

ANALYSIS OF THE KETTLE FALLS CULTURE CHRONOLOGY TEMPORAL GAPS

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ABSTRACT

The existing Kettle Falls culture chronology was developed from localized 1970s archaeological excavations. The chronology contains seven culture periods and two temporal gaps. This analysis of the temporal gaps assesses the data used to support their inclusion in the original culture chronology. During the 1970s excavations, the frequency of artifacts by strata was used to estimate population size. Temporal gaps were interpreted from strata yielding low artifact counts. The presumed temporal gaps were used to promulgate the chronology's underlying theme of periods of cultural hiatus or abandonment separated by complete population replacement. Varied artifact deposition through time due to changes in technology, location and intensity of associated activities is presented here as an alternative interpretation of the strata yielding low artifact counts. Support for the alternative interpretation additionally comes from 1970s data that indicates strata with relatively high artifact counts were encountered corresponding to the proposed periods of temporal gaps. Typological similarities preceding and succeeding the proposed temporal gaps further suggest cultural and occupational continuity.

INTRODUCTION

Discussions leading up to the analysis of the Kettle Falls culture chronology temporal gaps began during a 2006 Federal Columbia River Power System Cooperating Group Meeting between the Bonneville Power Administration, United States Bureau of

Reclamation, National Park Service and the Confederated Tribes of the Colville Reservation (Colville Confederated Tribes [CCT]) History/Archaeology Program. The basis for this effort stemmed from observed inconsistencies in the original 1970s data used to support the temporal gaps in the current Kettle Falls culture chronology. In addition, the interpretation of the temporal gaps as representing periods of abandonment or hiatus at Kettle Falls separated by periods of population replacement (Chance and Chance 1985; Chance 1986) was questioned.

The archaeological data initially used to support the inclusion of temporal gaps and population replacement in the culture history was predominantly recovered from investigations on Hayes Island adjacent to Kettle Falls (Figure 1). Artifact counts from natural and cultural strata from the Hayes Island investigations were used to determine population density. However, 1970s excavations in the vicinity of Hayes Island yielded contradictory data. These data consisted of excavated strata with widely divergent amounts of artifacts from the same period. There were some site components with high artifact yields that corresponded with low artifact-yielding strata at Hayes Island. The discrepancy suggested that the methods used to support low population density or temporal gaps required revision. Rather than acknowledging this contradiction, the high artifact yield data were interpreted (Chance and Chance 1985; Chance 1986) as representing visiting populations or sparse occupations during what was still considered a period of scarcity. Identifying the discrepancy

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provided additional justification for conducting this analysis of the temporal gaps.

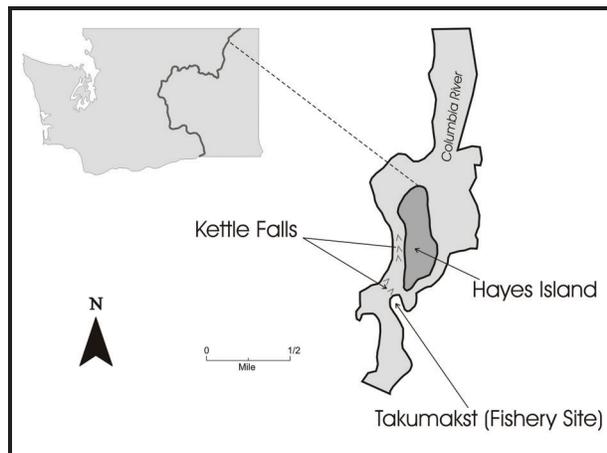


Figure 1. Kettle Falls and Hayes Island in northeastern Washington State. Map by author.

The following analysis includes a brief background on the history of archaeological investigations at Hayes Island culminating with the 1978 excavation that provided the final data used to construct the existing Kettle Falls culture chronology. The background is followed by a synopsis of the existing chronology and analysis of specific texts that describe the series of proposed population replacements and periods of cultural hiatus or temporal gaps. An archaeological assemblage from Hayes Island used to formulate the earliest iteration of the existing chronology is examined and compared with assemblages recovered during the 1970s excavation projects in the vicinity of Kettle Falls. Methods used to estimate population density in support of temporal gaps and periods of abandonment are examined. The current analysis offers a discussion that considers the complex nature of variable levels of activity intensity manifested in archaeological sites through time. An alternative model is next presented that suggests cultural continuity between the periods preceding and succeeding the originally proposed temporal gaps.

Recommendations are provided for future archaeological work around Kettle Falls and with the existing collections. Throughout the analysis of the chronology temporal gaps, cited references are presented from the 1970s reports of investigations, a 1991 report on return investigations at a site tested in 1978 (Chance and Chance 1991) and a Chance (1986) publication intended for the general public that describes the Kettle Falls culture chronology. The cited references are used to illustrate several points and indicate how the data was originally interpreted leading up to the formulation of the existing Kettle Falls culture chronology.

BACKGROUND

The site of Kettle Falls is located in northeastern Washington State (Figure 1), in the traditional territory of the Colville and Lakes tribes. Kettle Falls was one of the principal prehistoric and historic fisheries on the Columbia River prior to inundation by the Grand Coulee Dam reservoir Lake Roosevelt in 1942 (McKay and Renk 2002). The Grand Coulee Dam not only inundated the main fishery within its nearly 150-mile long reservoir, but additionally created an impediment to anadromous fish.

The dramatic change in Kettle Falls is illustrated when comparing two photographs from approximately the same vantage point. A photograph from the Army Corps of Engineers William Cuthbert Expedition depicts Kettle Falls and the northern portion of Hayes Island in 1891, taken from the right bank looking upriver (Figure 2). In 2009, a photograph was taken from the approximate same location (Figure 3), with Kettle Falls and Hayes Island submerged.

The loss of a principal fishery and resource as a direct result of the construction of the Grand Coulee Dam is still viewed as a tremendous



Figure 2. Kettle Falls and northern tip of Hayes Island during the 1891 William Cuthbert expedition; diagonal line is a crack in the photo glass (Seattle District Corps of Engineers Photograph Collection; George Warren, photographer).



