CHAPTER 4

GEOGRAPHICAL AND TEMPORAL ANALYSIS

4.1 Geographical Analysis Methods and Results

Fladmark (1978) previously noted that the geographical distribution of key-shaped formed unifaces appeared to be primarily restricted to the Interior Plateau culture area. He also maintained that similar items occurred in *Marpole phase* components of the South Coast, and in the *Arctic Small Tool tradition* assemblages of Alaska, the Yukon, and Northwest Territories. To his knowledge, no specimens had been found on the Plains or in the Great Basin.

By considering available radiocarbon assays from components bearing these tools, and by cross-referencing associated temporally diagnostic artifact types, Fladmark determined that they appeared to be chronologically restricted to between ca. 3300 and 1200 BP.

In the present study, the approximate geographical extent and temporal distribution of these items was estimated by considering all available published and unpublished research reports for sites throughout the Northwest, and by direct consultation with various researchers familiar with the prehistory of specific Northwestern archaeological regions. A letter including a description and photograph of the prehistoric study tools, and a brief account of the thesis goals and problems, was sent to 25 researchers. Each researcher was requested to provide any further information or insights that they, their colleagues, or associates might have regarding the geographic and temporal distribution of these tools, and what they thought their most probable function(s) might have been. Fourteen researchers responded by letter, and two others by telephone.

4.1.1 Geographic Distribution in the Southern Northwest

The results of the literature survey and researcher responses suggest that the geographical distribution of key-shaped formed unifaces in the southern part of the Northwest encompasses the entire Interior Plateau culture area and some of its immediately adjacent regions (Appendix 4; Figure 6).

The northern geographic extent of key-shaped formed unifaces in British Columbia is not presently known, although these tools have been found in the central part of the province at Punchaw Lake near Prince George (Fladmark 1976), and at Tezli Lake on the Blackwater River (Donahue 1975,1978). They may occur further north into northern B.C. and Yukon, but the relative paucity of survey or excavation data from north of 54° latitude does not permit this to be ascertained at present.

