) ranges from 12 to 46 feet in diameter with a mean of 30.7±9 feet. Protohistoric houses, 31 in number, range from 16 to 48.5 feet in diameter with a mean of 32.3±9 feet. The difference is not significant and a breakdown by historical or ceramic formula dated sub-periods shows no significant temporal trend.

Although prehistoric houses were square, they were about the same size. A sample of Nebraska and Upper Republican phase houses (Wood 1952: Table I) ranges from 13.5 to 54.0 feet across. Mean width is 28 feet and mean length is 29±10 feet. In contrast Ludwickson sees a reduction in house size through time in the Loup River phase (Ludwickson 1975: 101), but that is a different sample of houses.

Ceramic study of household pottery for the protohistoric period is limited because in a few sites no houses were excavated and few were excavated in others. This, coupled with cases where little pottery was found in a house, reduces the number of units available for a household level comparison. Two sites, the Burkett Site (25NC1) and the Wright Site (25NC3) have been examined. Even here some houses with small associated sherd samples must be eliminated. These are both large sites and the data available from excavated house units are small relative to the original number of habitations in the villages.

There may be more than a single component at each of these sites (Grange 1968: 106) and some chronological control for comparative purposes is accomplished through the use of the ceramic formula dating method (Grange 1974). Formula dates are derived from pottery types which are primarily based on rim form and the presence or absence of decoration. The distribution analysis is based on rim and lip decorations. For example, lip decoration includes plain, parallel incised lines, finger indentation, herringbone incised lines, zigzag lines and notched patterns. Statistical tests were carried out with SPSS programs (Nie, Hull, Jenkins, Steinbrenner and Bent 1975).

Although most decorative patterns occur at both the Burkett and Wright sites, a few are either unique or rarely associated with one of the villages. Zigzag and herringbone rim decorations are found at the Wright Site but not at Burkett. Notched lip decoration is more common at Burkett and finger indentation is more frequent at Wright. Chi-square tests indicate that such differences in design distribution are significant.

In addition to Chi-square a factor analysis was performed. The plotted results (See Figure 3) show that the sites fall in two distinct areas on the factor score plot for lip decoration. These data, coupled with the chi-square test noted above, can be interpreted as evidence of village level ceramic differences which would be expected if the endogamous village residence pattern

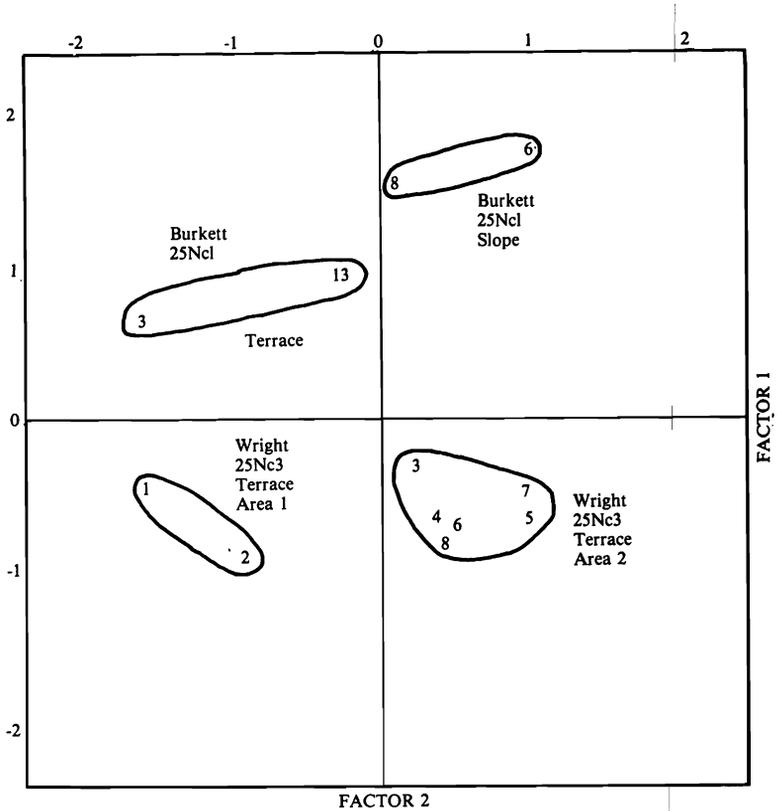


Figure 3. Lip decoration factor score plots showing site and site area differences.

of historic time was also present in the protohistoric sites. In other words, marriage within the village would result in the formation of village patterns of ceramic decoration and such site associated patterning can be observed in the archeological data.