Figure 3. Replication of the 1891 Cuthbert expedition photograph (Figure 2) taken in 2009. Photo by George Bishop.

loss to the members of the CCT. Stories, myths and legends associated with topographic features and activities at the falls have become threatened and some nearly forgotten after the outlet for their promulgation was destroyed. Twelve tribes comprise the CCT (Lakes, Colville, Sanpoil, Nespelem, Moses Columbia, Southern Okanogan, Methow, Entiat, Chelan, Wenatch, Palus and Chief Joseph Band of the Nez Perce). Although the salmon are gone, CCT tribal members continue to celebrate the First Salmon Ceremony adjacent to the inundated location of Kettle Falls every year. According to oral traditions, their ancestors have occupied the area around Kettle Falls since time immemorial.

HISTORY OF ARCHAEOLOGICAL INVESTIGATIONS AT HAYES ISLAND

Archaeological investigations in what would become Lake Roosevelt began in 1939 as a salvage project. The Columbia Basin Archaeological Survey (CBAS) recorded 35 archaeological sites within the area to be inundated (Collier et al. 1942). During the course of the project, the CBAS recorded one archaeological site on Hayes Island. The recorded site (Site 35) consisted of a single pictograph (Collier et al. 1942:28). Soon after completion of the project, Hayes Island and most of the sites recorded by the CBAS were inundated beneath Lake Roosevelt. Since that initial inundation, each year, a variable spring reservoir drawdown has occurred to avoid downriver flooding resulting from spring snow melt. The drawdown exposes inundated landforms and archaeological sites. Loss of vegetation due to inundation and erosion associated with reservoir operations revealed additional archeological sites. The next archaeological investigations occurred in 1966.

The first drawdown survey was initiated to investigate the condition of previously recorded archaeological sites (Larrabee and Kardas 1966). In addition, the survey inspected landforms to identify and record new archaeological sites (Larrabee and Kardas 1966). The investigations were linked to plans by the Bureau of Reclamation to construct a third power house at Grand Coulee Dam. Hayes Island was not visited during the survey.

The next drawdown survey occurred in 1967 (Chance 1967). Hayes Island was exposed yet not visited, although the pictograph site recorded by Collier et al. (1942) during the CBAS was mentioned in the survey report. The site was mentioned for its location on Hayes Island where looting was common (Chance 1967). The next two consecutive drawdown surveys focused on previously recorded sites (Rice 1968; Ross 1969). Hayes Island was not investigated on either occasion.

The first Hayes Island archaeological survey occurred during the 1970 annual spring drawdown. Chance (1970) recorded four new archaeological sites (45FE44, 45FE45, 45FE46 and 45FE47) and re-recorded the pictograph, CBAS Site 35 (Collier et al. 1942:28), as Smithsonian Trinomial 45FE35. The Hayes Island sites contained several pit features in addition to evidence suggesting a substantial amount of looting (Chance 1970). Of the five recorded sites, Chance (1970:48) indicated that 45FE45 (the Ksunku site) appeared to be complex and should receive the highest priority attention for continued archaeological investigations.

Test excavations began on Hayes Island at 45FE45, 45FE47 and 45FE35 (within a previously unrecorded "storage cist" [Chance and Chance 1982:321]) during the annual spring drawdown of 1971. The majority of the field records compiled during the 1971

project were unfortunately destroyed by a fire (Chance and Chance 1982). A brief report on the 1971 test excavations was included in the report on the 1974 excavations (Chance and Chance 1982).

In 1972, excavations continued on Hayes Island during the annual spring drawdown. Based on the results, a sequential essay (culture history) was formulated from an admittedly small sample (Chance et al. 1977:149). Chance et al. (1977:149) stated that rather than waiting to accumulate a greater body of data, the decision to create what would be the basis for the Kettle Falls culture chronology was adopted as a preliminary report. Over the next six years, the sequential essay was expanded into the current version of the Kettle Falls culture chronology.

The next excavation at Hayes Island occurred during the 1974 annual spring drawdown. Chance and Chance (1982) reported on the 1971 and 1974 excavations and updated the sequential essay. The original cultural periods proposed in the sequential essay from the 1972 excavation (Chance et al. 1977) were maintained with some additions (Chance and Chance 1982).

In 1976, excavations were conducted away from Hayes Island primarily at historic Fort Colville (45ST97). Additional testing occurred at the South Dune site, the Nancy Creek site and the Fishery Site (45ST119, 45FE16, and 45ST94, respectively; Chance and Chance 1977). Sites on Hayes Island (45FE44, 45FE45, 45FE46 and 45FE47) were investigated for damage and to collect diagnostic artifacts from the surface (Chance and Chance 1977).

During the 1977 annual spring drawdown, excavations continued at Fort Colville (45ST97) and at Mission Point (45ST95)

adjacent to Kettle Falls and Hayes Island (Chance and Chance 1979). In addition, exploratory excavations occurred at the South Dune site (45ST119), China Bend (45ST65), Slawntehus (45ST201), Pakilkin (45ST203), A Takumakst Winter Village site (45ST202), Michelle (45FE152), North Gorge (45ST44), Old Inchelium (45FE43) and "Other Sites" (Chance and Chance 1979:vi). Although an apparent anomaly was encountered at 45ST95, Chance and Chance (1979:170) stated that their proposed chronology appeared to coincide for the most part with the remainder of the excavations at Mission Point. The anomaly was an unexpectedly high frequency of artifacts that corresponded with a low artifact frequency encountered within the corresponding stratum on Hayes Island (Chance and Chance 1979:169).

The last large-scale excavations in the vicinity of Kettle Falls and on Hayes Island occurred during the 1978 annual spring drawdown. The 1978 field season concluded nearly a decade of consecutive archaeological investigations in the vicinity of Kettle Falls. The construction of the third powerhouse at the Grand Coulee Dam has since reduced the average amount of annual reservoir drawdown. As a result, Hayes Island and many recorded archaeological sites are rarely exposed (Figure 4).

