CHAPTER 7

DISCUSSION

Chapter 6 dealt in some depth with the description of mortuary variability at the level of the individual site. The present chapter deals with attributes of the burial data as a whole. It investigates age and sex representation and artifact associations as they relate to age and sex, summarises observations on burial form and location with regards to status, and attempts to trace the development of socioeconomic inequality on the Plateau.

Representation of Age and Sex Classes

Age

Subadults (infant/child) are underrepresented in a number of assemblages on the Plateau (Table 7.1; see also Chapter 6). Wildcat Canyon, Old Umatilla, and Sheep Creek show the clearest pattern, with the largest sample sizes, but subadults also appear to be underrepresented in the Nicola Valley sites, at Beek's Pasture, and at Congdon.

In some cases, such as Wildcat Canyon (35-GM-9), it seems that the discrepancy can be largely accounted for by the complete or near-absence of infants. This recalls the fact that, in many pre-industrial societies, new-born infants are often not named until surviving to a certain age, usually about one year. Among the Wishram, for example, a child was first named from six months to two years of age (Spier & Sapir 1930). The rationale for such behaviour is fairly clear: in situations where infant mortality is high—a characteristic of pre-industrial societies—one does not want to make an emotional or an economic commitment to a child that very well might not live past its first month. When a child dies before being named, it has not been recognised by its parents or by the community, and little or no investment of effort in its burial can be expected. Perhaps something along these lines was occurring during the late prehistoric period at Wildcat Canyon and elsewhere. Such lack of investment may be expressed by non-burial or burial in a way that somehow involves less effort, such as the absence of grave inclusions for example—recall the paucity of grave goods in the Nicoamen (EbRi 7) neonates compared to all other age classes.

In other cases the simple lack of infants does not entirely account for subadult underrepresentation, although it certainly contributes to it. At Sheep Creek (45-ST-46), no infants and the remains of only four children were found in a total of 36 individuals. The total absence of non-perishable grave inclusions with the children also suggests lower investment. The burial assemblage from Old Umatilla (35-UM-35B) includes the remains of seven infants, eight children, and eight adolescents (of less than age 15) in a total of 193 individuals—thus it appears that both infants and children are underrepresented in this case. There is no evidence of lower investment in those subadults that are present (although the possibility was difficult to test due to the fact that many of the subadult graves were disturbed and could not be included in the quantitative analysis).

None of the samples dealt with in this analysis are truly random, and some form of bias cannot be ruled out. For example, perhaps the infant and child burials, some of which had grave inclusions, were concentrated in separate parts of the cemeteries and so not recovered. There is little indication in Collier *et al.* (1942) as to the possible extent of the Sheep Creek site and the proportion of it excavated. But even if such spatial segregation did occur, it would not negate the arguments being presented here, since the whole point is exactly that such segregation symbolically as well as physically separates subadults from the adult mortuary space. In the case of Old Umatilla, however, Rice (1978a) is confident that the cemetery was very restricted spatially and that it had been entirely excavated, or very nearly so.

Another potential source of bias involves differential preservation of immature versus mature bone. This is difficult to address, since little in the way of osteological analysis is presented in the majority of the reports. Assemblages in which differential preservation definitely seems to be a factor include Beek's Pasture and Congdon (see Chapter 6). In other cases this is less clear. Collier *et al.* (1942) do

suggest, for example, that overall skeletal preservation was relatively poor at Sheep Creek, but no comparison is made between the remains of the adults and those of the four children that were recovered. In some cases, subadult burials may be less visible; this may be a factor particularly in talus graves, such as those in the Nicola Valley, where the size of the depression is fairly directly proportional to its likelihood of discovery.

Table 7.1: Summary of Age Distributions in Plateau Burial Sites

Site	*Age (total)*				*Age (undisturbed)†*			
	adult n	*sub n*	*Binomial p*		*adult n*	*sub n*	*Binomial p*	
Congdon	58	2	1.79E-07	***	9	1	0.1493	
Beek's Pasture	13	1	0.0475	**	13	1	0.0475	**
Juniper	10	3	0.4206		10	3	0.4206	
Wildcat Canyon	53	10	0.0078	***	29	3	0.0055	***
Berrian's Is.	40	17	0.5535		24	9	0.4497	
Yakima	23	11	0.6932		13	9	0.9084	
Yakima, Selah	7	5	0.8822		7	5	0.8822	
Sheep Island	18	7	0.5118		15	7	0.6713	
Rabbit Island I	8	3	0.5696		8	3	0.5696	
Rabbit Island II	8	5	0.8346		8	5	0.8346	
Fishhook Is.	13	8	0.8523		13	8	0.8523	
Okanogan	10	6	0.8247		10	6	0.8247	
Keller	6	6	0.9614		6	6	0.9614	
Whitestone Cr.	23	15	0.9238		23	15	0.9238	
45-FE-7	11	11	0.9860		11	11	0.9860	
45-ST-8	12	3	0.2969		12	3	0.2969	
Sheep Creek	32	4	0.0071	***	32	4	0.0071	***
45-ST-47	7	3	0.6496		7	3	0.6496	
Nicoamen	7	8	0.9848		7	8	0.9848	
Nicola Valley	9	1	0.1493		9	1	0.1493	
Kamloops/Chase	16	8	0.7250		16	8	0.7250	
Total =	384	137	0.0349	**	282	119	0.4681	
Old Umatilla	170	23	2.30E-09	***	76	4	2.45E-08	***
Total =	554	160	3.36E-06	***	358	123	0.0181	***

* .10 significance level, ** .05 significance level, *** .01 significance level
† grave associations considered sufficiently secure for inclusion in quantitative analyses presented in Chapter 6

On the Plateau as a whole, there is some evidence for a slight increase in infant/child representation in mortuary assemblages through time. Of 124 individuals from sites/assemblages assigned to the late prehistoric period (excluding Old Umatilla because of the skewing effects of its anomalous large sample size), 27, or 21.7%, are the remains of infants and children. This figure represents a significant departure from Weiss's expected 30% minimum (Fisher's exact $p = 0.0261$), although, again, the difference may be influenced by sites with differential preservation of subadults. By contrast, 56 of 179, or 31.3%, individuals in the protohistoric group are the remains of infants and children. The difference in subadult representation between the two time periods is not marked, but does reach the .10 significance level (Fisher's exact $p = 0.0882$), and may be accounted for by only a relatively slight increase in infant/child mortality and/or a greater tendency for inclusion in the adult mortuary space (or better preservation). Indeed, the trend is less than might be expected given accounts of the effects of introduced diseases in the

ethnohistoric and ethnographic literature. It may be that the current inability to more accurately define and date assemblages obscures what would otherwise be a more substantial difference.

Binford (1971:22) suggests that the differential burial location of children can be explained by the different level of corporate involvement generated by the death of a child as opposed to the death of an adult. Similarly, Ucko (1969) suggests that the age at which inclusion in the adult mortuary space occurs may represent the age at which the individual is more actively incorporated into the functioning of the community. One possibility is that a child is not treated as an adult upon death prior to assuming the economic role of an adult. Such a question should be approachable with archaeological data. Furthermore, from the ethnographies, it should be possible to arrive at some idea of the age at which adult activities were assumed by children. However, the formal investigation of this idea does not form part of the present work.

Sex

Some physical anthropologists have suggested that current skeletal sexing techniques tend to result in a bias towards male identification (e.g. Weiss 1972). This general tendency for greater male representation in prehistoric skeletal populations is not apparent on the Plateau (cf. Sprague and Birkby 1973:6). In fact, there is greater female representation overall (92 males compared to 103 females) (Table 7.2), although the difference is not significant at the .10 level. (However, when the Old Umatilla data are included, the difference does become significant at the .01 level.) At the level of the individual site (see Chapter 6), there are some minor departures from the expected 50:50 sex ratio. The fact that these largely average out in the combined sample indicates that the directionality of this difference is not consistent. But to say that the "expected" sex ratio is 50:50 is perhaps inaccurate. It refers to what could reasonably be expected for a "natural" population in which the sexes experienced no forms of differential mortality. In some hunter-gatherer populations, however, there may be a trend towards slightly greater numbers of adult females in the living community. This has generally been seen as reflecting greater risk to adult males brought about by warfare and hunting activities. The fact that nearly every Plateau group in the ethnographic literature is characterised as polygynous to varying degrees suggests that many communities may have had a proportion of females greater than 0.50. Thus, it may be, in fact, a somewhat greater adult female representation that should be expected. This is particularly so when the mortuary populations are predominantly from river valley contexts in which the main settlements were located. As discussed in Chapter 2, adult male deaths are expected to occur more frequently away from the villages if they are largely involved in hunting and warfare. Balancing this to some degree, on the other hand, may be the tendency to return the bodies of adult males to the main village for burial (cf. Hofman 1986). This hypothesis could be tested using more precise age at death estimates—it should be the young and middle adult males that are underrepresented at valley bottom village cemeteries.

Male and female representation does not differ significantly between the late prehistoric and the protohistoric periods (Fisher's exact $p = 0.1777$). During the late prehistoric period, however, there is some indication of a slight departure from a 50:50 male:female ratio. In a sample of 81 sexed individuals (not including Old Umatilla) from this period, only 33, or 40.7%, are identified as male, compared to 48 (59.3%) females. This difference is significant at the .10 level (Fisher's exact $p = 0.0569$). Were the Old Umatilla data to be included, the difference would become far more marked; of a total of 152 sexed individuals, 54 (35.5%) are identified as male and 98 (64.5%) as female. This recalls Hofman's (1986) hypothesis (discussed in some detail in Chapter 2) that males, given their relatively greater involvement in long-distance hunting and trading activities, are more likely to die and be buried away from central village cemeteries. The increased ease of transport brought about by the introduction of the horse may have made it more likely that the remains of individuals who died on such expeditions were returned to valley bottom locations for burial. In this regard, it is of interest to recall the account given by Dawson (1891) of the body of a Nicola man brought back to the Nicola Valley on horseback for reburial a year after his death. This hypothesis could be tested by comparing the frequency of disarticulated burials for males and females, but the ethnographically documented, status-related practice of opening the grave and rewrapping the bones of the deceased in new blankets or robes may confound the results, since males were likely more apt to receive this treatment. Furthermore, the identification of a sufficient number of sexed disarticulated burials, as opposed to disturbed burials, may be problematic given the descriptions in many of the available reports. In any case, the data available from Old Umatilla suggest that there is no tendency for males to be associated with secondary burial (see Chapter 6).

Table 7.2: Summary of Sex Distributions in Plateau Burial Sites

Site	*Sex (total)*				*Sex (undisturbed)†*			
	male n	*female n*	*Binomial p*		*male n*	*female n*	*Binomial p*	
Congdon	5	4	0.5000		5	4	0.5000	
Beek's Pasture	5	4	0.5000		5	4	0.5000	
Juniper	2	2	0.6875		2	2	0.6875	
Wildcat Canyon	9	12	0.3318		9	12	0.3318	
Berrian's Is.	14	23	0.0444	*	9	13	0.1186	
Yakima	6	8	0.7880		5	4	0.5000	
Yakima, Selah	0	0	n/a		0	0	n/a	
Sheep Island	11	5	0.1051		10	4	0.0898	*
Rabbit Island I	4	2	0.3438		4	2	0.3438	
Rabbit Island II	4	4	0.6367		4	4	0.6367	
Fishhook Is.	3	3	0.6563		3	3	0.6563	
Okanogan	3	4	0.5000		3	4	0.5000	
Keller	2	2	0.6875		2	2	0.6875	
Whitestone Cr.	7	14	0.0946	*	7	14	0.0946	*
45-FE-7	3	5	0.3633		3	5	0.3633	
45-ST-8	2	3	0.5000		2	3	0.5000	
Sheep Creek	8	10	0.4073		8	10	0.4073	
45-ST-47	2	3	0.5000		2	3	0.5000	
Nicoamen	2	5	0.2266		2	5	0.2266	
Nicola Valley	3	4	0.5000		3	4	0.5000	
Kamloops/Chase	4	1	0.1875		4	1	0.1875	
Total =	99	118	0.1108		92	103	0.2370	
Old Umatilla	46	87	0.0002	***	21	50	0.0004	***
Total =	145	205	0.0008	***	113	153	0.0083	***

* .10 significance level, ** .05 significance level, *** .01 significance level

† grave associations considered sufficiently secure for inclusion in quantitative analyses presented in Chapter 6

Artifact Type Associations

Age

The sample size available from any single site on the Plateau is generally inadequate for a statistical analysis of the relationship between age and artifact categories. A single pooled sample consisting of all aged skeletons from the analysed sites, however, presents the opportunity to examine these associations. The Old Umatilla material is not included in the pooled sample because of its anomalously large sample size, which would tend to bias the results towards one site. A future analysis might find it profitable to further divide the admittedly overly broad age categories of infant/child and adolescent/adult employed here. Ideally the skeletal material would be re-examined by a single researcher or group of researchers using the same aging criteria before any further subdivision was used in an analysis.

The combined sample from all sites listed in Table 7.3 provides a total of 416 individuals, of which 293 are assigned to the "adult" group and 123 to the "subadult" group. Disturbed burials for which some information on inclusions was available were nevertheless excluded from the analysis. Age was tested for significant associations against a total of 38 artifact types using chi-square with continuity correction and Fisher's exact *p*. Fisher's exact test, as the name implies, is the more accurate measure.

Chi-square values and their associated probabilities are reported only for comparison of the techniques and because they are more familiar to most readers. They provide a more conservative test, especially when the continuity correction is used (Thomas 1986).

Significant associations, including three at only the .10 level, are seen in ten artifact types (Table 7.4). Sampling error alone, however, could be expected to produce about three or four erroneously "significant" associations in 38 tests at the .10 level, or about two at the .05 level. This would suggest that little emphasis should be placed on the three associations reaching only the .10 significance level. These include bird beaks (1 adult: 3 subadults; Fisher's $p = 0.0795$), pestles (18:2; $p = 0.0751$), and miscellaneous shell ornaments (17:10; $p = 0.0599$). The remaining seven artifact types, for which a significance level of at least .05 was achieved, include: ground stone celts (20 adults: 2 subadults; Fisher's $p = 0.0307$), glass beads (13:13; $p = 0.0255$), copper pendants (11:12; $p = 0.0191$), tubular stone pipes (20:1; $p = 0.0117$), shaft smoothers (15:0; $p = 0.0074$), stone knives (56:9; $p = 0.0019$), and projectile points (69:11; $p = 0.0004$).

Stone projectile points and knives/bifaces are relatively strongly associated with adult burials, although a small number do occur with subadults. Shaft smoothers (preferred here to the commonly used, more specific term "arrowshaft smoothers") are found exclusively with adult burials, but they do not occur in large numbers, and so this exclusiveness may be due to sampling error. In fact, two pairs of shaft smoothers appear to be associated with a child, Burial 8, at Berrian's Island (45-BN-3). The burial was badly disturbed, however, and as such has not been included in the present analysis. The adult association of the type would remain statistically significant in any case. These three artifact types—points, knives/bifaces, and shaft smoothers—share a utilitarian orientation, either directly in the procurement of resources, or in the manufacture of equipment used in the procurement of resources. Further, they seem fairly specific to hunting technology rather than subsistence activities in general. Digging stick handles, for example, are not statistically associated with adults (15 adults: 5 subadults; Fisher's $p = 0.8037$). A number of other utilitarian artifacts appear to hint at adult association—iron knives, gravers, bone awls, harpoons, bone needles, etc.—but occur in too low frequencies to achieve statistical significance.

There are a number of possible explanations for the occurrence of projectile points and stone knives with subadults. As is shown in the following section on sex associations, while adult males do tend to be associated with projectile points, knives, and shaft smoothers, it is overly simplistic to assume that individual subadult graves including the items are necessarily male. However, it does suggest that up to approximately two-thirds or more of the subadults with these items may be males, and that the items were seen as appropriate grave inclusions for male subadults. Related to this explanation, it may be that the subadult category as defined here includes older children that would have actually begun to participate in the activities represented. A more sensitive breakdown of age categories might reveal interesting information on the transitional age range within which the adult-oriented utilitarian items such as these begin to be included in graves. Presumably this would tend to reflect the age at which the activities represented were initiated (cf. Ucko 1969). However, it need not be assumed that all of the objects included in a grave were intended for use, or even that they were seen as appropriate for future use (as in the case of a male child being buried with hunting equipment); rather, the inclusion of some items may reflect expressions of grief and/or gifts of parting by the deceased's kin. But, based on the results achieved here, while such behaviours may add considerable "noise" to the archaeological record, they do not seem to have entirely obscured all patterning related to achieved status.