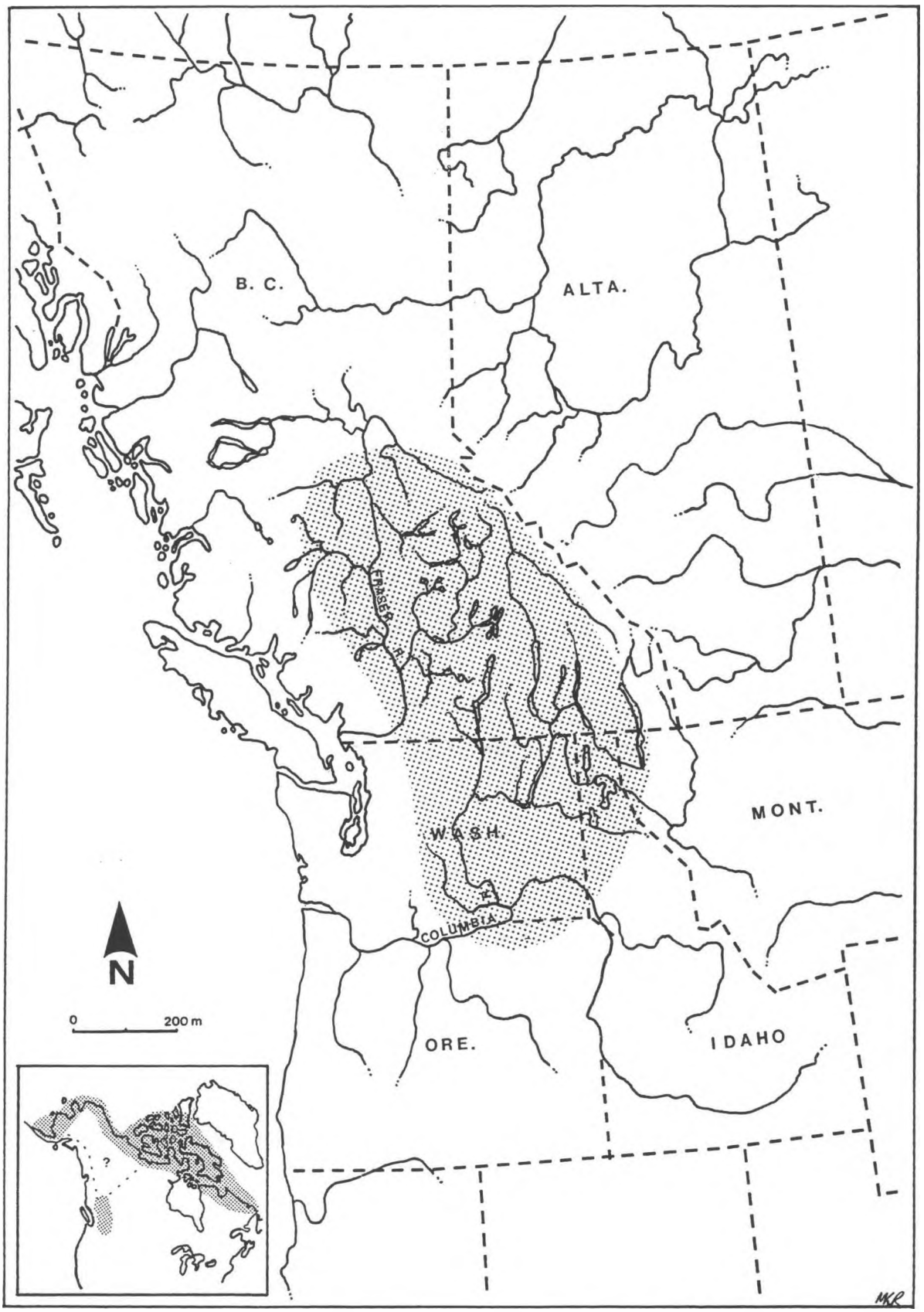

Figure 6. Presently determined geographical extent (shaded area) of key-shaped formed unifaces on the Interior Plateau and some of its immediately adjacent regions. The inset map (lower left) indicates their known distribution in the Arctic.

The western extent of these tools on the Canadian Plateau appears to be the Coast Mountains on the Fraser River (Sanger 1970; Stryd 1973). Borden (1968) recovered them in the Yale locality of the Lower Fraser Canyon, and Hanson (1973) and Von Krogh (1980) report them from the Hope locality of the Lower Fraser, which appears to have been the southwestern limit of their distribution in B.C. They have yet to be found west of the Coastal/Cascade Range on the Canadian or American portions of the southern Northwest Coast (Carlson, pers. comm. 1987; Daugherty, pers. comm. 1987).

Tools identical to key-shaped formed unifaces are not found in excavated sites east of the Rocky Mountains on the Alberta Plains. However, vaguely similar items with basal-lateral notches -- clearly hafting elements -- have been found in very small numbers in Alberta, and in northern Montana (Brumley 1975:183; pers. comm. 1988; Meyer and Beaulieu 1987:67; Wright, pers. comm. 1988). At present, the easternmost extent of key-shaped formed unifaces, as defined in this study, appears to be the Upper Columbia River valley just west of the Rocky Mountains in the East Kootenay region (Bussey 1986).

Key-shaped formed unifaces have been recovered from sites throughout the Columbia Plateau in north-central Washington (Grabert 1968; Miss *et al* 1984; Jaehnig *et al* 1985; Greengo 1986), central Washington (Gunkel 1961; Holmes 1966; Warren 1968; Nelson 1969), northeastern Washington (Rice 1968; Chance and Chance 1977,1979,1982; D. Chance, pers. comm. 1987), on the Snake River in south-eastern Washington near the Oregon/Idaho border (Caldwell and Mallory 1967; Yent 1976), and in northern Idaho (Miss and Hudson 1987). They have yet to be identified in assemblages from Montana (Davis, pers. comm. 1988), Oregon, or the Great Basin culture area.

In summary, the present data suggest that the geographical distribution of key-shaped formed unifaces in the southern Northwest is confined to the entire Interior Plateau and a few immediately adjacent regions. It is bounded on the west by the Coast/Cascade Mountains, on the south by the Washington/Oregon border, and on the east by the Rocky Mountains in both Canada and the U.S. As mentioned above, the northern boundary is not yet clear due to a paucity of archaeological data from north-central and northern B.C.

The geographical distribution of key-shaped formed unifaces on the Plateau corresponds with territories historically occupied by Interior Salish-speaking groups in the north, and several Sahaptin-speaking groups in the south. This suggests that their use was restricted predominantly to groups participating in, or being partly influenced by, a typical "Plateau" adaptive pattern.