The Kettle Falls culture chronology was finalized with data collected during the 1978 field season. The chronology is described in the report on the 1978 excavations (Chance and Chance 1985) and a Kettle Falls Historical Society publication (Chance 1986). One cultural period defined from the 1978 excavations was first reported in a paper presented at the Northwest Anthropological Conference (Chance 1982) and is additionally described in the 1978 report of investigations (Chance and Chance 1985) and the Chance (1986) publication.

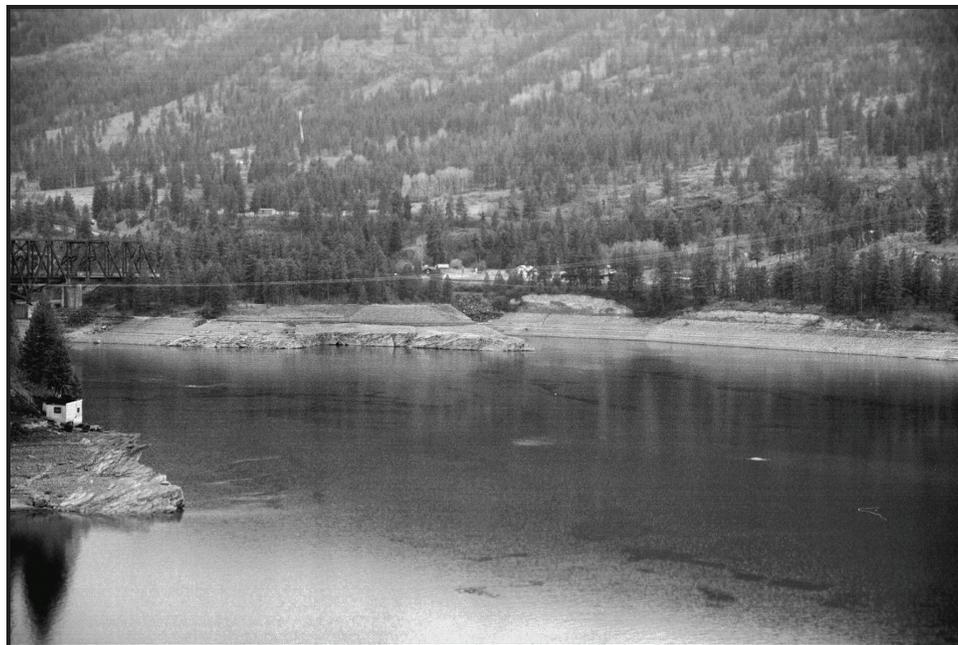


Figure 4. Overview towards the still- inundated southern end of Hayes Island and lower Kettle Falls taken during the 2005 annual spring drawdown of Lake Roosevelt. View from left bank looking downriver. (Photo by author.)

THE KETTLE FALLS CHRONOLOGY

Chance and Chance (1985) proposed seven periods and two temporal gaps for the Kettle Falls culture chronology: Shonitkwu 7600-6800 B.C.; gap 6800-5300 B.C., Slawntehus 5300-3600 B.C.; gap 3600-2800 B.C., Ksunku 2800-1600 B.C.; Skitak 1600-800 B.C.; Takumakst 800 B.C.-300 A.D.; Sinaikst 300-1400 A.D.; and Shwayip 1400-1800 A.D. (Figure 5). Two aspects (Chekwo and Yutlek) of cultural periods also were included to explain contemporaneous yet disparate artifact assemblages. The names for these periods and aspects were taken from Salish language terms, with *Shonitkwu* for falls, *Slawntehus* for Colville River, *Ksunku* for Hayes Island, *Skitak* for crossing, *Takumakst* for fishery, *Sinaikst* for Lakes, *Shwayip* for Colville, *Chekwo* for red, and *Yutlek* for raven (Chance and Chance 1985; Chance 1986). Each period represents a specific cultural entity or population with an associated strata encountered during the 1970s archaeological excavations. The transitions between periods

were believed to have been caused by some form of abandonment or cultural decline, followed by complete population replacement. Chance (1986:13, 14, 17, 19, 20, 22, 25 and 30) invokes a series of population replacements and periods of abandonment as each group responded to environmental changes, massive flooding, greatly reduced salmon populations, migrations, fires and epidemics. The following quote provides an example for a purported time when salmon runs failed at Kettle Falls:

When the fish runs resumed, the original ethnic group or groups that had monopolized the falls might fail to appear for the fishing season and would thus be replaced by some group that might have had different traits, ones that could be archaeologically detected, or that might be bearing the earmarks of a new wave of traits moving through the region or even large portions of North America [Chance and Chance 1982:418].

AD 1400-1800	SHWAYIP	
AD 300-1400	SINAIKST	CHERWIO ASPECT
800 B.C.-AD 300	TAKUMAKST	
1600-800 B.C.	SKITAK	
2800-1600 B.C.	KSUNKU	
2800-3600 B.C.	GAP	
5300-3600 B.C.	SLAWNTEHUS	YUTLEK/ASPECT
MAZAMA ERUPTION		
5300-6800 B.C.	GAP	
7600-6800 B.C.	SHONITKWU	

Figure 5. Existing Kettle Falls culture chronology (Chance and Chance 1985) with Mazama eruption superimposed. Temporal gaps are shaded.