The two additional artifact types associated with adults are tubular stone pipes and ground stone celts. Very few subadult graves include either of these artifact types. Among protohistoric Plains groups, stone pipes were considered to be markers of special ceremonial and/or chiefly positions, leading O'Shea (1984) to postulate that their inclusion with subadults reflected hereditary privileges related to these positions. Interestingly, the distribution of stone pipes appeared to be partly independent of wealth, leading O'Shea to suggest that there were two different types of status represented: ascribed and achieved. While there is some ethnographic evidence (Spier and Sapir 1930; see Chapter 5) to support a similar position for stone pipes on the Plateau, it is premature to accept this interpretation without further investigation. Furthermore, the single occurrence of a tubular pipe with a subadult in this study is a child's grave near Selah in the Yakima Valley (see Chapter 6); it should be recalled that Bergen (1989) was uncertain of his identification, and that the burial may in fact be that of an adult.

Two artifact types, glass beads and copper pendants, occur with greater than expected frequency in subadult burials, although they are far from exclusive to them. At least in the early contact period, ethnohistoric accounts fairly unambiguously relate that glass beads, especially those of certain colours, particularly deep blue, were highly valued trade items. Under such circumstances, it might be considered

Table 7.3: Sites Employed in Age Chi-Square

Site	*n*	*n adult*	*n sub*
Berrian's Is.	33	24	9
Beek's Pasture*	11	10	1
Congdon*	10	9	1
Juniper	13	10	3
Sundale*	10	10	0
Okanagan	16	10	6
Rabbit Is.	24	16	8
Sheep Is.	22	15	7
Wildcat Canyon	32	29	3
Fishhook Is.	21	13	8
45-ST-8	12	9	3
Sheep Creek	36	32	4
45-ST-47	10	7	3
Whitestone Cr.	38	23	15
45-FE-7	22	11	11
45-ST-48	5	2	3
45-ST-50	4	4	0
45-ST-51	2	1	1
Keller Ferry	12	6	6
Yakima	22	13	9
Yakima (Selah)	12	7	5
Kamloops*/Chase	24	16	8
Nicola Valley	10	9	1
Nicoamen	15	7	8
Total	416	293	123

* sites in which the accuracy of some of the age estimates is uncertain

unusual to find them more strongly associated with subadult burials. Possibly the lack of control over time in the analysis is masking the early high value in which glass beads were held. While beads were still valued in later times, as they became more common access to them undoubtedly became less restricted and they achieved wider circulation. The same may hold true with copper pendants. Alternatively, the inclusion of material wealth with subadults may have been practised throughout the timespan represented by the data. This would be expected if, as seems likely, a component of ascribed wealth existed in the societies in question.

Sex

As with age, the sample size of sexed skeletons available from any single site on the Plateau is generally inadequate for a statistical analysis of the relationship between sex and artifact types (the association of projectile points with males at Whitestone Creek being one of the few exceptions—see Chapter 6). Again, the appropriate response to this difficulty is to construct a single pooled sample including all sexed skeletons from the analysed sites. Sites contributing no sexed burials with reasonably secure artifact associations were not included in the analysis.

Table 7.4:
Chi Square and Fisher's Exact Tests for Age and Artifact Type Associations

Type	*adult (293)*	*subad. (123)*	*Chi-square*	*p (c.c.)*	*Fisher's p*
iron bracelets	3	1	0.1220	0.7268	0.9999
elk tooth pendants	10	4	0.0461	0.8299	0.9999
abraders	12	5	0.0660	0.7972	0.9999
antler wedges	11	5	0.0166	0.8974	0.9999
pigments	36	16	0.0016	0.9676	0.8714
Olivella	25	9	0.0470	0.8283	0.8448
copper, misc.	18	6	0.0755	0.7835	0.8181
digging stick handles	15	5	0.0431	0.8355	0.8037
drills	6	1	0.2265	0.6342	0.6791
iron, misc.	15	4	0.3309	0.5651	0.6071
beaver teeth	14	4	0.1885	0.6642	0.6037
Haliotis	6	4	0.1452	0.7032	0.4907
gaming pieces	6	4	0.1452	0.7032	0.4907
bone points	19	5	0.5410	0.4620	0.4894
copper beads	24	13	0.3467	0.5560	0.4530
bone beads	14	3	0.6395	0.4239	0.4159
shell disc beads	13	2	0.4376	0.5083	0.3878
scrapers	29	8	0.8480	0.3571	0.3459
mauls	5	0	0.9305	0.3347	0.3277
Dentalium	43	23	0.7708	0.3800	0.3068
bone needles	8	1	0.7352	0.3912	0.2920
harpoons	8	1	0.7352	0.3912	0.2920
claw core/tooth	10	7	0.9540	0.3287	0.2871
juniper seed beads	12	11	1.2436	0.2648	0.2487
bone tubes/whistles	12	2	0.6862	0.4075	0.2484
bone awls	26	6	1.4258	0.2325	0.2257
gravers	8	0	2.1296	0.1445	0.1118
iron knives	7	0	1.7192	0.1898	0.1101
bird beak	1	3	2.1034	0.1470	**0.0795**
pestles	18	2	2.9388	0.0865	**0.0751**
misc. shell ornament	17	10	3.0247	0.0820	**0.0599**
celts	20	2	3.6962	0.0545	**0.0307**
glass beads	13	13	4.5626	0.0327	**0.0255**
copper pendants	11	12	4.8808	0.0272	**0.0191**
tubular pipes	20	1	5.3404	0.0208	**0.0117**
shaft smoothers	15	0	5.1426	0.0233	**0.0074**
stone knives	56	9	8.2700	0.0040	**0.0019**
stone points	69	11	10.9780	0.0009	**0.0004**

Table 7.5: Sites Employed in Sex Chi-Square

Site	*n*	*n males*	*n females*
Berrian's Is.	22	9	13
Beek's Pasture*	9	5	4
Congdon*	9	5	4
Juniper*	4	2	2
Okanagan	8	4	4
Rabbit Is.	6	4	2
Sheep Is.	16	11	5
Wildcat Canyon	21	9	12
Fishhook Is.	6	3	3
45-ST-8	1	1	0
Sheep Creek	18	8	10
45-ST-47	5	2	3
45-ST-31	2	1	1
Whitestone Cr.	21	7	14
45-FE-7	8	3	5
45-ST-48	2	0	2
45-ST-50	2	0	2
45-ST-51	1	0	1
Keller Ferry	4	2	2
Yakima	10	5	5
Kamloops/Chase	5	4	1
Nicola Valley	7	3	4
Spences Bridge	1	1	0
Total	188	89	99

* sites in which accuracy of the sex estimations is uncertain

The resulting pooled sample provides a total of 188 sexed individuals from some 29 sites (ten of which contributed five or fewer sexed individuals), comprising 89 males and probable males, and 99 females and probable females (Table 7.5). This does not exhaust the database, since there are a number of sites, each yielding a very small number of burials, that I have not included here. A sufficient sample size has been achieved, however, to enable the exploration of sex and artifact type associations. Clearly there is the potential for some of the skeletons to be inaccurately sexed (see Schulting 1993b and Chapter 6). However, given the relatively large sample size and the number of independent investigators analysing material from different sites, it is unlikely that a bias one way or the other would remain to substantially affect the results. In any case, no hypotheses are being offered or defended here, the analysis is exploratory and the results should be seen in this light.

There are relatively few significant associations between sex and artifact type. This is at least partly a result of the relatively large number of artifact types, many of which occur only infrequently. Some types, such as mauls and pestles, while suggesting the possibility of being associated with one sex, occur in numbers too low to permit satisfactory testing. It is apparent nevertheless, even with these infrequently occurring types, that any such association would have to rely on probabilistic statements rather than absolute exclusivity. In other words, there are no cases, beyond those obviously affected by low occurrence of an artifact type, in which an artifact type is exclusive to one sex or the other.

Twenty-eight artifact types were tested against sex using chi-square with continuity correction and Fisher's exact *p*. Those types not included, such as drills and gaming pieces, occurred in too few sexed

burials to present even the possibility of achieving significant results. It is obvious from an examination of the distribution of artifact types between the sexes that collapsing categories into more general types (for example, all copper types, all iron types, all marine shell types, etc.) would not achieve a significant result, as indeed it did not when tested.

Significant associations (including two at the .10 level) between artifact type and sex are found in seven instances (Table 7.6). These include: projectile points (35 males: 11 females; Fisher's p = 1.0E-5), shaft smoothers (10:1; p = 0.0035), tubular stone pipes (10:2; p = 0.0143), stone knives/bifaces (24:14; p = 0.0202), antler wedges (8:2; p = 0.0487), harpoons (7:2; p = 0.0872), and bone points (10:4; p = 0.0929). In all cases males are associated with the artifact type in question. Again, it should be kept in mind that, when testing for significance with a large number of possible associations, sampling error alone can be expected to produce some erroneously "significant" results. A total of 28 artifact types were tested against sex; this could be expected to result in about one falsely significant result at the .05 level, or as many as three at the .10 level. Given this circumstance, it may not be valid to place much emphasis on the .10 level associations between males and bone points and harpoons. On the other hand, Johnston (1987), who includes additional data from a few small sites not represented here, also suggests that fish spears and harpoons seem to be associated with male burials on the Columbia Plateau (although no tests of significance are provided). It is also worth noting that combining the two artifact classes—bone points and harpoons—results in a chi-square value of 6.26, significant at the .05 level (p = 0.0124).

It is not unexpected that more males than females are associated with projectile points. In hunter-gatherer societies cross-culturally, men are typically responsible for hunting, or at least the kind of hunting that makes use of projectile technology. Certainly in the ethnographic documentation for the Plateau, both hunting and salmon fishing are consistently characterised as predominantly, if not exclusively, male activities. There are exceptions: for example, the use of fishing spear technology by women is documented ethnographically for the Cour d'Alêne (Smith in Johnston 1987:93). But in those cases where women are said to have participated in land mammal hunting, it is usually made clear that they did not use projectile weapons, but were involved solely in such activities as deer drives and butchering, or in the exercise of shamanic/guardian spirit power.

What is of interest, if we are to go by the ethnographic accounts, is the fact that 11 females *are* associated with projectile points. There are, of course, a number of possible explanations for this. It may be that some or all of the "projectile points" associated with females actually represent some other tool type. This could easily be tested, but it seems safe to say that it is an unlikely explanation for all cases. A simpler explanation is that a significant proportion of females did indeed participate in hunting activities using projectile technology. While it could be suggested that female participation in the hunt was greater in the past than during the ethnographic period, a number of the points associated with females do appear to date to the full protohistoric period. Interestingly, a companion of the Lewis and Clark expedition to the Columbia River observed women manufacturing projectile points (Holmes in Gero 1991:170). Taken together, the two lines of evidence suggest that women did both manufacture and use projectile technology,although not as frequently as men, and perhaps in a fashion that was less accepted socially (and thus was not mentioned by male informants). A final possibility is that the inclusion of an item in a grave does not necessarily mean that that item was used by the grave's occupant during life. Winters (1968) encountered similar difficulties in interpreting the unexpected occurrence of atlatl weights in Late Archaic female graves at Indian Knoll.

One of the more interesting results of the tests of association between artifact type and sex is the discovery that shaft smoothers are strongly associated with males. Eleven male graves contained shaft smoothers compared to only a single female grave. It is tempting to invoke the possibility that the single female occurrence was wrongly sexed, but of course this is hardly satisfactory without further evidence. It is perhaps worth noting that the female grave containing the pair of shaft smoothers is from Berrian's Island (45-BN-3), which, as discussed in Chapter 6, is also somewhat unusual in a number of other respects as regards the distribution of artifact types between the sexes. Another possibility is that the class "shaft smoother" may include some artifacts that served a different function, possibly relating to bead manufacture. Mohen (1990:241) illustrates a pair of grooved abraders identified as stone bead polishers from Neolithic Europe that look very similar to what have traditionally been labelled as "arrowshaft smoothers" throughout western North America. This presents an interesting possibility, particularly since I

Table 7.6:
Chi Square and Fisher's Exact Tests for Sex and Artifact Type Associations

Type	*male (89)*	*female (99)*	*Chi-square*	*p (c.c.)*	*Fisher's p*
copper, misc.	4	4	0.0430	0.8353	0.9999
glass beads	5	5	0.0230	0.8789	0.9999
bone beads/tubes	7	7	0.0050	0.9434	0.9999
Olivella	10	10	0.0002	0.9879	0.8173
bone awls	10	11	0.0002	0.9879	0.8173
shell disc beads	6	8	0.0050	0.9434	0.7869
digging stick handles	5	7	0.0120	0.9139	0.7710
copper beads	6	5	0.0330	0.8555	0.7588
copper pendants	5	4	0.0270	0.8699	0.7376
iron, misc.	5	4	0.0270	0.8699	0.7376
Dentalium	18	17	0.1220	0.7268	0.7079
iron bracelets	0	2	0.4050	0.5247	0.4987
iron knives	2	5	0.3940	0.5301	0.4490
elk tooth pendants	2	5	0.3940	0.5301	0.4490
celts	8	5	0.6000	0.4385	0.3902
Haliotis	3	1	0.3770	0.5393	0.3462
scrapers	13	9	0.8980	0.3434	0.2635
pestles	4	9	0.9070	0.3409	0.2590
iron tubes	0	3	1.1510	0.2834	0.2481
mauls	6	2	1.5360	0.2152	0.1523
pigments	13	7	2.0630	0.1509	0.1036
bone points	10	4	2.5540	0.1100	**0.0929**
harpoons	7	2	2.3470	0.1255	**0.0872**
antler wedges	8	2	3.2410	0.0718	**0.0487**
stone knives	25	14	4.7300	0.0296	**0.0202**
tubular pipes	10	2	5.2080	0.0225	**0.0143**
shaft smoothers	10	1	7.1370	0.0076	**0.0035**
stone points	35	11	18.6900	1.00E-04	**1.00E-05**

have the impression, possibly erroneously, that there is an absence of much in the way of evidence for bead manufacturing on the Plateau (but then stone beads are not that common on the Plateau except in The Dalles area). In his notes on the largely middle prehistoric (ca. 4000-2000 B.P.) Congdon site, Bergen (1989) comments a number of times on the "... interesting association of a porous basalt polishing stone and a collection of stone beads". These stones, however, are not found in pairs, nor do they appear to have the distinguishing longitudinal groove of the shaft smoother, which Bergen separately identifies, indicating that he made a distinction between the two. In any case, the association noted by Bergen is not statistically significant, at least given the data provided in his notes.

The association of stone knives/bifaces with males in just under a 2:1 ratio is likely related to the use of this tool in general hunting activities. Some artifacts identified as knives may have in fact been used as projectile points. But it is apparent that the use of knives/bifaces was by no means limited to males. It is also problematic that knives and bifaces are not distinguished in much of the early literature. Bifaces may function largely as efficient cores for producing expedient flake tools. In some cases, as suggested in Chapter 4 (see also Pavesic 1985, 1992), large, well-made bifaces may have been specialised grave inclusions never intended for use.

When the bone point and harpoon associations are included, the results show a tendency for many utilitarian artifact types to be included in male burials. The majority of these, though not all, appear to be associated with hunting and fishing activities. But it is also noteworthy that in no case is the association exclusive. Two artifact types, antler wedges and shaft smoothers, are associated with manufacturing activities. Antler wedges are presumably associated with heavy duty woodworking, while shaft smoothers are likely associated with the manufacture of hunting implements. Only one artifact type, tubular stone pipes, may be possibly considered a prestige item as generally defined (although recall the discussion in Chapter 4 suggesting that some projectile points may also have operated at least in part as prestige items).