At the intra-village level some clustering of decoration within different parts of a site would be expected if there were residential clusters as discussed earlier. This too can be seen in the factor analysis results shown in Figure 3. At each site the houses fall into broad clusters. At the Burkett Site houses 3 and 13 occupy one area of the graph and houses 6 and 8 occupy another area. These plots, based on pottery decoration, parallel the position of the houses within the village. Houses 3 and 13 are both on a terrace level, though widely separated. Houses 6 and 8

belong to a group of houses on a sloping terrace projection (See Figure 4). All four houses were occupied at about the same time, 1581 to 1592, by formula dating.

At the Wright Site two clusters of houses also appear on the factor score plot (See Figure 3). Houses 1 and 2 are on the main terrace but very widely separated. No other house near unit 2 was excavated and house 10, close to house 1, had too few sherds and is of too late a date for use in this comparison. More significant is the cluster of houses on a smaller terrace area where several houses were located around a larger structure (House 5) (See Figure 5). Houses in this cluster at the site also group together on the factor score plot (See Figure 3). Such parallel grouping by factor score and intra-village location is consistent with the expectation if there were endogamous village subunits following a pattern of matrilocal residence.

Unfortunately the controlled sample from both sites is too small relative to site size and house distribution to produce conclusive results. A distribution study of storage pits and middens has not yet been carried out. The presence of endogamous moieties cannot be confirmed but the existence of some matrilocal residential clusters in protohistoric Pawnee villages seems likely.

A similar study of historic period sites with the Nebraska site data is not feasible but the information is better for the Kansas Monument Site, a Republican band village. Using formula dating Roberts (1978: 75) has concluded that this site was occupied in the 1770s as well as in the 1820s (Roberts 1978: 86). Roberts has also shown that "certain rim motifs are more strongly associated with certain parts of the site than others" (Roberts 1978: 82) although an association of rim motifs and particular houses could not be demonstrated. It is possible that some intrasite clustering of ceramic decoration is present in this historic period site, as would be expected from the ethnographic model.

Returning to the protohistoric Burkett and Wright sites, some design frequency variation by house unit would be expected if matrilocal residence patterns resulted in household groupings of women who made pottery. Some archeological evidence of this pattern is also present.

There are some significant differences in lip design frequencies when pairs of houses at a site are compared. Tested by Chi-square, these associations are sometimes but not always signifi-



Figure 4. Location of houses at Burkett Site.