The proposed pattern of abandonment and population replacement begins with the Shonitkwu Period that suffered a “cultural decline” after damage to anadromous fish runs (Chance and Chance 1982). Following the Shonitkwu abandonment, a temporal gap occurs in the archaeological record until a period marked by the occasional sparse occupation of small band-level groups called the Slawntehus (Chance 1986). The Slawntehus were succeeded by a second temporal gap followed by another repopulation (Chance and Chance 1985). The new population arrived from the north “hesitant in numbers at first, and then very strong” (Chance 1986:17). The new population was called the Ksunku and represented “a rejuvenation of cultural and economic vigor at Kettle Falls after several millennia of much more uncertain survival” (Chance and Chance 1985:294). The Ksunku were eventually impacted by severe flooding and their way of life “lingered on in a feeble way for some time before its total disappearance” (Chance 1986:19). The Ksunku abandonment was followed by a “blank period of flooding and the time of

repopulation called the Skitak” (Chance 1986:20). The change from Skitak to Takumakst marked a time of increased “action” (Chance 1986:22) believed to represent the Salish expansion into the region. The Takumakst population replacement by the Sinaikst was attributed to technological innovation (Chance 1986) representing Lakes occupation at the falls. The last population replacement was postulated to relate to massive fires that burned at the most commanding of the habitable locations at Kettle Falls, culminating in the Colville occupation (Chance 1986:29).

Each cultural period is presented as being separated by abandonment, a “blank” (Chance 1986:20) period or “total disappearance” (Chance 1986:19), but there were two more prolonged temporal gaps proposed for the time separating the Slawntehus Period from the earlier Shonitkwu Period and the later Ksunku Period. The definition of the temporal gaps was in part attributed to the interpretation of the Slawntehus Period as a time of a culturally distinct, low population, sparse occupation at Kettle Falls (Chance 1982, 1986; Chance and Chance 1985). The present work challenges the validity of these two proposed temporal gaps first described by Chance and Chance (1985).

THE TEMPORAL GAPS

Chance and Chance (1982:140) estimated prehistoric population density using artifact yields by stratum from 1970s archaeological excavations on Hayes Island. A decrease in artifact yield between the Shonitkwu Period-bearing cultural stratum and the Ksunku Period cultural-bearing stratum on Hayes Island was used to promote the initial idea of a 4000-year temporal gap in the chronology (Chance 1982). At the Ksunku site (45FE45) on Hayes Island, virtual hiatuses were reported after encountering a drop in

stratigraphic artifact yield during the 1974 excavations (Chance and Chance 1982). The Shonitkwu component (Stratum 7) yielded approximately 50 artifacts per cubic meter of fill (Chance et al. 1977:191). Strata 6A1 and 6A2 each contained less than 6 artifacts per cubic meter of fill (Chance et al. 1977:191), the lowest artifact density at the site.

In Stratum 6A a hiatus occurs; in the center of the terrace where the stratum is expanded most, it is about 20 cm thick. This hiatus, marked by an absence of artifacts, and only an occasional waste flake, probably began somewhere around 5500 BC. [Chance et al. 1977:159].

This low density portion of the site was interpreted as a period of significant population decline:

Fewer people came to Kettle Falls and those few were less skillful in their tool manufacture. It was an ecological crisis of the first magnitude, known elsewhere in the western part of North America as well. The Shonitkwu had ended and large-scale human interest in the falls was not to revive for several thousands of years [Chance 1986:13].

Stratum 6 yielded a slight increase from Stratum 6A, and Stratum 5/6 yielded an increase in artifact yield approaching that found in Stratum 7 (Chance et al. 1977:191). Stratum 5 contained nearly 150 artifacts per cubic meter (Chance et al. 1977:191) which was used to support the interpretation of cultural rejuvenation at Kettle Falls for the Ksunku Period (Chance and Chance 1985).

In 1978, excavations at the mouth of the Colville River four miles south of Hayes Island were used to define a new

chronological unit called the Slawntehus Period. Relative to the Shonitkwu and Ksunku periods, the Slawntehus Period stratigraphically fit within Strata 6A, 6A1 and 6A2 (Figure 6) at 45FE45 (Chance 1982). The Slawntehus Period was viewed as evidence that “some people were visiting the falls in small groups, barely keeping body and soul together” (Chance 1986:14). After the 1978 fieldwork, the 4000-year temporal gap was altered to consist of a 1500-year temporal gap followed by a sparse Slawntehus occupation transitioning to an 800-year temporal gap (Figure 6). The Slawntehus period of scarcity lasted 1700 years.

THE SLAWNTEHUS PERIOD AND THE YUTLEK ASPECT

The Slawntehus Period was dated stratigraphically to just after the Mazama eruption (Chance 1982). Temporal gaps were maintained in the Kettle Falls culture chronology for the time after the Shonitkwu Period, prior to the Slawntehus Period and between the Slawntehus Period and the succeeding Ksunku Period. The pre-Slawntehus Period temporal gap dated from 6800 B.C. to 5300 B.C. and the post-Slawntehus Period temporal gap dated from 3600 B.C. to 2800 B.C. The rationale for the post-Mazama eruption temporal affiliation for the Slawntehus was described in a later report (Chance and Chance 1991:3):

For a couple of years, we seriously weighed the thesis that the Slawntehus artifacts were older than the assemblages of the Shonitkwu component at Kettle Falls...Its position on a high beach, with what looked like possible beach deposits (rhythmic strata) underneath them, suggested that the occupation might have been [*sic*] on an ancient Lake Columbia strand. That idea presented