The association of tubular stone pipes with males is susceptible to the same interpretive problems seen in the above discussion of projectile points. As with hunting, there is considerable ethnographic support for smoking being an activity indulged in primarily by men (see Chapter 4), and particularly men of high status, such as chiefs and shamans. Thus, it is not surprising that more males are found with pipes than females. But this does not account for the two pipes that are found with females, and it is the exceptions that are often more interesting than the rule. Ethnographic sources indicate that women could also become shamans, and so it is possible that some women smoked through their assumption of this role. And indeed, such an interpretation was in fact offered by Osborne (1957:33) for Burial 25 at Berrian's Island, one of the two instances of a female associated with a steatite pipe. This burial was also unusual in the quantity and variety of its grave inclusions (see Chapter 6). A related possibility is that some "pipes" functioned as sucking tubes used in shamanic performances.

A number of additional artifact types are noteworthy precisely because they did *not* associate strongly with one sex. Digging sticks, for example, are consistently and conspicuously related with female subsistence activities (i.e. root digging) in the Plateau ethnographic literature. They were held to be highly prized, personal possessions, given to young women at puberty (Cressman 1960:70). Yet, of the 12 specimens found as grave inclusions, five were found with individuals identified as male. The occasional association of a male skeleton with a digging stick handle would perhaps not require a great deal of explanation, but the absence of even a weak association between females and digging stick handles is another matter (see also Osborne 1957:84). Again, it is possible that some of the implements identified as digging stick handles actually served quite a different function. Early photographs taken by Teit at the turn of the last century (Tepper 1987) frequently show Thompson men holding "tomahawks" with antler heads that appear nearly identical to digging stick handles. The two implements should be easily distinguished by the orientation of the hafting hole. But of those specimens from burials for which illustrations are provided, none appear to be drilled for hafting in a manner similar to those shown in Teit's photographs.

It is also unusual that so few examples of this supposedly ubiquitous tool would end their use-life as grave inclusions (although a number were found either with unsexed individuals or in disturbed contexts and so were not included in the analysis). It may be, as was suggested in Chapter 4, that the majority of digging stick handles were made of wood. If this were the case, those that were made of antler—certainly a far more difficult material to work than wood—may have functioned partly as prestige items. In this regard I should note that those burials that do contain digging stick handles seem to have on average a greater richness of artifact types and an higher GLV. This would be easy to test more explicitly in a future analysis.

The distribution of ground stone celts/adzes is also perhaps unexpected. If these are associated with heavy duty woodworking, as is generally thought to be the case by those who label them utilitarian at all, then it might be expected that, as with antler wedges, they would show a tendency to be associated with males. This, however, is not the case. Eight celts were found with males, while five were found with females (Fisher's $p = 0.3902$); the majority of the celts found with both sexes are made of material identified in the primary sources as nephrite. This could be interpreted as supporting the hypothesis that a significant number of celts functioned more as prestige items than as utilitarian items. However, the possibility that women as well as men used celts/adzes in woodworking should not be discounted either.

There are, to summarise this section, three considerations in explaining and interpreting the significance of artifact/sex associations: 1) potential errors in the sexing of the skeletons, 2) errors in the classification of the artifact, and 3) the validity of assuming use during life based on inclusion at death. It is, in fact, a common but simplistic assumption that the articles included in a grave either belong to the occupant (and so were used by him or her during life), or were thought to be appropriate in terms of future role expectations (projectile points in the grave of a male infant, for example). While one finds this assumption made frequently in the literature on both the Plateau and elsewhere, it has, as far as I am aware, never been adequately tested in a cross-cultural ethnographic sample (see Ehrenberg 1989 for a similar

critique). For example, grieving family members might present items of their own for inclusion in the grave as gifts to the dead. These last two possibilities are difficult to chose between on the basis of the available archaeological data. Some combination of the factors discussed above may be responsible for the observed pattern.

Nevertheless, the fact that patterning is still evident and that it follows reasonable expectations based on cross-cultural ethnographic data, suggests that to a large extent utilitarian items that are included in adult graves were probably used during life. (It is worth noting that most Plateau ethnographic accounts state fairly explicitly that items interred with the deceased were those used during that individual's lifetime.) Since all of these associations are with males, it seems that male social roles were more clearly defined, or at least that it was considered more important to identify distinctively male social roles in the mortuary context. These roles seem, with the exception of tubular pipes, to have been largely economic, specifically involving hunting activities, and may relate to the greater prestige often conferred upon hunters. O'Shea (1984) notes a similar asymmetry in male/female artifact associations in his analysis of three protohistoric and historic Plains groups (Omaha, Pawnee, and Arikara), although he did not discuss the possible implications of his observations. Males exhibited overwhelmingly more statistically significant artifact type associations than did females, although a few female associations were also observed. In the five cemetery sites analysed, 42 male artifact type associations were noted, compared to only 6 female associations (O'Shea 1984:293-294). It would be interesting to examine this relationship in more detail with the Plateau data, by region and through time, but such an analysis is beyond the scope of the present work, as well as probably beyond the capacity of the currently available data.

One of the more practical applications of the results achieved here is the ability to take the identified artifact type associations and apply them to burials of unknown or questionable sex. Clearly this should be done with caution—none of the associations are exclusive—but in the absence of any other information it can at least provide a tentative identification. For example, a number of shaft smoothers occur with unsexed burials and in disturbed burial contexts throughout the Plateau. In some cases it would be very useful to have the ability to estimate the sex of individuals. For example, Burial 15 from Beek's Pasture, representing a single adult cremation of unknown sex, is by far the richest burial at that site (see Chapter 6). The grave includes a shaft smoother, suggesting that the individual is most likely male. The results of this section also indicate that the veracity of sex type associations made on the basis of ethnographic accounts cannot be accepted at face value, and that they should not be applied to archaeological data without being adequately tested. The ethnographic record can, and should, however, be used as a source of ideas in the construction of hypotheses to be tested.

Age and Sex in Relation to Status

While Chapter 6 did investigate the differential distribution of grave inclusions along the dimensions of age and sex at the level of the individual site/assemblage, the small sample sizes being dealt with often resulted in an inability to obtain statistically significant differences. The results were sufficient, however, to suggest what were suspected to be meaningful trends in status differentiation in the age/sex groups (see Tables 7.7 and 7.8). In order to investigate this impression further, a pooled sample containing all data from all sites used in the quantitative analyses presented in Chapter 6 was employed (again excluding Old Umatilla).

This combined sample contains 411 individuals, including 276 adults, 16 adolescents, 71 children, and 48 infants. Of the adult/adolescent group, 91 were identified as male and 100 as female.

The two broad age groups used throughout Chapter 6—adolescent/adult and infant/child—were compared using *t*-tests for number of artifact types, number of utilitarian types, and number of sociotechnic types (Table 7.9). The pattern that emerges clearly emphasises differences in the inclusion of utilitarian items as grave inclusions between the age groups. Sociotechnic items, on the other hand, do not differ significantly between the two age groups. This being the case, it is not surprising that tests for age-based differences in grave lot value (GLV) also fail to reach an accepted level of significance, since this measure, through its differential weighting of artifact types, emphasises sociotechnic items at the expense of utilitarian items.

Table 7.7: Summary of Age Differences in Artifact Richness

Site	*Age*		*No. Types X*		*Util. X*		*Socio. X*	
	adult n	*sub n*	*adult*	*sub-adult*	*adult*	*sub-adult*	*adult*	*sub-adult*
Congdon	9	1	3.44	0.00	2.44	0.00	1.00	0.00
Beek's Pasture	13	1	2.62	1.00	1.23	0.00	1.38	1.00
Juniper	10	3	4.10	0.00	0.30	0.00	3.80	0.00
Wildcat Canyon	29	3	2.03	0.67	1.31	0.33	0.72	0.33
Berrian's Is.	24	9	4.67	3.56	1.58	1.33	3.08	2.22
Yakima	13	9	0.85	2.56*	0.38	0.22	0.46	2.33**
Yakima, Selah	7	5	1.14	1.00	0.14	0.00	1.00	1.00
Sheep Island	15	7	2.73	0.86	2.00*	0.29	0.73	0.57
Rabbit Island I	8	3	2.13	1.67	1.25	1.00	0.88	0.67
Rabbit Island II	8	5	2.88	5.20	1.50	2.00	1.38	3.20*
Fishhook Is.	13	8	5.69	1.75	3.38*	0.75	2.31	1.00
Okanogan	10	6	1.60	2.00	1.00	1.00	0.60	1.00
Keller	6	6	1.83	1.00	1.33	0.50	0.50	0.50
Whitestone Cr.	23	15	2.76	2.80	1.13	0.67	1.65	2.13
45-FE-7	11	11	1.64	0.36	0.18	0.18	1.45	0.18
45-ST-8	12	3	1.25	0.67	0.67	0.00	0.58	0.67
Sheep Creek	32	4	2.31	0.00	1.81	0.00	0.50	0.00
45-ST-47	7	3	1.43	3.33	0.71	0.33	0.71	3.00
Nicoamen	7	8	6.29	3.13	3.57	1.38	2.71	1.75
Nicola Valley	9	1	4.44	1.00	2.11	0.00	2.33	1.00
Kamloops/Chase	16	8	8.13	6.13	5.06*	2.88	3.00	3.25
Total =	282	119						
Average =			3.03	2.27	1.59	0.77	1.44	1.45
t =			2.04		3.42		-0.05	
p =			0.042		7E-04		0.959	

* .10 significance level
** .05 significance level

Given that a large sample was available, the four age groups were also investigated separately (see Figures 7.1, 7.2, 7.3, 7.4). Analysis of variance (ANOVA) supports the results of the bivariate analysis. The only significant difference between the age groups is seen in their association with utilitarian items ($F = 4.21, p = 0.0060$). Figure 7.2 graphically shows the trend towards increasing numbers of utilitarian items with increasing age. The use of more precise age at death estimates, particularly in the child age class, would, as was suggested earlier in the analysis of artifact type associations, provide insights into the age during which adult roles were assumed on the Plateau. While not included in this analysis, more detailed age data are available for some of the burial sites discussed here. The absence of a significant difference in GLV scores between the age groups suggests that, while they may have been underrepresented as a group, those infants that *were* accorded burial in the adult mortuary space did not receive treatment indicative of lower status than adults.

The results of the above analysis are subject to a number of possible interpretations. Some trends are more easily and satisfactorily explained than others. For instance, it is not surprising that the occurrence of utilitarian items as grave inclusions tends to increase with age. But it is less clear why there should not be a similar trend in sociotechnic artifacts, if it is assumed that status on average increases with age. This would appear to suggest that, over the Plateau as a whole, wealth and status were to a large extent acquired by birth into wealthy, high-status families, rather than achieved. I should emphasise that it is not the mere

Table 7.8: Summary of Sex Differences in Artifact Richness

Site	*Sex*		*No. Types X*		*Util. X*		*Socio. X*	
	male *n*	*female* *n*	*male*	*female*	*male*	*female*	*male*	*female*
Congdon	5	4	4.60	2.00	3.20	1.50	1.40	0.50
Beek's Pasture	5	4	2.20	1.25	0.80	0.50	1.40	0.75
Juniper	2	2	10.00	3.50	1.00	0.00	9.50	3.50
Wildcat Canyon	9	12	2.78	1.58	1.67	1.25	1.11	0.33
Berrian's Is.	9	13	4.89	5.08	1.89	1.62	3.00	3.46
Yakima	5	4	0.20	0.50	0.00	0.50	0.20	0.00
Yakima, Selah	0	0	n/a	n/a	n/a	n/a	n/a	n/a
Sheep Island	10	4	3.30	1.25	2.30	1.00	1.00	0.25
Rabbit Island I	4	2	2.50	2.50	1.50	1.00	1.00	1.50
Rabbit Island II	4	4	2.00	3.75	1.25	1.75	0.75	2.00
Fishhook Is.	3	3	12.33	7.33	6.67	5.67	5.67	1.67
Okanogan	3	4	1.33	1.25	0.67	0.75	0.67	0.50
Keller	2	2	4.00	0.00	3.50	0.00	0.50	0.00
Whitestone Cr.	7	14	3.86	2.36	2.29	0.64	1.57	1.71
45-FE-7	3	5	2.33	0.40	0.00	0.00	2.33	0.40
45-ST-8	2	3	2.00	1.00	1.50	1.00	0.50	0.00
Sheep Creek	8	10	5.38*	1.30	4.25*	1.20	1.13*	0.10
45-ST-47	2	3	2.00	0.67	0.50	0.33	1.50	0.33
Nicoamen	2	5	8.50	5.40	4.50	3.20	4.00	2.20
Nicola Valley	3	4	3.67	3.50	1.67	2.00	2.00	1.50
Kamloops/Chase	4	1	11.50	4.00	7.50	4.00	3.75	0.00
Total =	92	103						
Average =			4.15	2.50	2.33	1.28	1.80	1.21
t =			2.86		2.85		1.73	
p =			0.005		0.005		0.09	

* .10 significance level
** .05 significance level

presence of some "rich" child burials that leads to this interpretation, but rather the fact that, on average, and with an adequate sample size, child burials cannot be distinguished from adult burials on the basis of the frequency with which sociotechnic artifact types are found as grave inclusions. Of course, this assumes that those artifacts that I have interpreted as being "sociotechnic" were in fact involved in this sphere, and that they are meaningful indicators of wealth and status. Arguments in support of these assumptions have already been presented in some detail in earlier chapters. Furthermore, the fact that the two artifact groups—utilitarian and sociotechnic—*do* exhibit non-random patterns with respect to age and sex suggests that the distinction made is behaviourally meaningful.

The results obtained here seem to mirror those obtained by Peebles (1971, 1978) in his study of grave inclusions at the Moundville site, in which utilitarian artifacts were found to be structured mainly along age/sex lines, while sociotechnic artifacts were not, but rather cross-cut the subordinate dimensions of age and sex. In fact it is not uncommon in complex hunter-gatherer mortuary studies to find that child burials on average display wealth equal to or greater than adult burials (for example, L. King 1982). This does not necessarily refute the hypothesis that this in many cases can indicate some degree of ascribed status as defined in Chapter 2. Mortuary analyses concentrate overwhelmingly on cases in which there are large numbers of burials from relatively well-defined cemeteries. This in itself biases the data towards

Figure 7.1: Relationship between Age and Number of Artifact Type

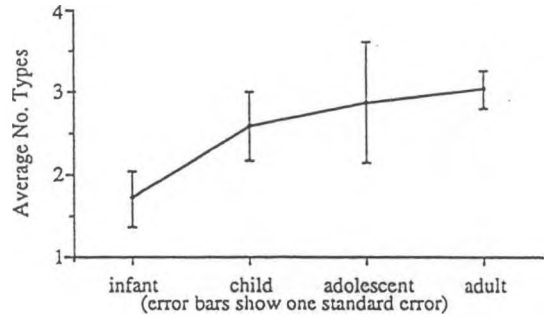


Figure 7.2: Relationship between Age and Number of Utilitarian Type

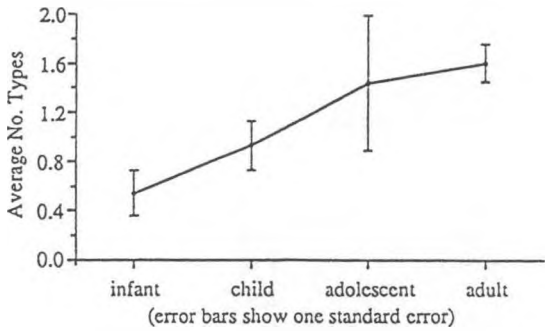


Figure 7.3: Relationship between Age and Number of Sociotechnic Type

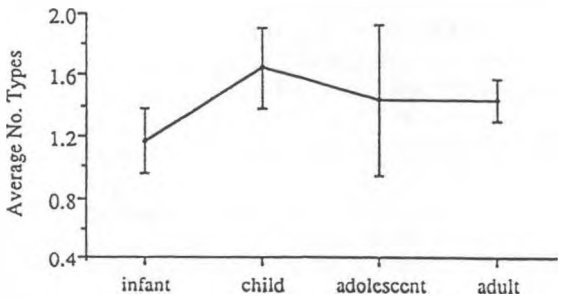


Figure 7.4: Relationship between Age and GLV

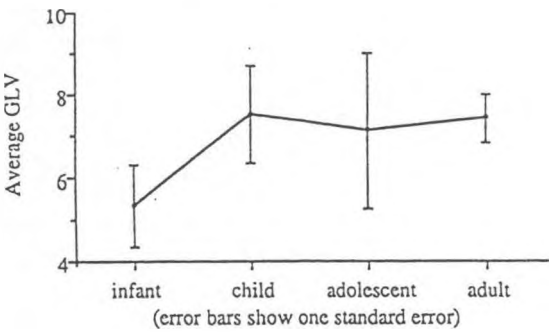


Table 7.9: *t*-Tests for Age and Number of Artifact Types

Average	*Adult*	*Infant/Child*	*t*	*p*
All Periods				
n	292	119		
Types X	3.03	2.23	2.04	0.0419
Util. X	1.59	0.77	3.42	0.0007
Socio. X	1.44	1.45	- 0.05	0.9593
GLV X	7.40	6.64	0.73	0.4636
Late Prehistoric				
n	97	27		
Types X	2.18	1.67	0.78	0.4357
Util. X	1.48	0.52	2.03	0.0441
Socio. X	0.69	1.15	- 1.69	0.0960
GLV X	4.36	5.59	- 0.90	0.3704
Protohistoric				
n	123	56		
Types X	3.14	1.88	2.06	0.0405
Util. X	1.20	0.59	1.99	0.0525
Socio. X	1.94	1.29	1.55	0.1238
GLV X	9.18	6.00	1.74	0.0845

those more complex sociocultural systems in which some degree of sedentism, corporate groups, and socioeconomic inequality are all more likely to have been present than not.

