AN ANALYSIS OF TABULAR SLATE TOOLS FROM PHILLIP'S GARDEN (EeBi-1), A DORSET PALAEOESKIMO SITE IN NORTHWESTERN NEWFOUNDLAND

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by

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A thesis submitted to the
School of Graduate Studies
in Partial Fulfillment of the
requirements for the degree
of Master of Arts.

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ABSTRACT

This thesis presents analyses of the tabular slate tool collection from Phillip's Garden (EeBi-1), a Dorset site in Newfoundland. The purpose of this study is to better understand the role tabular slate tools held in Dorset society. First, to assist in effective communications, a typology was created for tabular slate tools. Then, the micorwear of tabular slate tools was examined to determine their use, and k-mean analysis was used to determine their spatial distribution. It was hypothesized that tabular slate tools were used in skin processing activities, which was partially supported by the microwear analysis. Thus, the spatial distribution of tabular slate tools was examined through the context of skin processing activities, and their connection to functional and social aspects of Dorset society. A sample of tabular slate tools from other Newfoundland Dorset sites were also examined to determine if they fit into the same typology and were used in the same way as those from Phillip's Garden.

ACKNOWLEDGEMENTS

I would, first and foremost, like to thank my supervisor M. A. P. Renouf for suggesting this research project and repeatedly reading and reviewing my thesis. I would also like to thank her for providing (metaphorical) slaps to the head when she spotted shoddy research and writing. I would also like to thank the Carino Company for providing the seal hides used in the microwear experiments, Sam Horwood for creating the tabular slate tool replicas, and ISER for providing the funds used to obtain the replicas. I wish to thank The Rooms Provincial Museum for allowing me to examine and photograph slate artifacts from other Newfoundland Dorset sites as well.

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CHAPTER 1: INTRODUCTION

"Seal hunting is reflected in the Phillip's Garden artifact collection...Sealskin processing is an activity complementary to seal hunting. In this paper, we argue that tabular slate artifacts...are specialized sealskin-processing tools" (Renouf and Bell 2008:36-37).

1.1 Introduction and Research Questions

Phillip's Garden is a Dorset Paleoeskimo site on the Great Northern Peninsula of Newfoundland (Figure 1.1). It contains at least 67 dwelling features and an undetermined number of middens (Renouf and Bell 2008). Currently, 34,234 artifacts have been recovered from 24 house features and four middens. Of these artifacts, 1,496 are slate tools and fragments, 3,715 are chert endscrapers, and 165 are chert sidescrapers (Figures 1.2, 1.3 and 1.4) (PAC Archaeology Project database). Chert endscrapers are generally acknowledged as skin processing tools (Brink 1978; Cassell 2006; Hayden 1979; Rots and Williamson 2004; Weedman 2002), but the role of slate in the Dorset toolkit is more ambiguous. Both primary excavators of Phillip's Garden, Harp and Renouf, have hypothesized that at least some slate tools were used in skin processing.

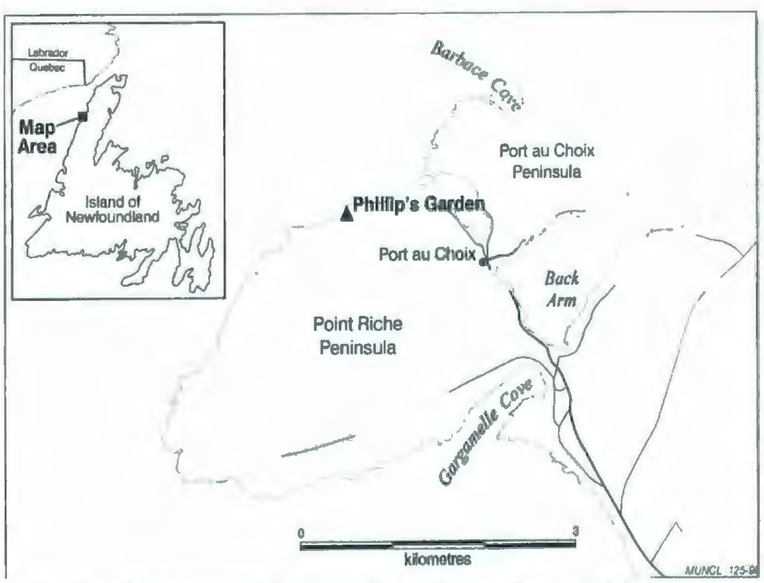

Figure 1.1: Location of Phillip's Garden (Map: Renouf 1999a, modified)

Figure 1.2: Phillip's Garden slate tools (Photo: R. Knapp)

Figure 1.3: Phillip's Garden endscrapers (Photo: PAC Archaeology Project)

Figure 1.4: Phillip's Garden sidescrapers (Photo: R. Knapp)

Harp (1976) classified some slate tools as scrapers, but labelled others as knives and chisels. Renouf and Bell (2008) hypothesized that the two largest groups of identifiable slate tools were used in skin processing, as a number of slate tools have unifacial or bifacial bevels on their use edges, similar to the bevels of an ulu edge (Issenman 1997).