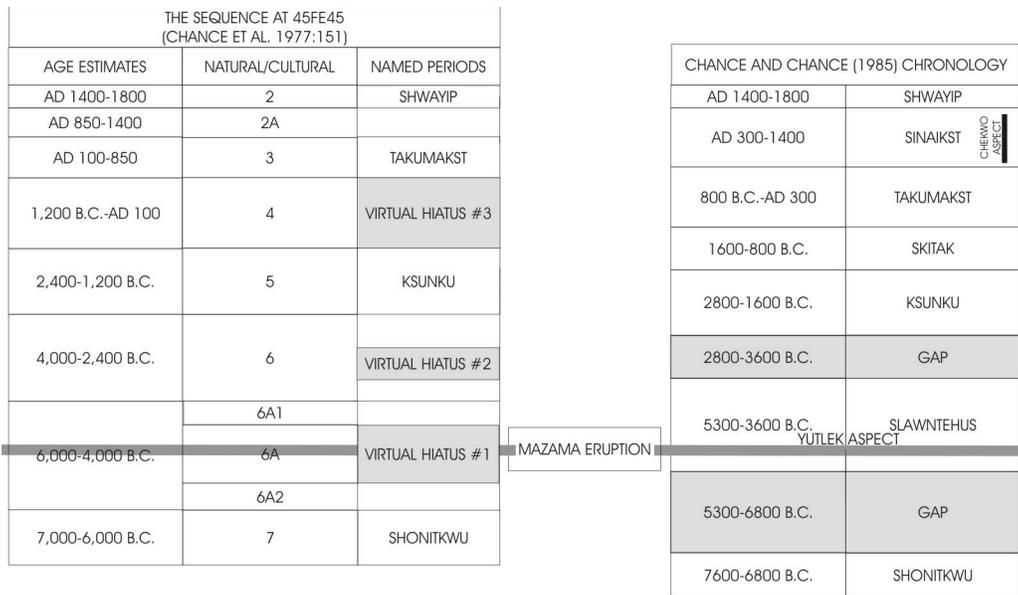


Figure 6. Stratigraphic sequence at 45FE45 compared to Kettle Falls Culture Chronology and Mazama eruption.

too many challenges and required too much new data that was not ready to hand. We rejected it because the weather would have been too cool, the food would have been too scarce. And the artifacts were not obviously as old as eleven or twelve thousand years. They looked somewhat younger, and stratigraphically they seemed to fit much better just after the Shonitkwu.

During the 1978 excavations, a cultural material assemblage dominated by cobble tools was encountered at 45ST65, 20 river miles upriver of Kettle Falls. Similar cobble tool-dominated assemblages were well represented at two additional sites, Pete’s Place (45ST59) located 10 river miles upriver, and the Hunters Site (45ST212) located 43 river miles downriver. The assemblage at 45ST59 rested directly on Mazama tephra. Based on the stratigraphic position relative to Mazama tephra the assemblage was placed within the Slawntehus Period. An additional reason for associating the assemblage with the Slawntehus Period related to raw materials:

The great paucity of quartzite slab and argillite tools at Pete’s Place argues for an activity by a people who were not canoe oriented, or if they were, they were traveling in them very little, for the quartzite source downriver, and the argillite sources upriver, were either unknown or ignored. This very sharply localized lithic inventory is a hallmark of the Slawntehus period, to which we assign this second terrace assemblage [Chance and Chance 1985:240].

Chance and Chance (1985) named these cobble tool assemblages the Yutlek Aspect of the Slawntehus Period. The Yutlek Aspect contained an “abundance of artifacts” (Chance and Chance 1985:240) which would suggest, based on the method for estimating population density, that the Slawntehus was more than a period of scarcity by people “visiting” and “barely keeping body and soul together” (Chance 1986:14). The Chance and Chance (1982) method for estimating population density by artifact counts would imply a relatively stable occupation during the

associated Slawntehus Period. However, the Kettle Falls culture chronology proposed low occasional occupations by groups unfamiliar with the area (Chance 1986), maintaining the original sequential essay defined by Chance et al. (1977).

DISCUSSION

The Kettle Falls culture chronology derived population density primarily from stratigraphic artifact yields (Chance et al. 1977:189). The two temporal gaps in the chronology were surmised from low artifact yield within excavated strata above Shonitkwu Period deposits on Hayes Island (Chance et al. 1977). The following discussion questions the methods for determining population density and the subsequent interpretation of an occupational gap followed by population replacement inherent in the existing Kettle Falls culture chronology.

A fundamental flaw with interpreting temporal gaps relates to estimating population based on stratigraphic artifact yield alone. Archaeological methods use cultural debris to infer what type of activities took place at a site, but a number of factors must be considered in the analytical process. First, the surviving cultural debris probably only accounts for a percentage of the total produced during associated activities. Second, the amount of debris would vary depending on the level of intensity and frequency of occurrence. Third, taphonomic processes affect how much cultural debris remains in a site and how much is lost in the years between when it is deposited and when it is recovered archaeologically. In addition, the density of artifacts in any stratum is heavily dependent on the rate of deposition of sediment, which is not likely to be constant between sites or even strata at the same site.

Activities additionally range in complexity. Archaeological sites often represent a number of combinations of activities. The variance of combinations of activities may create disparity in artifact yield among spatially distinct yet temporally contemporaneous archaeological sites.

People can also move the locations where certain activities are performed without significantly restructuring the pattern of activities. That is, if activities that occurred on Hayes Island for a time moved, the yield of artifacts by stratum would indicate a decrease or disappearance of the activity at the former location. In that regard, it would be difficult to track activity movement given the localized excavations on Hayes Island. The patterning of the activity across the landscape would require identifying the components of the functionally diagnostic assemblage and then determining if a similar assemblage existed in the vicinity. Over time, the patterning of an activity across the landscape could potentially be more difficult to identify by its associated assemblage if technological innovation or environmental impacts affected the type and rate of cultural debris deposition.

To determine if the same activities that occurred on Hayes Island were a result of a slight shift in location (and therefore not significant enough to warrant delimiting a change in the cultural historical record), or if there are significant changes suggesting one set of activities were replaced in favor of other subsistence related activities that could mark important cultural historical periods, spatial comparison between assemblages is necessary. Such comparisons were not made. Additionally, caution is required to account for technological innovation which may appear as a disparate component leading to a population change interpretation. Conversely, cultural continuity can be manifested in temporally-separate, morphologically-distinct

tool kits; the disparity explained by functional change. The difficulty in identifying continuity, functional change or cultural change for that matter lies with understanding the activities manifested in the assemblage. At complex sites, certain artifacts are bound to persist temporally, concurrent with activity movement, innovation or possibly ecological misfortune. The persistence leaves open the hypothesis for cultural continuity.

A detailed consideration of the factors that differentially condition long term range occupancy or positioning in macrogeographical terms is needed before we can realistically begin to develop a comprehensive theory of hunter-gatherer subsistence-settlement behavior. The latter is of course necessary to an understanding of archaeological site patterning [Binford 1980:19].