4.1.2 Geographic Distribution in the Arctic

Communication with Arctic specialists and perusal of published information indicates that items identical to, or similar to, key-shaped formed unifaces have been found in components in the Arctic and High Arctic from Alaska to Labrador where they are called "concave side-scrapers" (Appendix 4). In coastal regions of Alaska and the Yukon, Central Arctic, High Arctic, and Eastern Arctic, identical tools have been recovered from components belonging to the *Arctic Small Tool tradition/pre-Dorset* (Ackerman, pers. comm. 1987; Bertulli, pers. comm. 1987; Giddings 1964; Helmer, pers. comm. 1988; Irving 1964; McGhee 1976,1978,1979,1980, pers. comm. 1987; Morrison, pers. comm. 1987).

In Alaska and Western Arctic they appear in *Norton* (Paleo-Eskimo) components (Ackerman, pers. comm. 1987), and in the Central and Eastern Arctic they have been found in *Dorset* components (Bertulli, pers. comm. 1987; Helmer, pers. comm. 1988; Linnamae 1975; Mary-Rousseliere 1976; Maxwell 1973,1976,1980,1984,1985; McGhee 1981; Morrison, pers. comm. 1987; Jordan 1980). The proximal morphology of Dorset concave side-scrapers strongly suggests that many were hafted during use. In discussing the techno-chronological evolution of these items, Maxwell (1973:339) remarks that:

> The concave-edged side scraper...appears as a thick flake, possibly hand-held, with a beveled notch on one margin. Through time the tool becomes narrower, more delicate, and side-notched for hafting, and at the end...becomes a uni-bevelled, oblique-edged knife -- still used as a scraper by drawing the flint edge toward the body.

Ackerman (pers. comm. 1987) maintains that similar tools have been found in the western sub-Arctic, although Morrison (pers. comm. 1987) notes that they seem to be lacking in the eastern sub-Arctic. Le Blanc (pers. comm. 1987) indicates that they are rare in the Boreal Forest of Alberta.

Arctic concave side-scrapers tend to be smaller than their Plateau analogues, averaging only about 29 mm long (McGhee 1979:102). It has been inferred that they were used to work bone, antler, ivory, and wood (Ackerman 1987; Le Blanc, pers. comm. 1987; McGhee 1979; pers. comm. 1987). Many Arctic specimens have also been intentionally burinated along the "opposite" margin; a feature not observed on any Interior Plateau specimens. Also, it should be kept in mind that this tool form may not have functioned in precisely the same capacity in both of these areas given the differences in the nature and relative abundance of raw materials available in each of these environments.

4.2 Temporal Analysis Methods and Results

The approximate chronological distribution of key-shaped formed unifaces in the Northwest was determined by: (1) considering the range of presently available radiometric dates for excavated components containing these items (Table 2); (2) inferring relative age on the basis of other associated temporally diagnostic artifact types; and (3) considering information provided by the respondent researchers (Appendix 4).

4.2.1 Temporal Distribution in the Southern Northwest

The range of radiocarbon ages associated with components bearing key-shaped formed unifaces on the Canadian Plateau (Table 2), suggests that they appeared in the archaeological record around 3000 BP, and vanished sometime around 1000 BP. This temporal span is commensurate with the latter half of the *Shuswap horizon* (ca. 3500 to 2400 BP) and all of the *Plateau horizon* (ca. 2400 to 1200 BP) (Richards and Rousseau 1987). Their use appears to have been discontinued shortly after the commencement of the *Kamloops horizon* (ca. 1200 to 200 BP). The exact reason for their disappearance is not known, although it may have been related to the complete functional

replacement of atlatl technology with bow and arrow technology by about 1000 BP (see Chapter 10).

On the Columbia Plateau, key-shaped formed unifaces have been found in contexts dating between ca. 4000 and 1000 BP (Table 2). Most have been recovered from components dating between ca. 3000 and 1000 BP, but they have been found in at least two components from north-central Washington dating to ca. 4000 BP.