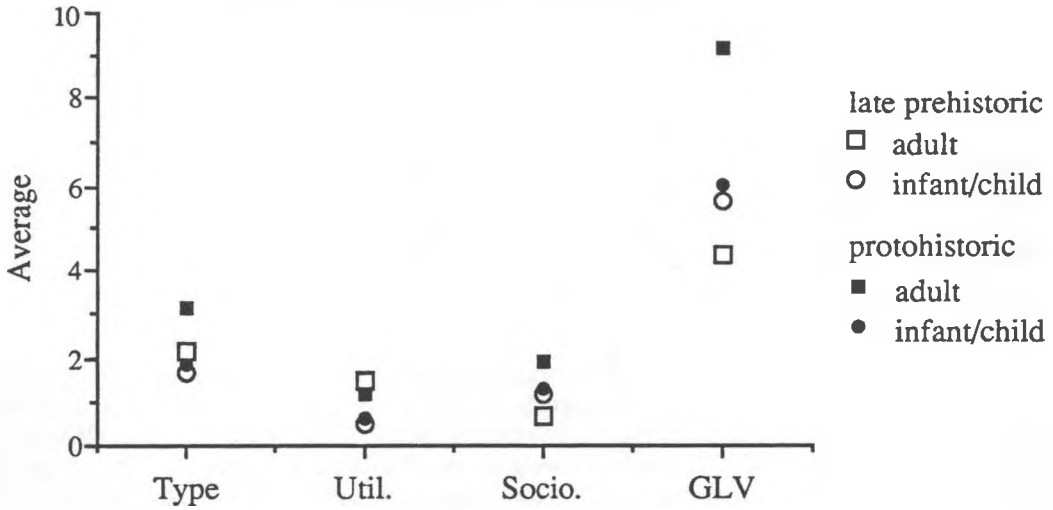
Braun (1979), whose work was discussed briefly in Chapter 2, introduces a more sophisticated model that attempts to distinguish between achieved and ascribed status in mortuary contexts. If infants and children are being used as vehicles to express the achieved wealth and status of their parents, then at some point there must be a shift when the individual determines his or her own status. Braun suggests that, ethnographically, this would occur near the time of puberty, upon the assumption of adult activities and roles. In such a situation one would expect a pattern in which adolescent burials exhibit lower energy expenditure (as measured by grave inclusions on the Plateau) than either infants and children on the one hand, or adults on the other. Some suggestion of such a pattern appears in the GLV scores, with children and adults exhibiting higher average GLV scores than adolescents. Infants show substantially lower scores, but this could relate to the phenomenon of what may be termed non-recognition discussed earlier. But, in any case, while they may be suggestive, none of these differences approach statistical significance. Possibly the observed pattern indicates a mixture of achieved and ascribed status.

Dividing the data into two broad time periods—late prehistoric and protohistoric—reveals further interesting relationships. Quite contrary to what might be expected, the late prehistoric infant/child group exhibits an higher average GLV than the adolescent/adult group, while the protohistoric infant/child group exhibits a substantially *lower* GLV than the adolescent/adult group (see Table 7.9 and Figure 7.5). Again, this pattern is generally not discernible at the level of the individual site/assemblage. Assuming for the moment the simplest situation—a generally isomorphic relationship between burial wealth and living status—it appears that the status of subadults *decreased* from the late prehistoric to the protohistoric period. More accurately, the average GLV value for the infant/child group hardly changed between the two periods (late prehistoric $\overline{X}$ = 5.59 and protohistoric $\overline{X}$ = 6.00), while that of the adult group increased dramatically in the protohistoric period (from $\overline{X}$ = 4.36 to $\overline{X}$ = 9.18). But since I am interested here in *relative* status, the effect is the same. The results could, then, be interpreted as suggesting a shift away from

an emphasis on ascribed status in the late prehistoric towards greater emphasis on achieved status during the protohistoric, keeping in mind that the terms "ascribed" and "achieved" represent relative positions on a continuous scale. Again, this pattern is quite unexpected. It has often been assumed that the protohistoric period on the Plateau was one of *increasing* sociocultural complexity, including a shift towards ascribed status from a more egalitarian system in the prehistoric period (Ray 1932, 1939; Stapp 1984). Why the opposite trend should be observed is unclear, unless a pattern similar to that proposed for some Northwest Coast groups held, in which sudden population decreases left previously inherited social positions more open to general competition (Ruyle 1973; see also Campbell 1989).

Differences along the dimension of sex were found to be more pervasive (Table 7.10). Here, *t*-tests reveal that male graves contain on average significantly more artifact types overall, and that this distinction is maintained when artifacts are separated into utilitarian and sociotechnic types, although only at the .10 significance level in the latter case. This trend is largely masked at the level of the individual site/assemblages forming the units of analysis in Chapter 6. Finally, male graves also on average exhibit significantly higher GLV scores than females at the .05 level.

Figure 7.5: Changes in the Relationship between Time, Age, and Grave Inclusions



To some degree this appearance of greater male status may be exaggerated. Ethnographically, women are often involved in the production and ownership of textiles—basketry and weaving—that are also forms of material wealth, but perishable. Certainly blankets and robes were wealth items on the Plateau, and were frequently used in mortuary contexts. On the other hand, ethnographic accounts presented in Chapter 5 suggest that both sexes would be wrapped in blankets or robes upon death, and so the differences observed in non-perishable wealth may still be a valid indicator of the difference between male and female status.

The shift from the late prehistoric to the protohistoric period sees a significant increase in female grave associations relative to males, though still remaining below the male average. This could indicate that females participated more equally in the new sources of wealth being made available in the protohistoric period. Alternatively, or perhaps reflecting the same underlying process, the increase in female grave wealth in the protohistoric period may indicate an increase in the importance of marriage alliances. Families invest in their children of both sexes through feasts and the distribution of gifts at important life events, leading up to and including marriage, and this investment is in effect advertised by the wearing of costly clothing and ornaments (cf. Hayden in press). On the Plateau, as elsewhere, wealth was commonly exchanged at marriage, typically in the form of bridewealth.

Table 7.10: *t*-Tests for Sex and Number of Artifact Types

Average	*Male*	*Female*	*t*	*p*
All Periods				
n	91	100		
Types X	4.15	2.50	2.86	0.0047
Util. X	2.33	1.28	2.85	0.0048
Socio. X	1.80	1.21	1.73	0.0861
GLV X	9.75	6.13	2.39	0.0179
Late Prehistoric				
n	32	29		
Types X	3.41	1.48	2.21	0.0311
Util. X	2.41	1.03	2.06	0.0440
Socio. X	1.00	0.45	1.69	0.0955
GLV X	6.75	2.72	2.35	0.0220
Protohistoric				
n	33	48		
Types X	4.73	2.90	1.79	0.0769
Util. X	1.97	1.10	1.60	0.1133
Socio. X	2.76	1.79	1.37	0.1751
GLV X	13.39	8.48	1.65	0.1028

There is in fact some interesting archaeological evidence for at least limited female exogamy and patrilocality on the Plateau. Both Old Umatilla (Lynch 1978) and Berrian's Island (Newman in Osborne 1957) display higher proportions of females exhibiting cranial modification (see Chapter 6), ethnographically more typical of the Chinook-speaking Wasco-Wishram (Chapter 5). The securing of marriage alliances with the wealthy occupants of the Long Narrows would have provided a definite asset to an upriver family, presumably giving them, if the marriage was between elites (as it is far more likely to have been—see Chapters 2 and 5), trading privileges and access to its great fisheries. The availability of new sources of wealth initially controlled largely by the Wishram through their middleman position would have provided added incentive to pursue such ties in the early protohistoric period. A possible increase in the importance of marriage alliances in the protohistoric period could also reflect shifting power relations seen at this time, and the need for allies due to the increased levels of aggression. While this scenario seems reasonable, it should be emphasised that the currently available evidence supporting it is tentative. For one thing, the large Old Umatilla cemetery gives few indications of the presence of a wealthy elite.

Also apparent is a trend towards decreasing inclusion of non-perishable utilitarian items in graves. Presumably this relates to the actual decrease in use of items of pre-contact technology in favour of Euroamerican items, particularly guns and steel knives, which were too valuable to be used as grave inclusions to the same extent that earlier stone and bone implements were. When such items were included in graves, they functioned more in the sociotechnic sphere, and, because they were coded as such, the incidence of utilitarian artifacts in the protohistoric period may be somewhat artificially deflated. But there are so few Euroamerican "utilitarian" items found as grave inclusions that this would have little effect on the observed decrease. Balancing the trend in decreasing utilitarian items is a substantial increase in the number of types of sociotechnic items, particularly copper ornaments, glass beads, and *Dentalium*, deposited in burial contexts in the protohistoric period. Absolute numbers of items also increase markedly (see Schulting 1993a) at this time, due largely to the increased availability of shell and copper.

It is frequently postulated that a shift in social organisation occurred during the protohistoric period, one which provided for a greater emphasis on ascribed status and rights on the Plateau (cf. Stapp 1984). This may have been related to the impact of European trade goods and a shift in economic emphasis towards the new trading patterns brought about by them. The acquisition of the horse and of the gun and their impact on native mobility and warfare are well-known phenomenon, and conceivably contributed to an increase in social complexity. Possibly the observed increase in grave inclusions, particularly sociotechnic items, in the protohistoric period indicates an increasingly differentiated ranked society requiring greater conspicuous consumption of status objects. Parker Pearson (1984) refers to the need of elite classes to consume increasing quantities of surplus and prestige items as fundamental for the maintenance and/or advancement of prestige and power. Expensive ornaments are obviously well suited to this role. Such a scenario has also been advocated by Stapp (1984), who presents the following hypothesis:

> Stimulated by the arrival of new items (trade goods to the west, and the horse to the east), local headmen reorganised their villages into corporate groups (Hayden & Cannon 1982). This led to an increase in production, leading to surpluses, which were then transformed into various forms of wealth, among them, copper ornaments. The ornaments, symbolic indicators of this newfound wealth and power, were distributed to family members, thus setting the stage for an evolution from an egalitarian society to a ranked society [Stapp 1984:102-103].

But there are a number of problems with this scenario. For one thing, given the small sample sizes, poor documentation, and inadequate skeletal analysis of many of the burial assemblages investigated by Stapp, it is not clear how much confidence can be attributed to his interpretation of rich "familial units" (Stapp 1984:99). Perhaps the shift, if indeed it does exist, can rather be attributed to the devastation wrought by introduced diseases. The epidemics may be assumed to have taken an especially heavy toll on children, and are almost certainly responsible for the extremely high infant and child mortality and frequency of multiple interments seen at protohistoric sites such as Freeland, Canoe Creek, and Nicoamen. Faced with these losses, perhaps the perceived value accorded to infants and children increased (cf. Brown 1981:29; Hofman 1968:172).

But more importantly, there is little indication, based on the mortuary evidence presented here, that any significant increase in wealth—and presumably status—differentiation did in fact occur between the late prehistoric and the protohistoric (discussed further below). There is no statistically significant difference in Gini indices between the two periods. The late prehistoric period cannot be characterised as "egalitarian". Regarding both adult and subadult burials, there is indeed on average an increase in the frequency and quantity of grave inclusions in the protohistoric period (as proposed by Sprague 1967), and also a tendency for the inclusions to be of a more ornamental nature, but this appears to indicate a general increase in the availability of new sources of material wealth, which then tend to remain distributed with an equivalent degree of inequality as that seen in the late prehistoric period. In fact, the observed trend is quite the opposite of what would be expected if a model assuming an increase in complexity in the protohistoric period were true. Infants and children are buried with *less* wealth (particularly as measured by GLV) relative to adults than in the late prehistoric period, arguing against any increased emphasis on ascribed status during the protohistoric period. The idea that the late prehistoric period was more egalitarian than the protohistoric period is not supported by the mortuary data as presented here.

Given my earlier discussion (see Chapter 2) on elite options in the face of increased availability of both new and traditional status items (copper and *Dentalium*, for example), there are alternatives to interpreting the increase of sociotechnic items found as grave inclusions during the protohistoric period as an increase in social complexity. In the late prehistoric period, rare single objects, such as tubular stone pipes or large nephrite celts, may have been sufficient to indicate high status (at least in terms of non-perishable goods likely to be interred with the dead). In the prehistoric exchange system, there would have been no dramatic increase in the availability of such items, and so one would not expect to find increasingly large numbers of them in burials. But once having incorporated such items as copper ornaments as indicators of wealth and status (or rather, having placed a greater emphasis on them, since prehistoric copper was known on the Plateau and most likely functioned as a status item), the exponentially increasing availability of the metal through trade would have made it necessary for the elite to incorporate more and more of it in order to maintain its ability to differentiate status (cf. Cannon 1989). One way of reducing the

supply (i.e. to curb inflation) would be to remove large amounts from circulation, and I suggest that this is very likely what was occurring on the Plateau during the protohistoric and early historic periods.

Exploring Inequality Through the Use of Lorenz Curves and Gini Indices

Mortuary data from 27 Plateau burial assemblages (some of these are composite samples) provide a range of Gini indices from 0.30 to 0.77 with richness as the measure of "wealth", and from 0.33 to 0.80 with GLV as the measure of "wealth" (Table 7.11). As might be expected, all assemblages depart significantly from perfect equality. By way of comparison, family income inequality in the United States in 1980 ranged from G = 0.3163 in Wyoming to G = 0.4450 in the District of Columbia (Braun 1988). (Of course these values are in no sense directly comparable since the same measure of wealth was not employed, but they do provide a sense of the degree of inequality that is being discussed.)