Reexamination of the Slawntehus Period and the Yutlek Aspect

The original hypothesis proposed for the sequential essay (Chance et al. 1977) appears to have been maintained regardless of subsequent data. An examination of the Slawntehus Period and Yutlek Aspect reveals some of the contradictions and ambiguities in the data that undermine the proposed chronological gaps and associated interpretations of low population density and population replacement.

The stratigraphic artifact yield method failed to observe more than “hints” (Chance and Chance 1985:269) of the Slawntehus Period or Yutlek Aspect component on Hayes Island. In fact, the connection was only applied after encountering the relatively artifact-rich Slawntehus and Yutlek Aspect deposits at archaeological sites away from Hayes Island. An obvious implication should have been that

Hayes Island alone did not contain the entire record of human occupation at Kettle Falls or the surrounding region. This seems not to have been recognized.

We are thus speaking of the history of the human use of the island [Hayes], and though we are certain it reflects the history of the surrounding region, we are not sure, in the near total absence of information from around Kettle Falls, of the degree to which these assemblages are representative [Chance et al. 1977:150].

It is plausible that the level of activity intensity may have been lower at times on the island, possibly due to accessibility. In any event, poorly represented cultural periods on Hayes Island were well represented on the mainland. If the temporal gaps were formulated from age estimates based entirely on Hayes Island assemblages, the encounter with the Slawntehus Period and Yutlek Aspect on the mainland would suggest a broader spatial sample of archaeological data was necessary to assist with defining the proposed culture historic model. Several avenues for additional research and plausible arguments existed. Nonetheless, the temporal gaps formulated primarily from excavations on Hayes Island were proposed and included in the final versions of the Kettle Falls culture chronology (Chance and Chance 1985; Chance 1986).

Chance and Chance (1985:269) argued that the Slawntehus Period was weakly represented around Kettle Falls. However, the artifact yield for the Yutlek Aspect was dominated by cobble tool artifacts and was stratigraphically and typologically within the Slawntehus Period. In fact, “more than a score” (Chance 1982:7) of Slawntehus Period sites with high artifact yields were recorded around Kettle Falls. The archaeological record was

indicating complexity and intra-site functional and spatial variation, but the temporal gap repopulation hypothesis was maintained. To continue support for low population density, temporal gaps and population replacement, the stratigraphic artifact yield method appears to have been replaced in favor of statements regarding the poor quality of the artifacts in Slawntehus Period assemblages.

These people of the Slawntehus made little use of quarried stone for making their artifacts; nearly all of their stone tools were fashioned from river cobbles gathered and broken apart for the purpose at each camping place. This is in considerable contrast to other periods of time on the upper Columbia. It is, comparatively speaking, an unambitious way of going about the business of living, for it shows a willingness to be satisfied with almost anything within reach. In the realm of stone technology it means that the people did not care too much how their tools looked, or whether they would keep a sharp edge, and so on [Chance 1986:15].

Chance (1986:15) continued “we do not want to carry this too far, for one site from this period has produced a few microblades.” Unfortunately, it was and has continued to be carried too far. Statements regarding prehistoric people’s ambition, poor aesthetic qualities of tools (from a modern perspective) and their failure to identify quality tool stone, used to corroborate the idea of a culture unfamiliar with the region and ill-equipped to subsist at a certain level of quality are absolutely and completely unsupported.

Another problem is the inconsistent interpretation of the meaning of local raw materials and expedient tools between periods. For the Shonitkwu, expedient tools from

locally-available quartzite raw materials indicate “a respectable degree of familiarity with the local area” and resident status (Chance et al. 1977:150). For the Slawntehus and the Yutlek Aspect, expedient technology from locally-available river cobbles is used to suggest unfamiliarity by groups merely passing through. The discovery of Slawntehus house feature was not used to support resident status. The hypothesis proposed for the original sequential essay was maintained regardless of all subsequent data.

A Relative Case for Continuity

Age estimates for Shonitkwu Period artifacts were based on a “comparison of both layers and the artifacts found here [Hayes Island] with similar items found elsewhere in the Northwest that have been dated by assays of radiocarbon” (Chance 1986:10). The inception and the terminus of the Shonitkwu Period are therefore estimates. On Hayes Island, two periods of virtual hiatus purportedly followed the Shonitkwu component at 45FE45 (Figure 6). The dates for the hiatus episodes were again estimates supported by low artifact-yielding strata. When the Slawntehus Period was defined, it was first reported for the period just after the Mazama eruption (Chance 1982; Chance and Chance 1985:275;). The methods for the temporal placement were later reported by Chance and Chance (1991:3) indicating the Slawntehus Period stratigraphically appeared to fit just after the Shonitkwu Period. Both periods contain microblades and Cascade phase artifacts. Yet, a temporal gap was proposed to separate what were eventually (Chance and Chance 1985; Chance 1986) viewed as two separate cultural entities.

The Shonitkwu Period assemblage and the 45FE45 Stratum 6A1 assemblage contained an abundance of cobble tools. The Yutlek Aspect of the Slawntehus contained a cobble

tool-dominated assemblage on Mazama tephra. However, a temporal gap was incorporated after the date estimated for the Shonitkwu Period that contained typologically similar artifacts to the Slawntehus Period and Yutlek Aspect of the Slawntehus, which were in turn referenced as separate cultures.