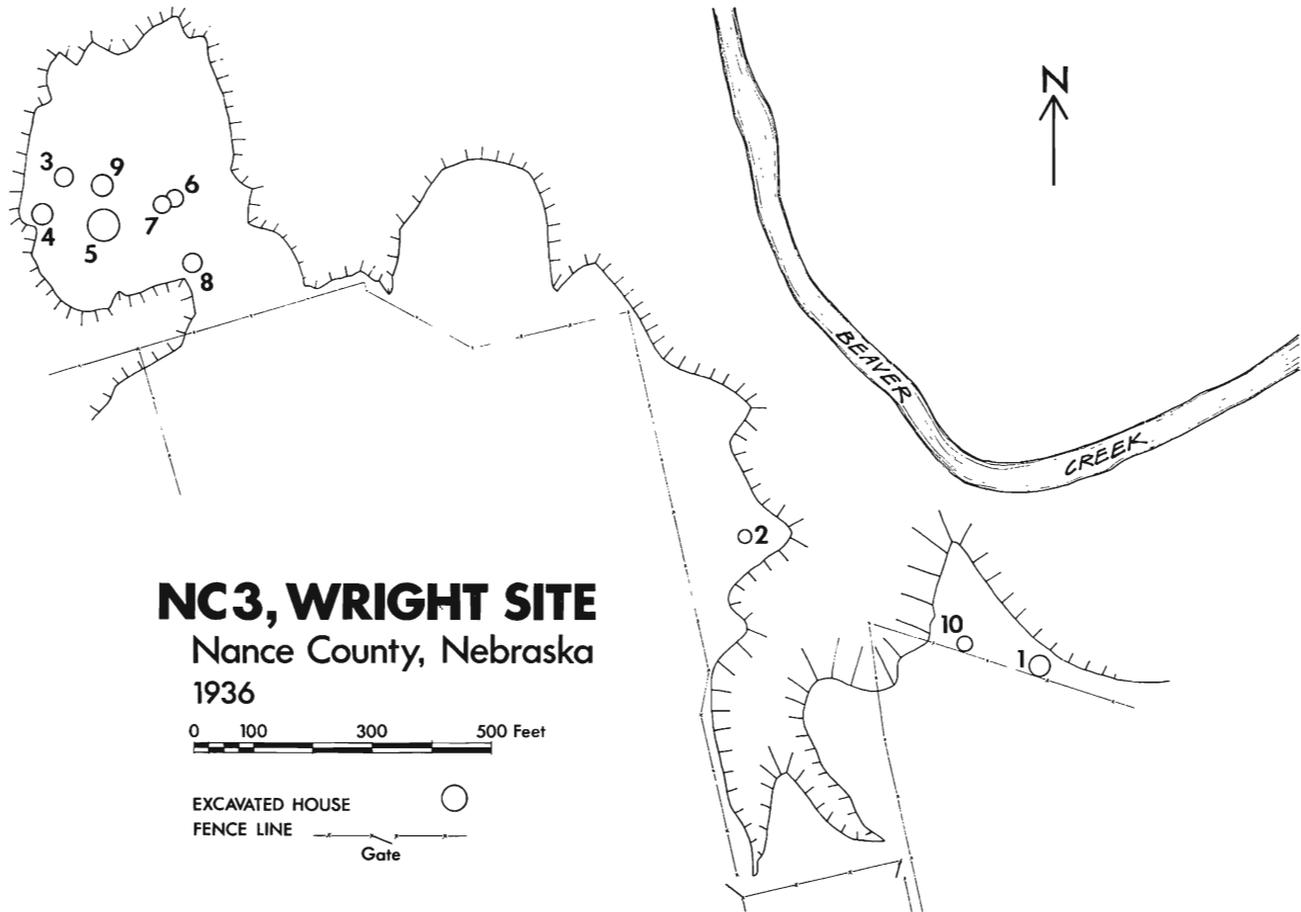


Figure 5. Location of houses at Wright Site.

cant at the 0.05 level of confidence. Factor score plots of lip designs show that each house at the Burkett Site (25NC1) is set somewhat apart when compared with the other plotted houses (See Figure 6). At the Wright Site (25NC3) a similar separation of coeval houses may be seen. House 1, formula dated at 1636, and house 8, dated at 1633, are separated by their factor score positions. A similar separation is seen in house 2 (1668) when it is compared with house 4 (1669). Houses 6 and 7 have similar formula dates (1626 and 1622 respectively) but fall in the same area of the factor score plot. This is counter to the position of other house pairs and the hypothesized expectation. However, in this case these structures are stratigraphically superimposed and could represent the rebuilding of a house by the same family and this would explain observed similarity in pottery decoration.

It should be noted that the comparison of paired houses is based on dating the structure by ceramic formula date methods which permit the identification of contemporaneous structures. Unfortunately the dates appear to be precise but have fairly wide standard deviations and one defect in this approach is that it requires the assumption of a chronological precision which is beyond the statistical power of the method.

Bearing these assumptions in mind, factor score plotting does show some household variation in lip decoration of pottery vessels which is consistent with the hypothesis of matrilineal residence.

There is another line of evidence which should be considered. Divale has shown that "At a 95 percent confidence interval, any site that had an average floor area within two standard errors of 175 m^2 (from 79.2 m^2 to 270.8 m^2) could be inferred to have had matrilineal residence" (Divale 1977: 114). This is a somewhat larger limit than the 550-600 square foot (50.6 to 55.2 m^2) estimate made by Ember (1973: 180).

The Lower Loup houses have a mean floor area of 79.5 m^2 and matrilineal residence could be inferred using Divale's stringent model. It does not come out so neatly for prehistoric and historic periods. The Upper Republican/Nebraska sample used earlier has a mean floor area of 78.9 m^2 while the historic Pawnee house floor area is 74.1 m^2 . Both are outside the range of Divale's estimator despite the known matrilineal pattern for the historic period. However, both are within the matrilineal range established by Ember.

There has been increasing interest in the reconstruction of Central Plains settlement organization and Hotopp has utilized Naroll's and Wedel's household population estimator factors (Hotopp 1978: 116-117). Naroll (1962) estimates 10 square meters per person while Wedel estimates 5 square meters per person. The Naroll factor would suggest 7 to 8 people per house while Wedel's would indicate residential groups of 15 to 16 people per house for Lower Loup and Pawnee dwellings. This would be consistent with matrilineal extended family patterns.

There is, then, support in the archeological data for the hypothesis that the protohistoric Pawnee had a pattern of matrilineal post-nuptial residence.