Table 7.11: Summary of Measures of Inequality in Plateau Mortuary Assemblages

		All Types			*Utilitarian*		*Sociotechnic*	
Site	*n*	*C.V.*	*Gini*	*Gini GLV*	*C.V.*	*Gini*	*C.V.*	*Gini*
Kamloops/Chase*	24	0.36	0.30	0.33	0.39	0.34	0.45	0.41
Selah	12	0.42	0.33	0.37	-	-	-	-
Rabbit Is. I, 45-BN-15	11	0.44	0.36	0.33	0.55	0.57	0.48	0.46
Congdon, 45-KL-41	30	0.39	0.36	0.35	0.43	0.41	0.43	0.40
Rabbit Is. II, 45-BN-15	15	0.41	0.37	0.41	0.49	0.52	0.47	0.48
Nicola Valley*	10	0.43	0.41	0.42	0.50	0.52	0.45	0.42
45-ST-8	15	0.47	0.45	0.58	0.58	0.67	0.60	0.70
Rabbit Is. (I&II), 45-BN-15*	26	0.44	0.42	0.46	0.51	0.55	0.51	0.54
Nicoamen, EbRi 7	15	0.51	0.52	0.50	0.57	0.64	0.47	0.48
Berrian's Is., 45-BN-3	33	0.53	0.53	0.53	0.56	0.65	0.56	0.56
Juniper	22	0.54	0.55	0.59	0.68	0.82	0.57	0.60
Okanogan, 45-OK-66, 112*	16	0.52	0.55	0.49	0.58	0.66	0.48	0.46
Whitestone Cr., 45-FE-24	38	0.52	0.56	0.57	0.68	0.76	0.53	0.59
45-ST-47	11	0.59	0.57	0.60	0.65	0.84	0.57	0.75
Fish Hook Is. I, 45-FR-42	10	0.54	0.57	0.67	0.58	0.67	0.64	0.77
Fish Hook Is. II, 45-FR-42	13	0.54	0.57	0.61	0.54	0.59	0.58	0.66
Sundale	25	0.53	0.58	0.62	0.63	0.75	0.57	0.65
Sheep Island, 45-BN-55	22	0.58	0.61	0.60	0.60	0.69	0.60	0.70
Old Umatilla, 35-UM-35B	105	0.54	0.62	0.66	0.54	0.62	0.72	0.87
Wildcat Canyon, 35-GM-9	32	0.83	0.65	0.68	0.62	0.71	0.66	0.78
Fish Hook Is. (I&II), 45-FR-42*	23	0.60	0.67	0.69	0.60	0.70	0.60	0.73
Yakima Valley*	22	0.58	0.67	0.70	0.67	0.81	0.61	0.73
Keller Ferry, 45-LI-27	12	0.59	0.68	0.72	0.62	0.72	0.67	0.81
Dalles-Deschutes*	34	0.60	0.68	-	0.53	0.59	0.67	0.82
Beek's Pasture	18	0.65	0.72	0.71	0.68	0.81	0.65	0.72
Sheep Creek, 45-ST-46	38	0.64	0.73	0.77	0.63	0.73	0.70	0.84
45-FE-7	24	0.65	0.77	0.80	0.68	0.69	0.83	0.83
number of sites/assemblages =	27							
simple average =		0.53	0.55	0.57	0.58	0.66	0.58	0.65
r^2 (with preceding column) =			0.74	0.92		0.93		0.88

* denotes composite assemblages

Sample size ranges from 11 individuals at site ST-47 to 38 individuals at both Whitestone Creek and Sheep Creek, and 105 at Old Umatilla. Because the Lorenz curve and its derivative Gini index are measures of relative inequality, sample size should not be a factor, despite the fact that the larger samples tend to display a greater richness of artifact types. This is important given the criticism of sample size dependence levelled against many other measures of richness and diversity (cf. Bobrowsky and Ball 1989). Plotting the Gini indices against sample size for 19 sites (see Figure 7.6) clearly shows no correlation between the two variables ($r^2 = .02$).

One of the more interesting results seen in Table 7.11 involves the high correlation ($r^2 = 0.92$) between the Gini indices calculated from the simple richness of artifact types, and the GLV Gini indices calculated from weighted "wealth" scores (Figure 7.7). This result is emphasised in the richness and GLV Lorenz curves for individual burial assemblages presented in Appendix C. The rank order of assemblages does change in a few cases, but none of these shifts are significant when tested. Furthermore, the direction of change is not predictable, so that in some cases the GLV Gini score will be lower than the richness Gini score, while in others it will be higher.

The averages of the Gini scores calculated for artifact richness and for GLV across the 27 assemblages are basically identical (G = .55 and GLV G = .57, respectively). This result might be expected, since those graves with a greater richness of artifact types are more likely to contain exotic and prestige items, and such items receive a higher weighting in the calculation of the GLV Gini . However, I would like to emphasise that this result need not necessarily apply in other contexts; rather, the relationship is a matter for empirical research. It is also worth noting that the Gini index is fairly highly correlated ($r^2 = 0.74$) with the computationally simple coefficient of variation (defined as $SD/\overline{X}$, in this case transformed to vary between 0 and 1.0), which is simply a standardised measure of variability.

Figure 7.6: Plot of Gini index against sample size n for all sites

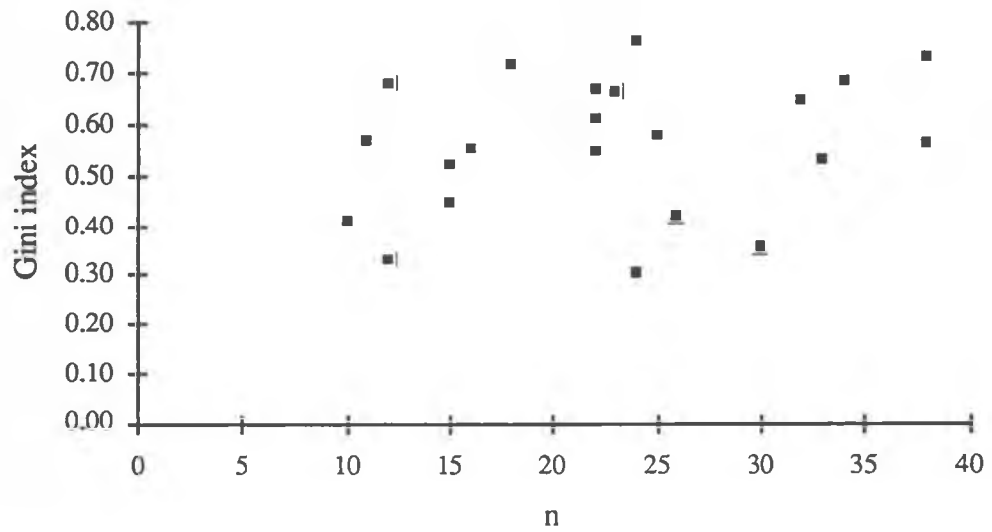
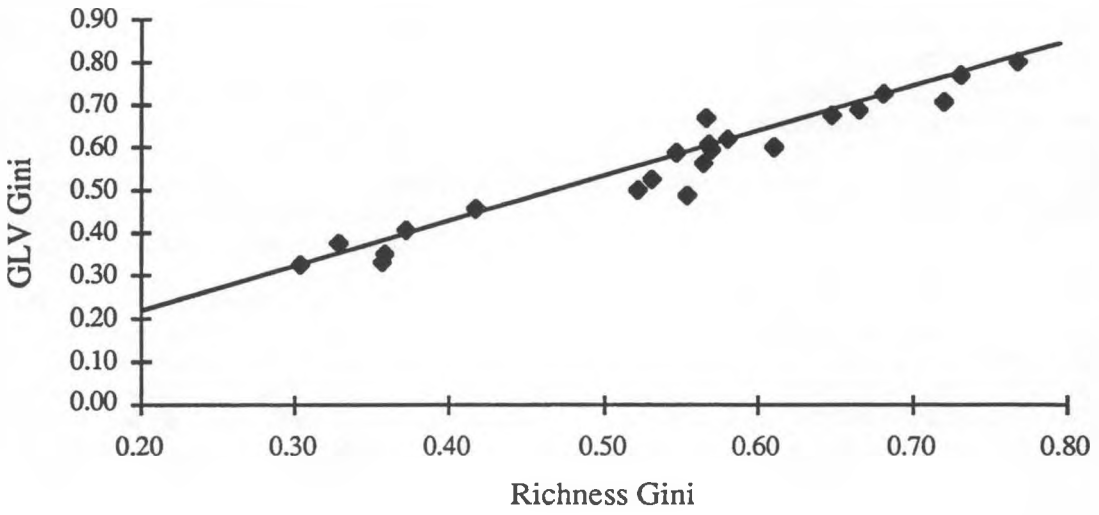


Figure 7.7: Relationship between Richness and GLV



Before conducting the analysis, I hypothesised that sociotechnic artifact types would be more unequally distributed, given the greater expense involved in their acquisition compared to utilitarian artifacts. Presumably all adults participated in subsistence activities and so would possess the "tools of the trade", and might often be buried with them. The elite, on the other hand, would be expected to participate disproportionately in regional exchange systems and so would have greater access to exotic and other prestige items relative to the rest of the community. This expectation was not borne out by the results, however, which are notable only for the overall lack of observed differences in inequality in distributions of utilitarian and sociotechnic artifact types. In fact, the average Gini indices of both groups are nearly identical (UTIL G = 0.66; SOCIO G = 0.65). As fairly substantial differences are seen at the level of the individual assemblages, it may be that confounding factors, particularly age (at death), sex, and time period, are partly responsible for this result. As demonstrated earlier in this chapter, adult males in particular are significantly more likely to be interred with a number of specific utilitarian artifact types, including projectile points, knives, shaft smoothers, antler wedges, bone points, and harpoons; thus they contribute substantially to the observed inequality in the distributions of utilitarian artifact types. Finally, because of the low richness in utilitarian artifact types in some of the assemblages, some of the high Gini scores may in some cases be misleading. That is, they are likely not behaviourally meaningful.

The difficulties in testing the statistical significance of Gini indices and the offered solution were presented in Chapter 3. Once sample sizes of approximately 20 are reached, the difference between the two Gini indices being tested are required to reach about 0.20 before a significance level of .05 is attained. As is apparent from Table 7.12, there is little problem in reaching the required degree of separation in many cases. It is, of course, much more difficult to achieve significant results with very small sample sizes of less than about 15. It is this that largely prevents the investigation of within-group variability in inequality.

To my knowledge, the results presented here constitute the first attempt to test differences between sample Gini indices for statistical significance in an archaeological context. The advantage of treating assemblages as samples rather than populations regardless of the completeness of recovery at a site should be obvious. Doing so enables the use of Lorenz curves and Gini indices to move beyond being merely a descriptive tool to meaningful inferences concerning larger groups. I would argue that, even in cases where an entire burial group or cemetery *has* been systematically excavated, it is still more useful to treat the resulting burial assemblage as a sample rather than a population. Following Cowgill (1989), in such cases the "population" may be thought of as a "sample" of what would be present at a site if the cultural groups responsible for the material record there had continued doing the same things in the same place for a longer

period of time. Rarely would we want to restrict our comments to only the recovered assemblage, no matter how "complete" it appears.

Table 7.12: Randomisation Tests for Gini Indices based on Plateau Mortuary Data

	Kam	Sel	Cong	Nic	ST8	Rab	Nicm	Ber	Jun	Okan	White	Sun
Kamloops	-											
Selah		-										
Congdon			-									
Nicola				-								
45-ST-8					-							
Rabbit Is.						-						
Nicoamen	<.05	<.10	<.10				-					
Berrian's	<.01	<.10	<.10					-				
Juniper	<.01	<.10	<.05						-			
Okanogan	<.01	<.10	<.05							-		
Whitestone	<.01	<.05	<.05			<.10					-	
45-ST-47	<.01		<.10									
Sundale	<.01	<.05	<.01			<.10						-
Sheep Is.	<.01	<.10	<.01	<.10		<.05						
Wildcat	<.01	<.05	<.01	<.05		<.01						
Fishhook	<.01	<.01	<.01	<.10		<.05						
Yakima	<.01	<.01	<.01	<.05	<.05	<.01						
Keller	<.01	<.01	<.01	<.10	<.10	<.05						
Dalles-Des	<.01	<.01	<.01	<.05	<.05	<.01	<.10	<.10	<.10			
Beek's	<.01	<.01	<.01	<.05	<.10	<.01	<.05	<.05				
Sheep Cr.	<.01	<.01	<.01	<.01	<.05	<.01	<.05	<.01	<.05	<.10	<.05	<.10
45-FE-7	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.05	<.05	<.05	<.05

NB. 45-ST-47 has been left off of the horizontal axis of the table as it adds no significant results.

So, now that it is possible to: 1) quantify the degree of inequality in a distribution of grave inclusions, and 2) test differences in the resulting values for significance, it remains to ask how the results are to be interpreted. That is, what can they tell us? Selected Plateau assemblages in Table 7.13 show the proportion of "wealth" (artifact richness in this case) held by population deciles, together with theoretical distributions of perfect equality and absolute inequality for comparison. Thus, for example, even in the most equitable distribution, that of Kamloops/Chase, the top ten percent of the burials hold about 25 percent of the "wealth". In contrast, the top ten percent of the Sheep Creek burials hold about 67 percent of the "wealth". Looking first at the low end of the range of Gini scores, randomisation tests seem to separate Kamloops/Chase, Selah, and Congdon as showing significantly less inequality than most of the remaining assemblages. The Selah assemblage, besides displaying a relatively equal distribution of artifact types (G = 0.33) and GLV (GLV G = 0.37), gives an impression of extreme simplicity. As Table A.2 (see Appendix A) shows, there is little "wealth" in the assemblage to be differentially distributed; there are only three artifact classes present in the entire assemblage. Such an assemblage, especially because of its small size (n = 12) is very susceptible to skewing, and this is just the kind of situation that might be expected to lend itself on occasion to a very unequal distribution and thus an high Gini value. That this is not the case could suggest that the Selah data do not in fact represent a wide range of status positions. Whether or not these positions were present in the living community is another matter, since more elaborate burials might have been located elsewhere.

Table 7.13: Proportion of "Wealth" for Given Proportion of Population in Selected Plateau Assemblages

% of Pop.	% of Wealth							
	Equality	Kamloops	Rabbit Is.	Berrian's Is.	FishHook Is.	Wildcat	Sheep Cr.	Inequality
0 to 10	0.10	0.01	0.00	0.00	0.00	0.00	0.00	0.00
10 to 20	0.20	0.05	0.03	0.02	0.00	0.00	0.00	0.00
20 to 30	0.30	0.10	0.05	0.04	0.00	0.00	0.00	0.00
30 to 40	0.40	0.19	0.13	0.09	0.00	0.03	0.00	0.00
40 to 50	0.50	0.27	0.18	0.14	0.03	0.08	0.00	0.00
50 to 60	0.60	0.36	0.27	0.21	0.10	0.12	0.05	0.00
60 to 70	0.70	0.50	0.41	0.31	0.18	0.18	0.09	0.00
70 to 80	0.80	0.60	0.51	0.40	0.31	0.30	0.20	0.00
80 to 90	0.90	0.74	0.71	0.63	0.48	0.53	0.33	0.00
90 to 100	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GINI =	0.00	0.30	0.36	0.53	0.57	0.65	0.73	1.00
n =	1000	23	26	36	22	39	34	1000

The Kamloops/Chase composite assemblage displays the least inequality in its distribution of grave inclusions, both in terms of richness and GLV. Despite the fact that its Gini value of 0.30 is almost identical with that of Selah, Kamloops/Chase presents an entirely different impression. As with the Selah assemblage, it almost entirely lacks the pyramidal structure expected in a situation of high inequality and status differentiation. The difference is, that while the Selah assemblage is characterised by simplicity and a low artifact richness, Kamloops/Chase is the second most diverse assemblage in the collection after Berrian's Island (see Table A.2). To some extent this may be a result of the composite nature of the Kamloops/Chase assemblage, as it undoubtedly encompasses a wider temporal span than Selah. But this alone does not nearly account for the discrepancy. Kamloops/Chase also exhibits the highest average number of artifact types, over seven per burial. While the low inequality in the distribution of artifact richness could be interpreted as indicating a more "egalitarian" society than most of the other assemblages, an alternative explanation would be that the lowest socioeconomic group is simply not represented; i.e. its members were either being buried elsewhere or not being buried at all in ways that would leave traces in the archaeological record. A similar interpretation for Selah seems far less likely given the impoverished nature of its artifact assemblage. The relative lack of inequality observed in the Kamloops/Chase assemblage, then, may be occurring *within* the upper wealth stratum alone. Rather than indicating a more egalitarian society, it may actually point to greater and more formalised social inequalities, with special burial areas for the most important community or lineage members. Interestingly enough, Teit (1909:592) notes that, among the Shuswap, poor people who had no powerful relatives were not buried, but simply deposited on the ground or piled over with mats and brush. This is not to say that the ethnographic observation can be uncritically used to "explain" the archaeological data. More work needs to be done before a satisfactory account can be offered for the relatively low inequality seen in the Kamloops/Chase, particularly given the problematic nature of the sample. But, given the available data, and recognising its limitations, it does appear that the grave inclusions indicate a relatively wealthy group, and that the poor are entirely absent.