Temporal placement of the Slawntehus lacked chronometric dates. As mentioned previously, Chance and Chance (1991:3) considered whether the Slawntehus Period component was earlier than the Shonitkwu Period, stating “the artifacts were not obviously as old as eleven or twelve thousand years. They looked somewhat younger, and stratigraphically they seemed to fit much better just after the Shonitkwu.” If Chance and Chance (1991:3) identified the Slawntehus Period as “just after” the Shonitkwu Period and Chance and Chance (1985:275) state that the Slawntehus Period dates to around the Mazama eruption and runs up to the top of 45FE45 Stratum 6A, the 6A2 stratum at 45FE45 would have constituted the remaining evidence for a post-Shonitkwu Period temporal gap at Hayes Island. However, Chance et al. (1977) indicated that the small 6A2 assemblage indicated an increase in the use of quartzite knives, with continued use of manos and cobble chopping tools. The assemblage fails to support a period of abandonment or hiatus. Regarding the earliest Shonitkwu Period and the next substantial occupation, Chance (1986:17) stated that “these Ksunku...had much vigor and economic efficiency, yet their artifacts illustrate a fascinating persistence of old forms, as if Kettle Falls was a strong point of cultural conservatives.” If temporal gaps are eliminated, typological similarity between the Shonitkwu Period and the Ksunku Period assemblages suggests cultural continuity.

Chronometric Data and Continuity

Another line of evidence to address cultural continuity is the chronological distribution of radiocarbon dates obtained for Lake Roosevelt. If there were significant gaps in the distribution of radiocarbon age estimates that corresponded with the two proposed temporal gaps, this would support the hypothesis, while a more continuous distribution would support the alternative view of cultural continuity. Considering the radiocarbon dates between ca. 6800 and 1600 B.C. obtained thus far from Lake Roosevelt (Table 1), there are no significant gaps corresponding with the proposed gaps in the cultural chronology (Figure 7). Instead, Table 1 and Figure 7 indicate temporal continuity from the earliest temporal gap through the second gap and beyond.

There are limitations of the radiocarbon distribution data. Shonitkwu Period chronometric dates (or any dates greater than 6000 B.C.) have not yet been recovered. A key issue here is the availability of chronometric data, which is affected by inundation, reservoir capping (reservoir-deposited sediments) and loss of datable carbon at Lake Roosevelt. Site 45ST49 illustrates this problem. At 45ST49, artifact yields from shovel probes indicate that wave action is stripping away reservoir capping and exposing cultural materials, while the terrace behind the receding shoreline margin contains a deeper reservoir cap and buried materials (Pouley 2007a). The findings account for the numerous recordings of relatively thin linear archaeological sites within frequently inundated portions of Lake Roosevelt. Recorded site boundaries typically occur at the face of receding terraces when they likely should extend well back of the cutbank margin beneath the deeper reservoir cap (Pouley 2007a).

Table 1. Radiocarbon age ranges for Lake Roosevelt sites that correspond with the temporal gaps.

Site	Lab Number	Radiocarbon Age (cal B.P.) ^a	Max Age (cal B.C.) ^{ab}	Min Age (cal B.C.) ^{ab}	Reference
45ST34	Beta-107592	6960 ± 60	5980	5720	Hartmann 1997
45ST65	TX-3498	6510 ± 100	5630	5290	Chance and Chance 1985
45ST414	Beta-108789	6430 ± 70	5520	5260	Hartmann 1997
45ST207	GaK-7875	5980 ± 140	5250	4500	Chance and Chance 1985
45ST59	Beta-108115	5900 ± 50	4900	3330	Hartmann 1997
45ST65	GaK-7707	4780 ± 140	3900	3100	Chance and Chance 1985
45ST59	Beta-198791	4430 ± 50	3330	2920	Hartmann 1997
45FE45	GaK-7873	4120 ± 190	3300	2100	Chance and Chance 1985
45FE45	GaK-7711	3630 ± 390	3100	1000	Chance and Chance 1985
45FE45	GaK-6420	3850 ± 140	2800	1900	Chance et al. 1977
45FE45	TX-3495	3910 ± 80	2610	2150	Chance and Chance 1985
45ST94	TX-3501	3850 ± 140	2600	2000	Chance and Chance 1985
45ST207	GaK-7876	3770 ± 100	2500	1900	Chance and Chance 1985
45ST28	GaK-7874	3170 ± 220	2000	900	Chance and Chance 1985
45FE45	TX-3496	2890 ± 340	2000	200	Chance and Chance 1985
45ST63	Beta-131484	3260 ± 130	1900	1200	Roulette et al. 2000

^a calibrated at 2 δ using OxCal 3.9 (Bronk Ramsey 2001) and the IntCal98 calibration dataset (Stuiver et al. 1998).

^b minimum and maximum extent of 2 δ calibrated age range(s).