In north-central Washington, Grabert (1968) has assigned them to the *Chiliwist phase* (ca. 3000 to 900 BP) of the South Okanagan valley, and they also occur in the *Hudnut phase* (ca. 4000 to 2000 BP) and initial half of the *Coyote Creek phase* (ca. 2000 to 1000 BP) of the Rufus Woods Lake region (Campbell 1985). In central Washington, Nelson (1969) reports them for the *Quilomene Bar phase* (ca. 2800 to 2100 BP) and the initial half of the *Cayuse phase* (ca. 2100 to 1000 BP), Warren (1968) assigns them to his *Selah Springs pattern* (ca. 3000 to 1000 BP), and Holmes (1966) recovered a similar item from the *Schaake I* component (ca. 3300 to 2800 BP). At Kettle Falls in northeastern Washington they occur in the *Ksunku period* (ca. 4000 to 3200 BP) and the *Sinaikst period* (ca. 1700 to 600 BP) (Chance and Chance 1977,1979,1982; D. Chance, pers. comm. 1987). In the Lower Snake River region of southeastern Washington they have been attributed to the *Tucannon phase* (ca. 5000 to 2500 BP) (D. Chance, pers. comm. 1987), and to the *Harder phase* (ca. 2500 to 700 BP) (Yent 1976).

4.2.2 Temporal Distribution in the Arctic

Data for the Arctic suggest that concave side-scrapers date between ca. 4500 and 1000 BP in both western and eastern sub-areas. As previously mentioned, they are found in components belonging to the *Arctic Small Tool tradition* (ca. 4500 to 2500 BP), and to the later *Norton* and *Dorset* cultural complexes of the Paleo-Eskimo tradition, which both date between ca. 2500 and 1000 BP.

4.3 Summary and Discussion

The present data suggest that items conforming to the typological definition of "key-shaped formed uniface" as outlined in this study are occasionally found in two environmentally different and non-adjacent culture areas: the Interior Plateau and some of its neighbouring regions; and most of the Arctic. They are reportedly rare or absent in the interior of the Yukon and Northwest Territories, northern B.C., Alberta, southern Idaho, Montana, Oregon, and the Northwest Coast.

At present, the earliest appearance of these items seems to have been in the Arctic sometime around 4500 BP; at least 500 years earlier than they are known to have appeared on the Columbia Plateau. Assuming this reflects reality rather than sampling error, one model which can account for this temporal disparity is that this tool type has a single origin, and it was a technological innovation of people participating in the Arctic Small Tool tradition/pre-Dorset. Its adoption and use may have then eventually diffused rapidly southward via inland hunting groups from the Arctic to the Columbia Plateau sometime between 4500 and 4000 BP. This scenario suggests that their distribution should be more or less contiguous throughout the Northwest, and that a north-to-south cline of progressively later appearance dates might be expected.

There are a few problems with this model. First, these tools appear to be absent or very rare in the sub-Arctic culture area. Also, radiocarbon dates for components bearing these items on the Canadian Plateau (Table 2) suggest that their initial use in this sub-area was about 1000 years later than on the adjacent Columbia Plateau. Since the Canadian Plateau lies between the Arctic and Columbia Plateau, a north-to-south cline of progressively later appearance dates is logically expected; unfortunately this situation does not presently appear to exist. It is important to note, however, that only a few investigated components have been radiocarbon dated to between ca. 3000 and 4000 BP on the Canadian Plateau (Richards and Rousseau 1987; Stryd and Rousseau 1988). Therefore, the apparent absence of these tools from ca. 4000 to 3000 BP may be due to sampling problems. I predict that key-shaped formed unifaces will eventually be found in components dating to this time on the Canadian Plateau within the next few decades.

A second possible model suggests that this tool form may have been indepedently invented in two geographic centers; once in the Arctic around 4500 BP, and again on the central Columbia Plateau about 4000 BP. If this is true, I expect that this tool form might not be represented in areas lying between the Arctic and Plateau. At present, this seems to be the case. I submit that it is more parsimonius to postulate that the appearance of key-shaped formed unifaces on the Canadian Plateau is a result of a northward diffusion from the nearby and environmentally similar Columbia Plateau rather than southward diffusion from the Arctic in the distant north.

The current evidence (i.e., housepit dwellings and semi-sedentary adaptive pattern) suggests that a logistical subsistence and settlement system (Binford 1980) appeared about 4500 BP on the Columbia Plateau (Ames, Green and Pfoertner 1981; Chatters 1984,1989; Campbell 1985). This is about 1000 years earlier than the appearance of such an adaptive system on the Canadian Plateau (Richards and Rousseau 1987; Stryd and Rousseau 1988). By ca. 4000 BP, intensification of curated tool use, which included key-shaped formed unifaces, accompanied the development of a logistical strategy on the Columbia Plateau. The advantages and benefits derived from using curated technologies in a logistical subsistence and settlement system are discussed in Chapter 3.6.