At the opposite extreme, the highest Gini values are seen at Beek's Pasture, Sheep Creek, and FE-7, ranging from G = 0.72 to 0.77. Beek's Pasture and FE-7 both date to the protohistoric period, while Sheep Creek dates to the late prehistoric period. As might be expected, assemblages with high Gini scores are characterised by having a significant number of burials containing no grave inclusions, together with relatively few burials containing many and diverse items (see Table A.2). There is always the problem of

contemporaneity to deal with, but it seems unlikely that, in all the cases examined, those burials lacking grave inclusions are substantially earlier than those burials with grave inclusions. One thing this brings into focus is the oft-cited idea that grave inclusions are almost "invariably" found in Plateau burials (Sanger 1969; Sprague 1967:201, 1971a; Stryd 1973:88); clearly this is not the case, although it may hold more for the Canadian than for the Columbia Plateau. Again, one must be cautious in the interpretation of the observed differences in inequality. While they certainly do suggest a very unequal access to certain types of goods, at least for the purposes of mortuary display, this should not be taken to imply that great social distances necessarily separated "rich" and "poor" groups within the community. The basic necessities of life may have been more equitably distributed. On the other hand, ethnographic evidence indicates that, at least among some groups, access to even basic resources was indeed very differentially distributed. In the most extreme cases, some groups had a class of slaves with no ownership or access rights whatsoever.

Lorenz curves and Gini indices can be also used to break down inequality within assemblages along age and sex lines. Unfortunately, in practice it is difficult to analyse age and sex groups separately due to the small sample sizes involved. In those few assemblages divided by age, there are no statistically significant differences in the Gini indices. Gini values are nearly identical for adults and subadults at Berrian's Island and Whitestone Creek (Figures 7.8 and 7.9), two assemblages in which relatively large numbers of adults and subadults are present.

Comparing inequality between the sexes is subject to the same problems of sample size. Nevertheless, the protohistoric Berrian's Island assemblage suggests greater female inequality, although only at a .10 significance level (Figure 7.10), compared to that seen in males from the same site in terms of number of sociotechnic artifact types (G = 0.6154 and 0.3621, respectively). This is a relatively anomalous result, and its interpretation is unclear at this point. Sufficient numbers of artifact types are present (indeed, this is the most diverse assemblage in this regard) so that the Lorenz curves and Gini indices are likely to be valid measures, i.e. they are not subject to the kind of fortuitously inflated inequality possible in small samples with extremely limited richness.

This example serves to highlight some of the uncertainties involved in the interpretation of Gini indices: Does the relatively greater inequality in the distribution of sociotechnic artifact types in female burials indicate greater status for some females, or does it reflect a tendency for relatively few female burials to be given what might be called a "high status" treatment, while such treatment is more common among the male group? Additional lines of evidence suggest that the observed pattern favouring high status for some females is "real" and behaviourally meaningful, in the sense that it is not an artifact of the technique or the sample size. Both the average richness and GLV are higher in the female group than in the male group, although the difference does not reach statistical significance. Furthermore, an examination of artifact associations reveals that copper and iron artifacts, which are expected to be prestige items during this period, are more commonly found in female graves (see Chapter 6). Given the small sample size, only the association of iron ornaments (with females) produces a significant chi-square at the .10 level (chi-square = 2.77; $p = 0.096$) (and this includes associations in a number of disturbed burials, and so may be questionable). The point here is that an examination of the broader context of mortuary treatment is an essential aspect of interpreting differences in inequality seen in measures such as the Lorenz curve and Gini index.

Lorenz curves and Gini indices are potentially a very useful means of exploring inequality in many different contexts. Of course, the validity of any conclusions made rests solely on whether or not we accept 1) the premise that the number, kinds, and attributed values of artifacts in a burial are valid measures of wealth, and 2) that wealth is a meaningful dimension of variability in mortuary behaviour on the Plateau. Neither of these arguments can be made on the basis of the Lorenz curves, but rather rely for support on the kinds of subsidiary arguments presented earlier; that is, they are archaeological questions and not statistical ones. Perhaps the main use of the Lorenz curve and Gini index should at present be in the exploration of various dimensions of inequality.

Comparison of Ethnographic and Archaeological Burial Data

Ethnohistoric and ethnographic accounts discussed in Chapter 5 provide considerable support for the presence of differential burial practices relating in a fairly direct fashion to socioeconomic status differences present in life. While the direct applicability of this information to the archaeological record, and particularly to prehistoric material, remains questionable, it is important in that the model it provides is

Figure 7.8: Berrian's Is. Lorenz Curves for Adults and Subadults

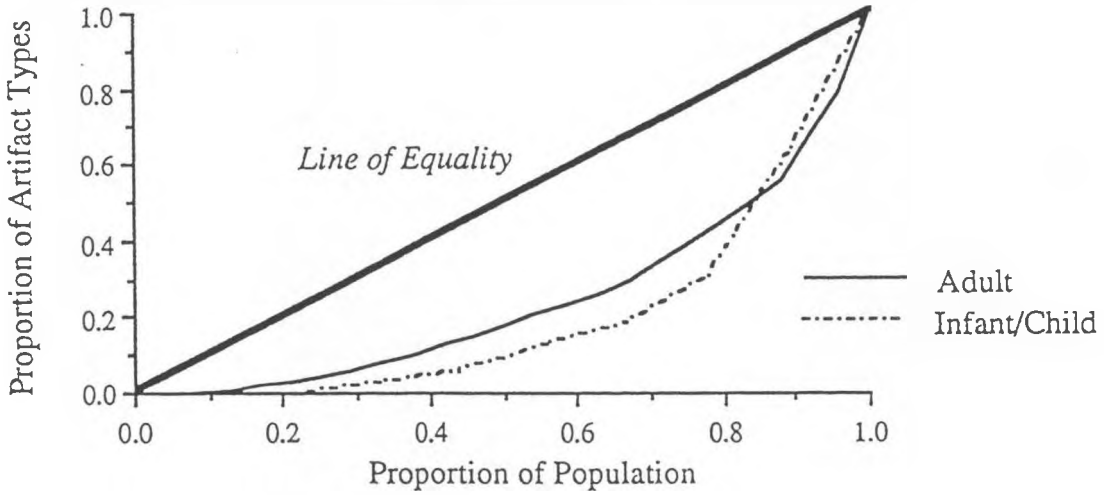
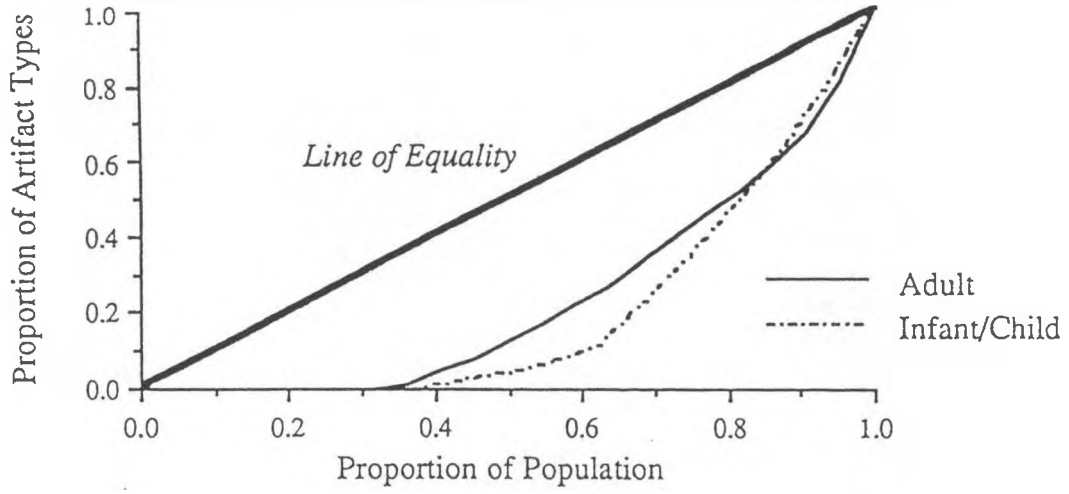


Figure 7.9: Whitestone Creek Lorenz Curves for Adults and Subadults



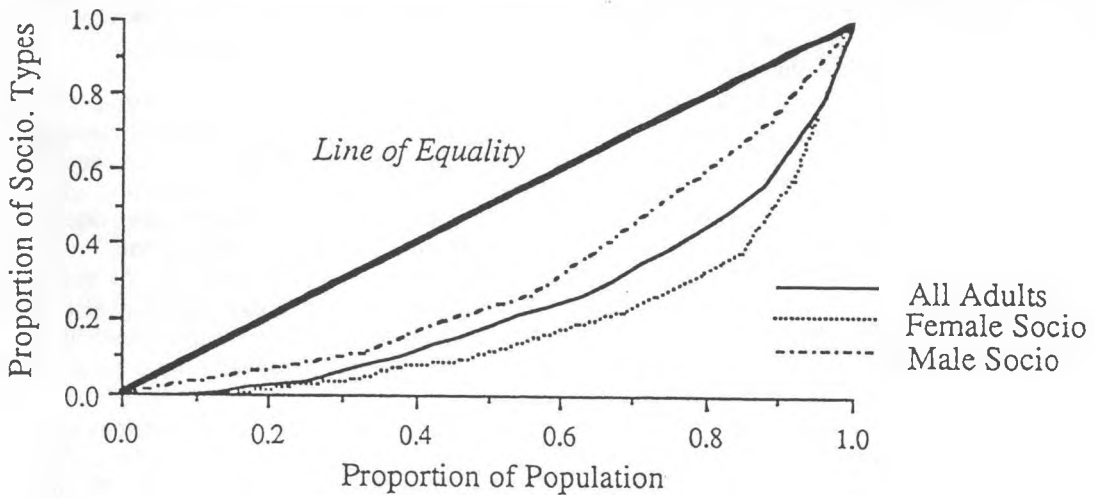
consistent with many of the theoretical expectations underlying mortuary analysis. There are also a number of apparent contradictions between the two sources of data, some of which are discussed below.

Ethnographically, the denial by the Shuswap and Lower Lillooet that talus slopes were ever used for burial could suggest that this was seen as a low-status form of burial and would not be admitted by Teit's (1906, 1909) informants. Well-documented archaeological evidence from the late prehistoric period indicates that talus burial was employed well within Shuswap territory, and there is no reason to suppose massive population displacement in Shuswap territory during this period (cf. Hills 1971). The artifacts found in some of these burials, however, are not consistent with the hypothesis that only poor people were being buried in talus slopes. Thus the explanation may be simply that the practice predates ethnographic memory. It is also possible that the few known examples of talus burial in these areas represent hurried disposal of the deceased by outside groups.

More difficult to account for is the fact that Spier and Sapir's (1930) informants state that neither the Wishram nor their neighbours practised cremation. Cremations, together with talus burial, are the most common forms of burial in the late prehistoric/protohistoric period in The Dalles-Deschutes region. Numerous copper artifacts are found in cremations at B. Stewart, Badger Creek, Miller's Island Sites 15 and 21, Spedis Valley, Beck's Pasture, and others. There is no evidence that cremations were a low status form of burial—in fact, quite the opposite—and so it is not reasonable to suggest that Spier and Sapir's informants would deny it on this ground. This could be interpreted as supporting the idea, mentioned in Chapter 5, that the Wishram were very late arrivals at The Dalles, possibly displacing a Salish-speaking group (although, as mentioned in Chapter 5, other evidence argues strongly against this).

The denial among the Okanagan that cremation was ever used (Teit 1930:289) may also be contradicted by archaeological evidence, though scant and in some cases poorly documented (Atkinson 1952; Caldwell 1954a, b; Barlee 1969b; Chatters 1986). Since there is no reason to suspect that cremation would be seen as a low status burial form and would thus be denied by informants, it may be that this practice predates ethnographic memory as well. The best documented cremations are those from 45-OK-561 investigated by Chatters (1986), who suggests that the remains are largely those of murder victims. Temporary shifts in normative mortuary practices can be caused by unusual circumstances of death or mass death (Binford 1971; O'Shea 1984; see also Teit 1900, who mentions the practice of cremation for dying

Figure 7.10: Berrian's Is. Lorenz Curves for Male and Female Adults



Thompson warriors in enemy territory), both of which seem to apply in the case of 45-OK-561. If so, an outsider's casual inquiry on what is almost universally a sensitive subject would be unlikely to elicit an informant's full response.

Ethnographic accounts summarised in Chapter 5 related the practice of killing a slave upon the death of an high status person for some Plateau groups. Archaeologically, evidence for this practice can be expected to survive only in those cases where the two (or more?) bodies are interred together. Two sites discussed in Chapter 6, Fountain (EeRl 19) and Skwaam Bay (EgQw 1), provide very tentative evidence of the killing of slaves as part of the mortuary ceremony surrounding high status burials. In both cases, this evidence consists of the placement of a burial entirely lacking grave inclusions either directly above or below a burial with relatively elaborate inclusions. Interestingly, the "low" and "high" status individuals at both sites are also differentiated by their opposing orientations; this may have served to further symbolically separate the respective status positions represented. The evidence is better at Fountain, since in this case, although the two individuals are separated by some 20 cm of pit fill, there is no indication that any length of time passed between the two interments. By contrast, a period of time *may* have elapsed between the interments at Skwaam Bay, although this is not clear from the report. Even if this were the case, it is conceivable that a slave would be killed a number of years later as part of the extended commemorative funerary ritual typical of the ethnographic period on the Plateau.

On the Columbia Plateau, evidence for the sacrifice of slaves is even more tenuous. At Old Umatilla, the skull of Burial 177, a young adult male, was found crushed by a stone club head, which still remained *in situ* in the left parietal (Rice 1978a:50, Figure 33). Whether this is unusual enough in itself to be taken as evidence of sacrifice rather than more generic violence is questionable. Finally, the unusual multiple burial at Rabbit Island II (Feature 1) may have a sacrificial origin (see Chapter 6).

The Socioeconomic Implications of Burial Location and Grave Type

Stryd (1973:88) has stated regarding burial practices on the Canadian Plateau: "Differential burial location may have been a conscious social practice...". I think that this is certainly true. Differentiation by burial location is a very common feature in many societies, and I earlier suggested some of the underlying theoretical reasons for this. The preceding section compared aspects of ethnographic and data on burial form, highlighting some contradictions between the two in the process. In this section I expand on the archaeological evidence for differential burial location and also grave type based on age and socioeconomic status. Sex is not examined in relation to either location or type, but is seems fairly clear that little in the way of either intra- or intersite patterning appears in this dimension.

Data discussed in Chapter 6 suggest that infants were sometimes located outside the adult mortuary space, either by burial in a different area, or possibly by non-burial, either one of which might be responsible for the observed pattern at such sites as Wildcat Canyon, Old Umatilla, Sheep Creek (45-ST-46), and Kamloops/Chase. Other examples, although less rigorously documented, may also be found. Sprague (1967), for example, cites H. T. Ball as stating that, in the Spokane area, talus slope burials contained a far higher proportion of infants than seen in inhumation areas, and that this was especially true for the early historic period. Cole (1958) noted the paucity of infant remains in historic burial sheds on two grave islands in the lower Middle Columbia.

There is some, albeit limited, archaeological evidence that different forms of burial were associated with different socioeconomic statuses. As with many aspects of Plateau mortuary behaviour discussed above, the absence of absolute dates and proof of contemporaneity are problematic. The energy expenditure model presented in Chapter 2 suggests that cremation should be associated with the highest socioeconomic status, followed by inhumation, and, lastly, talus burial. As seen in Chapter 6, the evidence either in support of or against this model is largely equivocal. In all cases the absence of data on the number of individuals represented in the cremations makes comparison difficult and tentative. At Beek's Pasture, cremations appear to have significantly higher grave wealth than talus burials. This may also be true of Miller's Island, Wahluke, and Kamloops/Chase. In no case is it possible to formally demonstrate this proposition. At other sites (e.g. Juniper, Yakima, Sheep Island), it appears unlikely that cremations surpass alternative burial forms in grave wealth.

Archaeologically, there is some indication that talus burials, at least in some areas, are associated with lower socioeconomic strata (of those forms that preserve archaeologically). Sprague and Birkby (1970) report two sites in the Lower Snake River region, Ferguson (45-WT-55B) and Palus (45-WT-56), where they suggest that the talus slope burials investigated may indicate poorer segments of society, based

on the paucity of artifacts. The sites are inferred to date to the late prehistoric and protohistoric periods, respectively. As discussed in Chapter 6, W. Strong *et al.* felt that the talus burials they investigated in Spedis Valley represented "... the inferior ranks of society ..." (1930:44). But only in one case can a quantitative argument be made: the inhumation burials at Whitestone Creek (45-FE-24) exhibit a significantly higher average artifact richness and GLV than the talus burials at 45-ST-8. And, as discussed in Chapter 6, even here the relationship between burial form and status is less than entirely satisfactory (for one thing, the two sites are separated by a considerable distance and were occupied in the historic period by two different ethnolinguistic groups).