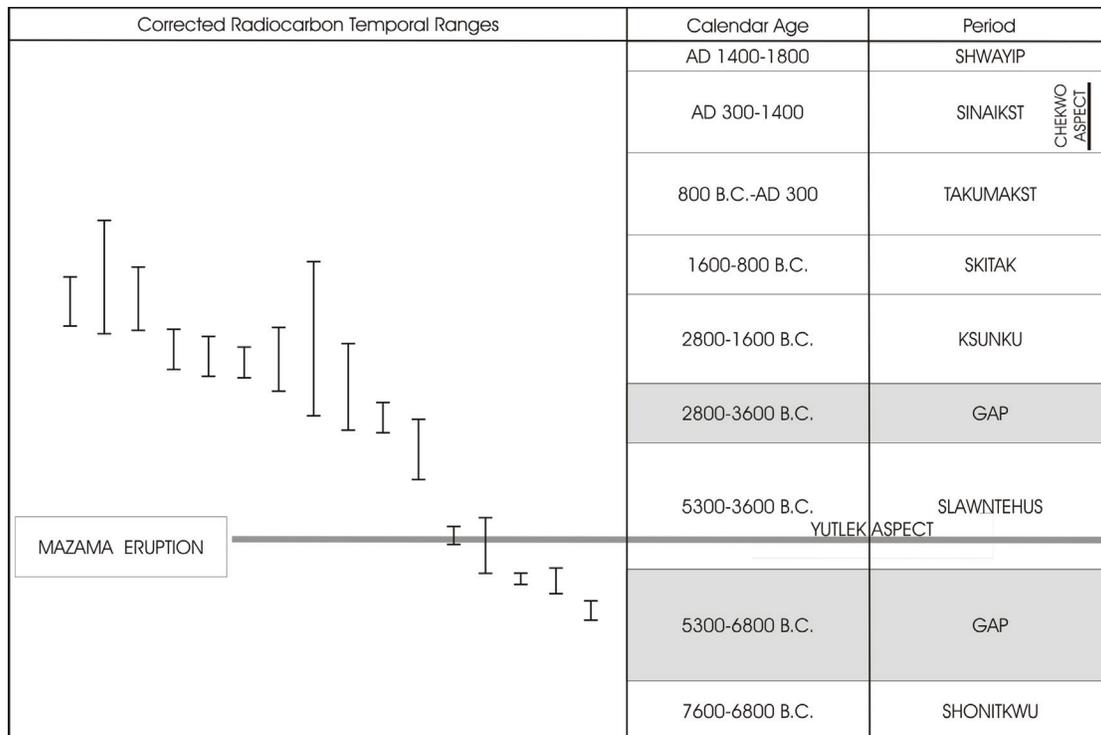


Figure 7. Radiocarbon dates within the proposed gaps of the original Kettle Falls culture chronology. See Table 1 for radiocarbon age estimates.

To collect intact carbon deposits, future excavations will need to occur in the deep reservoir cap behind the cutbank margin. The deflated artifacts on the drawdown beach are removed from their original position and datable carbon is most often removed by the reservoir. Therefore, gathering datable carbon may require excavation of intact hearth features beneath the deeper reservoir cap behind the terrace margin, possibly identified with the assistance of a magnetometer.

Simultaneous with attempts to procure early datable carbon should be a further reassessment of the Shonitkwu Period and its proposed age range of 7600-6800 B.C. Methods of relative dating used for the Shonitkwu Period fail to support the proposed temporal affiliation. The "similar items" (Chance 1986:10) used to support the 7600-6800 B.C. temporal affiliation for the Shonitkwu Period were not described. According to Chance (1986) and Chance and Chance (1985), microblades and a dart point comprise temporally diagnostic artifacts. However, microblades have been found in Shonitkwu, Slawntehus, Skitak and Sinaikst period deposits (Chance and Chance 1985) and the dart point depicted in Chance (1986:10) does not appear to resemble regional variants diagnostic to 7600-6800 B.C. Although it is possible that dates for the Shonitkwu Period are accurate, based on the available body of data, they are currently difficult to support.

There are few archaeological assemblages in North America that date to 7600-6800 B.C. comprised of as diverse array of artifacts as those purported for the Shonitkwu Period at Hayes Island. Shonitkwu Period artifacts were found on Hayes Island and in deflated contexts on the mainland (Chance and Chance 1985). Slawntehus Period artifacts were recovered at mainland archaeological sites and hints were encountered in lag deposits on

Hayes Island (Chance and Chance 1985). Nowhere in the Kettle Falls region have Shonitkwu Period artifacts been recovered stratigraphically in situ below Slawntehus Period artifacts. The end of the Shonitkwu Period and inception of the Slawntehus Period lack definable data. The dates used by Chance (1986) and Chance and Chance (1985) are too precise given the supporting data.

ALTERNATIVE

Continuity in artifact counts across strata at 45FE45 and typologically similar assemblages in Yutlek Aspect and Slawntehus Period components leave open the possibility of cultural continuity. The perceived low artifact yields by stratum on Hayes Island are not observed at Yutlek Aspect sites and are poorly expressed at Slawntehus Periods sites, where Chance (1986) relied on qualitative assessments of artifacts and raw material choices to support the original sequential essay, discounting the earliest house feature in the Kettle Falls region. If the low artifact yields by stratum on Hayes Island equate to a drop in activities, we know that other activities continued in the immediate region. The anomaly observed at 45ST95 on Mission Point (Chance and Chance 1979:169), where a high artifact yield was encountered within a stratum that corresponded with a Hayes Island stratum with a low artifact yield, also suggests continuity while indicating the argument for abandonment and population replacement is poorly supported. It is possible that the Mazama eruption impacted activities on Hayes Island for a time, but if the fish runs were diminished or stopped (as discussed above), the stratigraphic continuity of artifacts indicates that the people adapted and continued to utilize other resources associated with the island.

When artifact yields by stratum on Hayes Island increase at the beginning of the Ksunku

Period, it is likely in response to heightened activity levels and not population replacement. Any number of testable alternative hypotheses appear more plausible than cycles of populations with unalterable lifestyles abandoning the area after suffering environmental misfortune. The most straightforward interpretation of the archaeological data from Hayes Island and around Kettle Falls is both temporal and occupational continuity, and likely cultural continuity, with spatial variance of activities based upon resource availability.

RECOMMENDATIONS

The Kettle Falls culture chronology requires an update. First and foremost the scenario of temporal gaps and notions of repeated population replacement should be abandoned. While the period designations may still prove useful, the corresponding assemblages and temporal affiliations require adjustment, taking into consideration that it is possible for morphologically disparate assemblages to occur simultaneously as manifestations of the same culture. Therefore, the inclusion of aspects (Yutlek and Chekwo) is questionable. Chronometric data for the Shonitkwu Period and possibly early Slawntehus/Yutlek Aspect will help identify the temporal inception of the two periods. Several sites are candidates for possessing early Shonitkwu or Slawntehus components based on the body of literature compiled from compliance projects in the Lake Roosevelt National Recreation Area (e.g. Hartmann 1997; Pouley 2007a). Magnetometry or other non-intrusive archaeological techniques are recommended for locating intact subsurface features that may contain datable material. Block excavation may be necessary to reach the desired depths in a safe manner. Separating activities by technology, location, and from discrete and complex assemblages while incorporating paleoenvironmental data will

further assist with developing an updated prehistoric culture history for Kettle Falls and the Lake Roosevelt region. This analysis of temporal gaps leads more broadly to a recommendation for periodic review of earlier archaeological work in other localities. Updated functional, spatial and temporal interpretations of prehistoric lifeways will test the validity and accuracy of chronology units and assist with developing future research designs and methods.

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