In summary, this preliminary examination of intra-site house variability in pottery decoration produces some evidence consistent with the hypothesis that endogamous villages, moieties and matrilineal residence may have been established patterns among

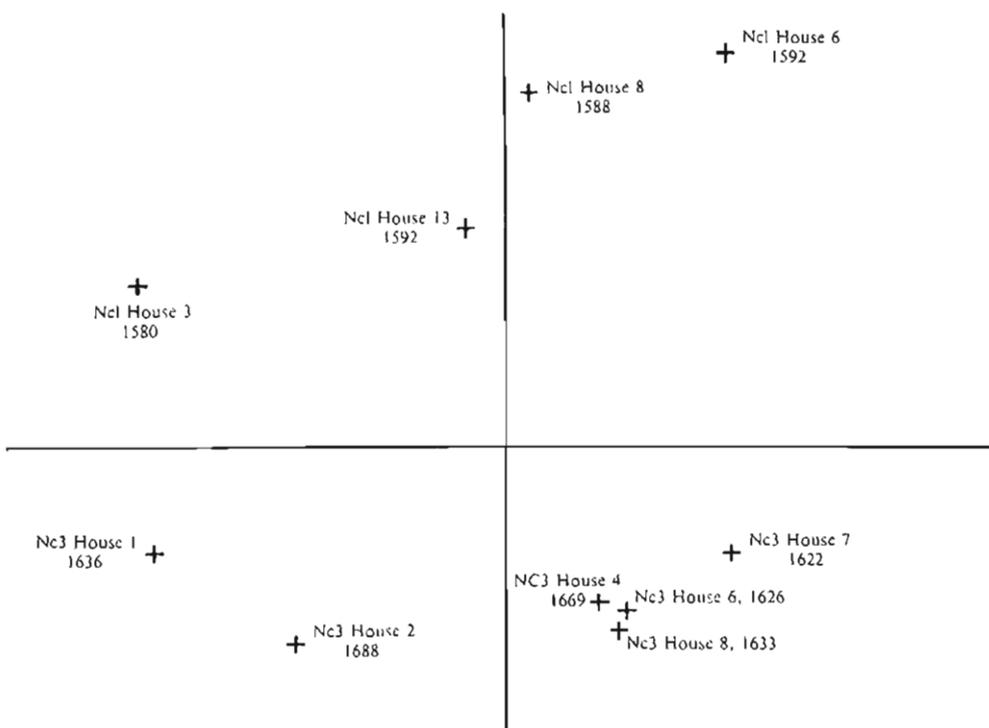


Figure 6. Comparison of house dates and lip decoration factor score plots.

the proto-historic Pawnee. Matrilocal residence groups in households could extend into the late prehistoric period but those hamlet-sized villages probably lacked the intra-community spatial organization seen in the protohistoric period. It can be suggested that such organization came about with the increase in village size during the proto-historic period (Wedel 1956: 89-91). A conclusive demonstration of this hypothesis is not yet in hand but these preliminary results show it is possible to attempt to trace some aspects of social organization into the proto-historic past.

It has been shown that historic Pawnee can be linked with the protohistoric Lower Loup Phase and that in turn may be subdivided into geographically localized groups which appear to be the forerunners of the historic Skidi and South Band divisions. Some generalized links to the prehistoric Central Plains Tradition have been identified and some possible ancestral complexes such as the Anoka Phase, St. Helena and Loup River Phase have been identified, though other Central Plains assemblages could yet prove to be significant. We have not yet identified the *specific* Central Plains ancestor of the Pawnee that Strong predicted some 40 years ago. The evidence does favor a movement from south to north within the Central Plains Tradition.

To proceed further in solving the problem of Pawnee origins it will be necessary to work with the full range of cultural data, not just ceramics and houses. The backlog of undescribed protohistoric and historic materials needs to be studied and published in detail with these problems in mind. Some new excavation in historic Skidi and in parts of Lower Loup sites would greatly enhance the available data. An intensive re-examination and analysis of all late prehistoric ceramics in the Central Plains might be useful in narrowing the field to determine which, if any, of the several local or regional Central Plains phases are most closely related to the proto-historic Pawnee. As in this symposium, the archeological data should be correlated with ethnographic data, ethnohistorical documentation, Pawnee traditions, linguistic and biological data.

The implications of current research indicate to me that, as a working hypothesis, Jantz' and Wedel's speculation (1976 Mini-symposium) that the Nebraska Phase might represent the prehistoric Arikara is worth pursuing. Such an idea makes sense in terms of an Arikara migration northward up the

Missouri River valley. A correlated hypothesis of a parallel movement of the prehistoric forerunners of the Pawnee farther west through the Smoky Hill to the later units in the general Upper Republican sequence seems reasonable. (See Figure 1a) If substantive evidence in support of these ideas can be obtained, tribal identification could be pushed back to A.D. 1000. Hopefully the resolution of the problem will not take another 40 years.

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