Possibilities other than socioeconomic status differences for the use of talus slopes involve changes in burials norms through time, seasonality (talus burial might be used when the ground was frozen), and cultural conservatism (Sprague & Birkby 1970:6). Factors such as these may have been involved in the Nicola Lake talus slope burials, since these do not appear "poor" in terms of their grave inclusions. Since so few inhumations are known from the Nicola Valley, it may also be that talus burials were simply the normative practice for that area in the protohistoric period. Thus the common suggestion that talus burials reflect a lower status form of burial cannot be substantiated for the Plateau as a whole. Again, regional variability exists such that in some areas this relationship may hold while in others it does not. The familiar problem of demonstrating contemporaneity plague a thorough investigation of the position of talus burials. It must also be recognised that there exists great variation within talus burials themselves, with some likely representing more than the equivalent labour seen in many inhumation burials (see Oliver 1991).

Inhumation burials, then, at least on average, are placed in an intermediate position between cremation and talus burial in regards to the energy expenditure model (see Chapter 2). Thus there are no separate tests to discuss concerning them, since they have been dealt with in the examination of the other two burial forms presented above. But it is possible to examine inhumation burials as a class in themselves in considerably more detail; not only are they more abundant, but they tend to be both better preserved and better reported than either cremations or talus burials. And inhumations lend themselves to a series of easily recognised and quantifiable elaborations, such as depth of burial, and the addition of such features as plank cists and rock cairns. However, preliminary investigations (see Chapter 6) appear to indicate little orno relationship between any of these elaborations and the quantity and variety of grave inclusions (it should be emphasised that more obvious elaborations sometimes seen over inhumations, such as monumental wooden sculpture, are not included in this analysis—these certainly could be expected to exhibit evidence of higher status in a number of dimensions). Thus this avenue was not pursued further here, although a future analysis might find it profitable to reconsider.

It is also possible to use inhumations to investigate the relationship between primary and secondary burial and status. The large cemetery at Old Umatilla (35-UM-35B) (see Chapter 6) presents the opportunity tot estthis idea.The results (primary = 1.62, secondary $\overline{X} = 0.90$; $t = 2.33$; $p = 0.0217$ (see Chapter 6) do not support the hypothesis, offered in Chapter 2, that secondary burials should on average be associated with greater grave wealth, as they represent an additional stage of effort. However, the large proportion of secondary burials (especially when those too disturbed to include in the analysis are taken into account) at this site suggest that their context is not the same as was envisioned when this hypothesis was introduced. The severely restricted size of the cemetery and the large number of disturbed burials suggest that many of the secondary burials represent aboriginal disturbance by later inhumations and habitation (the cemetery itself was apparently occupied intermittently between burial episodes [Rice 1978a]). Possibly the lower average number of grave inclusions reflects this disturbance (i.e. occasionally some grave items were missed or appropriated upon reburial).

A small number of more isolated occurrences seem to suggest that in some cases secondary burial was associated with individuals of high status—the child burial at Tucannon (45-CO-1B) presents one example of this (see Chapter 6).

There is no indication, from the few data that are available, that any particular burial form is associated with greater or lesser inequality internally, i.e. talus burials show similar Gini indices to pit inhumations. It is not possible to test cremations similarly, since there are too few with reported complete artifact associations. Along the Middle Columbia, and especially in The Dalles-Deschutes region, it seems that artifact richness between cremations is more uniformly distributed than in other burial forms. But even this impression could easily be erroneous, since the number of individuals per cremation is generally undetermined, and may range from one or two to 20 or possibly more individuals in a few cases. Given the methods of recording artifact types and determining "wealth" measures used here, it is not valid to compare

facilities holding multiple individuals as equivalent to groups of burials each holding only one or two individuals.

In summary, the position of different forms of burial *vis a vis* socioeconomic status differentiation is as yet unclear. In some cases there seems to be a significant relationship between burial form and the amount of grave wealth, while in others no such relationship can be detected. The current inability to deal adequately with problems of dating and proving contemporaneity of different burial forms within an area exacerbates this situation.

Mortuary Evidence and Intensity of Landscape Use

Ethnographically, substantial differences in socioeconomic complexity between the various ethnolinguistic groups of the Plateau are seen (see Chapter 5). Furthermore, there is some indication that these differences are related to resource richness, most importantly the availability of salmon and the potential to control this resource by laying claim to the most productive fisheries. However, preliminary investigations along these lines do not suggest that we will be able to discern regional patterning of this nature with the quality of mortuary data presently available, at least not in a solid quantitative sense. The lack of control over time and the limited number of sites with adequately documented numbers of burials and their associations both contribute to this failure. It can be said, however, that the burial regimes in The Dalles-Deschutes region appear to represent the most elaborate treatment of the dead on the entire Plateau, for both the prehistoric and the protohistoric periods. Other sites further upriver on the Middle Columbia also exhibit elaborate burial assemblages (e.g. Berrian's Island, Wahluke, Pot Holes), particularly in the protohistoric period, although probably not to the degree seen in The Dalles-Deschutes region. Again, disturbance by amateur collectors and inadequate reporting make a direct comparison of The Dalles-Deschutes sites with other Middle Columbia sites difficult if not impossible.

While there are a number of lines of evidence that suggest that the Mid-Fraser Canyon region should also exhibit considerable mortuary complexity and differential deposition of grave wealth (cf. Hayden 1990a, 1992b; Hayden *et al.* 1985), the burial evidence from this area is relatively scant and poorlydocumented. But what evidence there is does not appear to contradict this proposition. Considerable investment in funerary behaviour is particularly evident in the protohistoric and historic periods, with the erection of monumental wooden grave figures among the Lower Lillooet and Thompson (Ostapkowicz 1992). Prehistoric mortuary data from the Kamloops-Chase area also exhibits considerable complexity, including a series of possible cremations only rarely seen elsewhere in the south-central interior of British Columbia, together with elaborate grave inclusions. At the same time, the assemblage also exhibits less inequality than seen elsewhere, but, as discussed earlier, this may result from the presence of only relatively high status burials. Other areas, including the Yakima Valley, the Upper Columbia region, the Okanogan, and the Okanagan/Similkameen appear to exhibit considerably less elaborate burial regimes. These areas do, however, in some cases show marked inequality in the distribution of grave inclusions, including wealth and prestige items, that *are* present.

Three areas of the Plateau—the Yakima Valley, the Okanagan/Similkameen, and the Nicola Valley—appear to share some interesting similarities with regards to the distribution of burial sites over the landscape. While not yet thoroughly investigated and formally tested, there is an impression that these areas exhibit a pattern emphasising numerous small burial sites scattered over the landscape, sometimes at frequent intervals within a relatively limited area. The Selah talus burials (Bergen 1989), for example, occur in a number of small clusters that may represent use by family groups for short periods of time. A very similar pattern was observed by the author during a survey of talus burial sites in the Upper Nicola Valley (see Oliver 1991); the interpretation of many of these sites as small family plots was supported by discussions with members of the Upper Nicola Band, as well as by observation of the distribution of twentieth century cemeteries.

This is not to say that the distribution of burial sites is random—as seen throughout the Plateau, it tends to focus on terraces overlooking rivers and lakes—but the large cemeteries seen in other areas (particularly The Dalles-Deschutes, the McNary Reservoir, and Lytton-Lillooet), do not appear to have parallels here (the medium-size sites reported for the Yakima Valley, Skaha Lake, and Douglas Lake in the Nicola Valley may be exceptions, but they also appear to date to the protohistoric period—see below). One of the problems with an examination of this possible pattern is that the areas in question have seen relatively little scientific investigation of burial sites, and have been heavily disturbed and looted.

The presence of many small burial grounds suggests a less intensely focused use of the landscape. This is supported in the Yakima, Okanagan/Similkameen, and Nicola Valleys by settlement data, which appears to exhibit fewer and smaller village—and by inference lower population densities—sites than in many surrounding areas of the Plateau (see Grabert 1971; Smith 1910; Vivian 1992; Wyatt 1972). The availability of abundant, predictable, and concentrated resources such as salmon at The Dalles and the Six-Mile/Bridge River fisheries would encourage large settlements. This in turn, it is argued, leads to more intense resource competition both within and between communities. As discussed in some detail in Chapter 2, one manifestation of such competition is the appearance of large conspicuous cemeteries near the resource loci in question. These cemeteries are expected to contain more elaborate burials and to exhibit greater internal differentiation (in terms of socioeconomic inequalities as evidenced by, for example, number and variety of grave inclusions).

This scenario fits relatively well with the resource base of the Yakima, Okanagan/Similkameen, and Nicola areas, where land mammal hunting, plant gathering, and, in the latter two areas, lake fishing probably constituted the most important resources. But salmon, at least in the Okanagan/Similkameen and Nicola Valleys, are relatively scarce, and those runs that are available are of poorer quality. The situation in the Yakima Valley may be somewhat different, but it seems that little research has taken place there from this perspective. The nature of the resource base in these areas thus promotes a more diffuse use of the landscape, one in which it is both difficult and uneconomical to attempt to assert control over access to specific resources in anything but a very general sense, usually involving limiting use by outside groups. Such conditions do not favour the formation of corporate groups and their concomitant claims to important resource extraction locations (Saxe 1970; Goldstein 1980, 1981; Charles and Buikstra 1983—see Ch. 2).

This situation may have changed with the introduction of the horse in the protohistoric period. The availability of open rangelands in the Yakima, Okanagan (far less so in the more rugged Similkameen), and Nicola Valleys, and the shift in emphasis to overland trade routes appear to have greatly increased the influence of both the Yakima and the Okanagan peoples (indeed, one expression of this shift in power is the nineteenth century Okanagan expansion into and domination of the eastern half of the Nicola Valley). This scenario has been suggested by other Plateau researchers for the two separate areas, quite independently of the mortuary evidence. While the mortuary evidence can neither confirm nor refute this scenario, it does seem to be consistent with it. Those elaborate burials and larger cemeteries (e.g. Skaha Lake and Douglas Lake) that do exist in these areas appear to be an entirely protohistoric phenomenon. But again, the mortuary record from the three areas i such that this proposition must be viewed as highly tentative and subject to modification upon further research.

The Development of Socioeconomic Inequality on the Plateau

One of the specific interests of this study was to attempt to trace the development of socioeconomic inequality on the Plateau. Although perhaps biased by an evolutionary perspective, the expectation was that inequality would increase through time as social systems became more complex. Certainly this progression need not be steady, but could proceed sporadically. Evidence already available from numerous excavations on the Plateau strongly supports the idea that, at least in general, such indicators of societal complexity as the extent of trade networks and material culture became increasingly elaborated through time (cf. Browman and Munsell 1969; Richards and Rousseau 1987).

One of the main problems with dealing with Plateau mortuary assemblages is the lack of absolute dates, or in many cases even relative dates. The extent of this difficulty is perhaps best expressed by noting that, of the more than 450 individuals represented in the combined sample, only one individual, from the Nicoamen site, is associated with a radiocarbon date, and that date is problematic (Skinner and Copp 1987) (the Cache Creek burials were not included in this aspect of the analysis). For the purposes of the analysis, it must be assumed, in the absence of evidence to the contrary, that all of the burials in an assemblage are at least roughly contemporaneous. While this assumption is probably not strictly justified in any but a few cases, there are reasonable grounds for imparting a certain robustness to the methods being employed here. Barring the presence of individuals from periods exhibiting vastly different socioeconomic organisation, the burials in any single assemblage, even if representing a timespan of several centuries, can be thought of as reflecting a kind of averaged behaviour. This is not to belittle the very real problems of sample size, poor temporal control, and a veritable host of other difficulties. But as long as the analysis is considered in its proper context, as exploratory, these problems are to some extent mitigated.

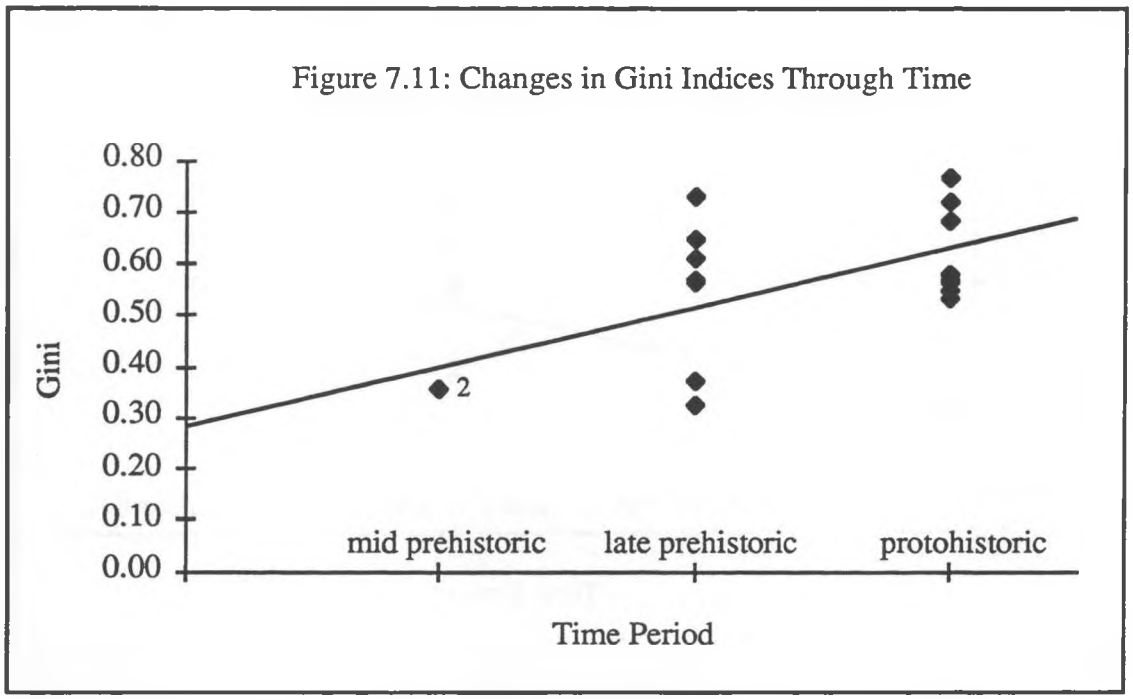
Keeping in mind these difficulties, it is possible to explore changes through time in inequality as expressed by the Gini indices. Two assemblages, Congdon and Rabbit Island I, are fairly securely dated to approximately 3000 B.P. by projectile point styles (Lohse 1985; Cole 1993). Nine protohistoric assemblages are fairly easily identified by the presence of early forms of Euroamerican trade items, most importantly copper beads and pendants, but also iron pendants and bracelets, and early forms of blue and white glass beads. The remaining seven assemblages can then simply be lumped together into a late prehistoric group (ca. 2000-200 B.P.), recognising that this almost certainly introduces some distortion. This presents a total of 18 assemblages for this aspect of the study (Table 7.14). A number of composite assemblages and assemblages deemed excessively problematic in terms of their dating are excluded from the analysis. It should be noted that none of those excluded would fall into the middle prehistoric group (ca. 4000-2000 B.P.). (Again, Old Umatilla has been excluded due to its anomalous large sample size—its inclusion would not substantially affect the results.)

The results are shown in Figures 7.11 and 7.12. Averaged Gini values for richness of artifact types are 0.36 for the middle prehistoric, 0.54 for the late prehistoric, and 0.60 for the protohistoric. Similarly, averaged Gini scores based on GLV as a measure of wealth are 0.34 for the middle prehistoric, 0.58 for the late prehistoric, and 0.63 for the protohistoric. An analysis of variance (ANOVA) shows the differences among the three time periods to be significant at the .10 level for richness ($F = 3.49$, $p = 0.057$) and at the .05 level for GLV ($F = 5.48$, $p = 0.016$). In both cases, Spearman's rank correlation coefficient indicates that the relationship between time period and Gini scores is significant at the .10 level (Spearman's r = 0.427 and 0.445 for richness and GLV, respectively). The main difference is clearly between the middle prehistoric and the subsequent two periods. The late prehistoric and the protohistoric periods are not distinguishable statistically, either in terms of richness or GLV. The large variance seen in the late prehistoric group could reflect errors in the assignment of its constituent assemblages, or it could be a real characteristic of the period. It is not possible to distinguish these two possibilities without refinements in dating.

The fact that protohistoric burial assemblages do *not* appear to exhibit greater inequality than the late prehistoric group is perhaps unexpected, but is open to a number of interpretations. The influx of new wealth created by the introduction of the horse and by the early fur trade does not appear, on the basis of the

Table 7.14: Assignment of Plateau Sites to Time Periods

Middle Prehistoric	*n*	*Late Prehistoric*	*n*
Rabbit Is. I, 45-BN-15	11	Yakima (Selah)	12
Congdon, 45-KL-41	30	Rabbit Is. II, 45-BN-15	15
		Fish Hook Is. I, 45-FR-42	10
		Sheep Island	22
		Wildcat Canyon, 35-GM-9	32
		Sheep Creek, 45-ST-46	38
Protohistoric	*n*	*Composite Assemblages*	*n*
45-ST-8	15	Kamloops/Chase	24
Berrian's Is., 45-BN-3	33	Nicola Valley	10
Juniper	22	Nicoamen, EbRi 7	15
Whitestone Cr., 45-FE-24	38	Okanogan	16
Fish Hook Is. II, 45-FR-42	13	Rabbit Is. (I&II), 45-BN-15	26
45-ST-47	11	Fish Hook Is. (I&II), 45-FR-42	23
Sundale	25	Dalles-Deschutes	34
Keller Ferry, 45-LI-27	12	Yakima	22
Beek's Pasture	18		
45-FE-7	24		

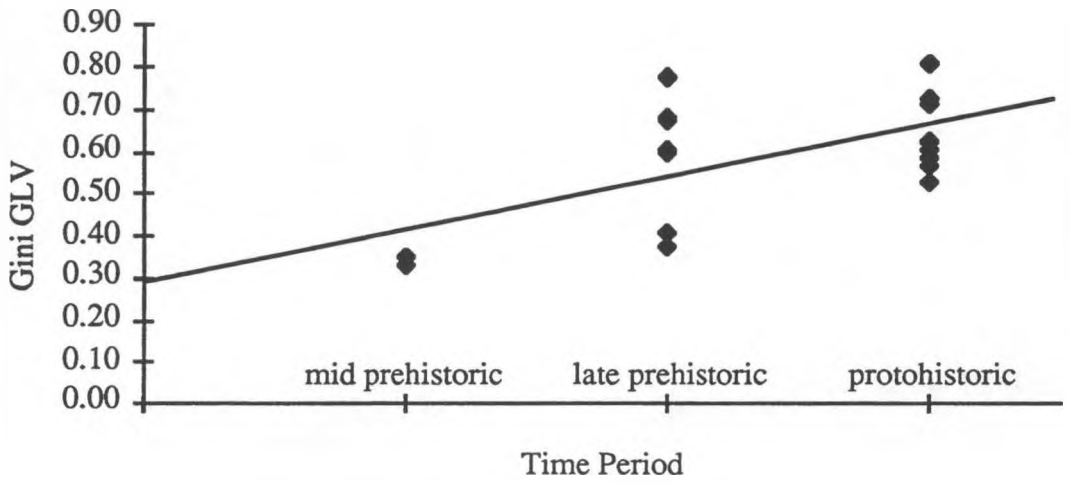


mortuary evidence, to have drastically disrupted the nature of the socioeconomic status system in place during the late prehistoric period. However, as suggested in Chapters 2 and 3, it may be that the methods of analysis need to be modified for the protohistoric period. The sudden availability of new wealth may have led to an increasing emphasis on the absolute quantities of a limited range of suitable artifact types (e.g. *Dentalium*, copper and iron ornaments, etc.). Such a scenario would be similar to what Cannon (1989:438)has labelled an "... inflationary spiral of display fueled by emulation". In such a case, the measures of "wealth" employed for earlier periods would have to be modified somewhat to take into account the changing way in which material culture was being used both to maintain and to challenge the status system (see Schulting 1993a). On the other hand, the analysis of the distribution of grave inclusions among infant/child and adult age groups presented earlier in this chapter also showed no evidence for an increase in socioeconomic complexity (as measured by the degree of emphasis on ascribed status) in the protohistoric period.

While it is difficult to deal with them in a quantitative fashion, a number of additional burials provide further important insights into the development of inequality on the Plateau. Foremost among these on the Columbia Plateau are the human remains recovered from Marmes Rockshelter (45-FR-50) in southeastern Washington, in levels dating from 10,000 to 9,000 B.P. (Rice 1972:153). *Olivella* shells were commonly found as grave inclusions with many of the burials throughout a long sequence (see Chapter 6). The next well-dated group, and even here the dating is entirely based on projectile point typology, is Rabbit Island I (45-BN-15) at ca. 3000 B.P., leaving large gaps of millennia for which there are few data on burial practices from the Columbia Plateau. The Rabbit Island I burials were all extended. Many of the burials from Congdon may date to roughly the same period, but here, the majority of interments seem to have been flexed (Bergen 1989).

The situation for the Canadian Plateau is somewhat different. The earliest human remains from south-central British Columbia are from the Gore Creek site, EeQw 48. The remains of an adult male were dated to 8340 ± 115 B.P. (Cybulski *et al.* 1981). But the unfortunate individual seems to have been caught in a mudslide, and thus can present no information on mortuary practices from that time. The earliest purposeful burials known are from Clinton, EiRm 7, and date to 4950 ± 170 B.P. (McKendry 1983; Stijelia and Williams 1986). The remains of two adults were found; both apparently lay extended, a position extremely rare in later burials on the Canadian Plateau. Neither burial was associated with any grave inclusions, although Burial 2 was disturbed.

Figure 7.12: Changes in GLV Gini Indices Through Time



The next burials in the sequence date to the Shuswap horizon, ca. 4000/3500-2400 B.P., of the Canadian Plateau Pithouse Tradition as proposed by Richards and Rousseau (1987). A total of three or possibly four burial sites appear to date to this period: Shuswap Lake Park (EfQu 3) (Sendey 1972), Punchaw Lake (FiRs 1) (Fladmark 1976), and Pine Mountain (EdRk 9) (Sanger 1970). As Richards and Rousseau note (1987:29), there seems to be some consistency in the burials from this time. All are from housepit contexts. The Shuswap Lake Park site, EfQu 3 is the only one of these sites to contain more than a single individual. Here, the remains of a total of seven individuals were recovered from excavations in H.P. 13, and the cranium of an eighth individual was encountered in the wall of one of the units. Shuswap horizon burials are also similar in that, other than red ochre, they seem to lack grave inclusions.

By contrast, grave inclusions appear quite common from ca. 1500 B.P. onwards. Examples, discussed in Chapter 6, in undisturbed contexts from ca. 1500 to 1000 B.P. include Cache Creek (EeRh 1) (Pokotylo *et al.* 1987), Adams Lake (EfQw 2) (Schulting 1993c), the Bell site (EeRk 4), and Fountain (EeRl 19) (Stryd 1973). All four sites contain burials with relatively abundant and diverse grave inclusions. Another interment possibly dating to this period (see Chisholm 1986:146) was reported from the Brocklehurst site (EeRc 8) in Kamloops (Wilson 1976). The burial was that of an adult male accompanied by a total of 121 items, including stone net weights, retouched flakes, a bone leister point, a composite toggling harpoon valve, red ochre, 12 bear tooth pendants, and 92 shell beads. Finally, the Government site child cremations discussed at some length in Chapter 6 may date to before ca. 1200 B.P. Other burials from the same period have been found without grave inclusions, although they seem to be in the minority. McLeod and Skinner (1987), for example, report the interment of an adult male, dated to 1410 ± 110 B.P., in a bark-lined pit at Fountain Creek (EeRl 19) near Lillooet. No grave inclusions were identified, although the pit fill included a number of lithic flakes not in direct association.

While the database is thus far quite meagre and any conclusions must remain tentative, it appears at present that there is a near total absence of grave inclusions in burials dating to before ca. 1500 B.P. on the Canadian Plateau. It is almost certain that to some extent this reflects a sampling problem, since there are wide gaps in our knowledge of the burial practices of this period. But while the specific date of 1500 B.P. may be pushed back as new data are brought to light, it is unlikely that the vagaries of sampling can account for the entire timespan. Thus we have an early period in which material culture was relatively simple compared to later times, and either lacked or had very limited quantities of many of the items that may be thought of as primitive valuables (Richards and Rousseau 1987), together with mortuary practices that did not place emphasis on the inclusion of non-perishable objects of any kind in graves. This was followed by a period exhibiting considerably more diverse material culture, incorporating many items

brought from long distances and/or manufactured with intensive effort and skill, combined with an increase in final deposition of these items in burial contexts. It seems reasonable to suggest that the two are related, and that it was the need to display wealth and status, both in life and in death, that fueled the elaboration of material culture and intensification of trade contacts in the area at this time.

On the Columbia Plateau grave inclusions appear almost with the earliest human remains, and from the very beginning include exotic marine shells. Nor does there appear to be a subsequent period in which grave inclusions are not found relatively frequently. But it does appear that there were marked expansions in trading activity on the Columbia Plateau after ca. 2000 B.P. (Nelson 1969), and again after ca. 1000 B.P. (Browman and Munsell 1969; Erickson 1990). *Dentalium* makes its first appearance after about 2000 B.P., with incised forms appearing only after 1000 B.P. *Haliotis*, *Pecten*, and a number of other genera also make their appearance at this time (Erickson 1990). Other valuable materials, such as nephrite, steatite, turquoise, native copper, and whalebone clubs, either first appear during this period or greatly increase in frequency and expand in distribution at this time (Browman and Munsell 1969; Richards and Rousseau 1987).

It has long been recognised that two of the most important archaeologically accessible sources of information on socioeconomic inequality are mortuary remains and settlement data. Ames (1991a, b) has suggested that the appearance of both very large houses and large villages on the Columbia Plateau occurred between 2000 and 1500 B.P. The large houses and villages of the Mid-Fraser Canyon also fall within this timeframe (Hayden *et al.* 1985; Hayden and Spafford 1993; Hayden and Ryder 1991; see also Stryd 1973). These structures did not replace smaller dwellings, which in fact remained far more common, but supplemented them, adding another level in the village/settlement hierarchy, one which does not appearto have existed before. In both cases it is possible to suggest the formation of corporate groups, and increasing differences in household wealth and power (Ames 1991a; Hayden and Cannon 1982; see also Naroll 1956 and Netting 1982).

It has frequently been suggested that art conveys socially important information (e.g. Schaafsma 1985; Hartley 1992). If this is the case, then the increasingly elaborate iconography seen in the art of the late prehistoric period leading into the protohistoric period may indicate the need for increased display of ownership, rights, and privileges. The poor context and lack of dates make it difficult to fully address this relationship, but certainly the distinctive "grinning face" images of lower Middle Columbia region date to late in this transition. I have already argued in Chapter 4 that the connection between parietal and mobile art seen most dramatically in the distinctive "grinning face" image of Tsagiglálal can be interpreted as an iconography associated with advertising elite access, either directly or indirectly, to the best fisheries of the Long Narrows. A similar interpretation may be made for some of the rock art of the Mid-Fraser Canyon area (Lundy 1979; see Chapter 4).

Less certain is how far back this type of function for art on the Plateau can be traced. Carlson (1993) has recently summarised stylistic changes in Northwest Coast rock art. He relates most or all early (first appearing ca. 2500 B.P.) rock art images to experiences relating to the spirit power quest; only during the late prehistoric/early historic period does rock art become involved with the "... proclamation of wealth, power and high rank" (Carlson 1993:9). Timing aside, I would suggest that, on the Plateau, the display of spirit power images and wealth and status were intimately connected and largely inseparable. The oldest known mobile art on the Canadian Plateau is a zoomorphic hand maul from the Lehman site (EeRk 8) near Lillooet, dated by association to 2185 ± 150 B.P. (Stryd 1983:175). More importantly, Stryd (1983:175) notes the "... sudden appearance of small carvings in various media" at approximately 1500 B.P. Again, this appears to roughly correlate with the period of increasing socioeconomic complexity suggested here.

Increasing connections with the coast are also indicated in material culture (Fladmark 1982) and art styles, for example in the seated human figure bowl complex (Duff 1956, 1975), and in whalebone clubs (Boas 1907). The postulated date of ca. 2000 to 1500 B.P. for the increased development and expression of socioeconomic inequalities on the Plateau presents interesting parallels to what was occurring in the Gulf of Georgia region of the Northwest Coast. The Marpole Phase, dated ca. 2400 to 1600 B.P., is often held to have been a cultural climax in this region (Borden 1970, 1983; Burley 1980; Mitchell 1971). It shows amore elaborate material culture in non-perishable artifacts than in preceding times, including an highly developed art style, and a far greater emphasis on ornamental display items and exotic materials than seen either previously or subsequently; burials also display an highly unequal distribution of grave inclusions (Burley 1980). Furthermore, Marpole Phase material culture displays many traits more typical of the interior, leading Borden (1950) to postulate actual migration from the interior at this time. While I do not necessarily agree with this interpretation, it serves here to demonstrate the presence of a close connection

between the coast and interior at this time. Recent excavations at the Scowlitz site indicate that the transitional Fraser Valley was also characterised by considerable socioeconomic differentiation at least by the end of this period (Blake *et al.* 1993). As with Marpole sites, connections to the interior are indicated at Scowlitz, based on projectile point styles and the occurrence of native copper (assuming an interior source).

It is suggested here that the increase in exotic materials during the period after ca. 2000 B.P., together with evidence for increasing inequality in house size and grave inclusions, indicate a relatively rapid period of increasing socioeconomic inequality on the Plateau as a whole. The elite at this time strove to both enhance existing long distance trading contacts and develop new ones, in order to acquire exotic wealth and prestige items used to enhance their status through display, feasting, and the giving of gifts to supporters. These features of Plateau society may have been present in some form prior to 2000 B.P.—indeed they almost certainly were—but after this we see, if not a qualitative difference in the form of socioeconomic inequality, then at least a considerable increase in its expression (cf. Ames 1985). That the process seems to have occurred over such a wide area at roughly the same time strongly suggests that it involved a complex net of interrelations encompassing much of the Plateau and probably parts of the Northwest Coast as well (see also Fladmark 1982). This recalls recently formulated arguments to the effect that nonegalitarian societies develop not in isolation, but in clusters (Kelly 1991; Clark and Blake 1994; Fox 1994). "One society does not hoist itself from one social level to another; the process involves the simultaneous emergence of a network of *chiefdoms* from a network of interacting *chiefs*" (Clark and Blake 1994:20) (emphasis in original).

To repeat my earlier cautions, I am not simply proposing a steady evolution towards increasing cultural complexity on the Plateau. Nor do I mean to imply that a shift back to a simpler organisational system cannot occur (cf. Ames 1991a, b). Indeed, there are a number of lines of evidence suggesting that such a simplification did in fact occur on both the Plateau and parts of the Northwest Coast. The proposition that the Marpole phase in many ways represents the most complex culture type for the entire Gulf of Georgia regional sequence has already been presented. And the large, internally differentiated pithouse villages of both the Mid-Fraser Canyon and the Middle Columbia regions do not persist into ethnographic times (Hayden and Ryder 1991; Stryd 1973; Osborne 1951; Schalk 1983). The burial evidence can be interpreted as indicating a more elaborate material culture in the protohistoric period, but this may be to some extent biased by the increasing availability of new wealth items, such as copper ornaments and glass beads. As seen in this chapter, there is no evidence for increasing socioeconomic inequality from late prehistoric times to the protohistoric period. Still, it is possible that complexity decreased on the Plateau sometime after 1000 B.P., and then increased again during the protohistoric period. The poor temporal resolution of late prehistoric burial assemblages does not permit the testing of this hypothesis using burial data, although there is some evidence for it from other sources (e.g. the settlement data mentioned above).

A full examination of the reasons underlying the proposed increase in complexity and inequality at ca. 2000 B.P. are beyond the scope of the present study. However, it is intriguing that some researchers (e.g., Johnston 1987; Thomison 1987; Chance and Chance 1982; see also Mitchell 1971) have argued that the heavy reliance on salmon that characterised much of the Plateau, and particularly the western portion that forms the core study area of this analysis, did not appear until after ca. 2000 B.P.