This thesis intends to determine whether slate tools from Phillip's Garden were used in skin processing activities, and further to examine the place of skin processing in Newfoundland Dorset society. To accomplish this objective, two research questions are asked. Were slate tools from Phillip's Garden used in skin processing activities? What was the place of skin processing in Newfoundland Dorset society? To answer these questions, research is broken into three foci: classification of slate artifacts, microwear analysis of slate tools, and spatial analysis of skin processing lithics.

A new classification system was developed to better describe the variation among slate tools at Phillip's Garden. Gracie (2004) and Renouf and Bell (2008) developed preliminary classification systems for these tools. Gracie (2004) separated slate tools and fragments into six classes: bevelled slate tools, cat's tongues, slate pendants, slate points, unidentified tool fragments and fragments. These categories are further explained in Chapter 3. Renouf and Bell (2008) were only concerned with the slate tools with bevelled edges, as they hypothesized these were used in skin processing tasks. They separated tools into two classes: bevelled slate and rounded-tip tools (Renouf and Bell 2008). Gracie's (2004) classification system was created using only a sample of the slate collection from Phillip's Garden, and so did not encompass the full range of variation within the collection. Renouf and Bell's (2008) classification system described general trends within the slate tool collection as well, but did not fully describe the variation among slate tools. Therefore, the classification system presented in Chapter 3, while similar to Renouf and Bell's (2008) model, attempts to more fully examine and explain the variation among slate tools and fragments.

After classification, microwear analysis was performed on those tools hypothesized to be skin processing tools. This hypothesis was largely based on the similarities between Dorset slate tools and Inuit and Siberian skin processing tools (Issenmen 1997; Oakes and Riewe 1995, 1998). In particular, slate tools with bevelled edges are compared to Inuit uluit, and thin, tabular tools with rounded or pointed edges are compared to Siberian boot-sole creasers. The Dorset bevelled tools are compared to uluit because they were both made from slate, and have bifacially or unifacially bevelled working edges. The Dorset bevelled tools also vary significantly in size, as do uluit (Oakes and Riewe 1995). The tabular tools with rounded or pointed ends are compared to Siberian boot-sole creasers (Oakes and Riewe 1998) because these are the Arctic tool type they most resemble.

Replicas of 13 slate tools from Phillip's Garden, including six bevelled tools, six rounded-tip tools, and one multi-tool, were made and used to scrape, crease, and cut two harp seal hides. The microwear of these tools was then compared to the microwear of slate artifacts under a microscope at low magnification. Those slate artifacts whose microwear matched their replicas were established as skin processing tools. Once the usewear of skin scraping, creasing, and cutting tools was established, larger samples were taken from the Phillip's Garden collection. The sampled artifacts were photographed under low magnification, and their usewear was compared to the established microwear pattern. This process, and its results, are discussed further in Chapter 4.

The spatial distribution of slate tools was examined to gain further insight into organization of skin processing activities at Phillip's Garden. The spatial distribution of artifacts and features have the potential to provide information regarding a number of cultural aspects, including gender and cosmology (Whitridge 2004), which were examined in relation to skin processing activities at Phillip's Garden. To identify activity areas, a clustering algorithm known as k-means analysis was used. K-means analysis is effective for identifying clusters of individual artifact classes and can provide information regarding cluster structures (Blankholm 1991). These issues are discussed further in Chapter 5.

1.2 Previous Research on Skin Processing at Phillip's Garden

Four previous articles are related to skin processing activities at Phillip's Garden. Bell et al. (2005) discussed the impact of skin processing on ponds used to dehair and tan hides, and Renouf and Bell (2008) discussed evidence of skin processing at Phillip's Garden. Bell et al. (2005) analysed core samples from Bass Pond, adjacent to Phillip's Garden. From 2000 cal BP to 1400 cal BP[1], the pollen and chironomid data from the sediment core showed a sharp increase in the salinity of Bass Pond, corresponding with a peak during the Dorset habitation of Phillip's Garden (Bell et al. 2005:124-125; Renouf

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1 Here, cal BP, or calibrated radiocarbon dates (before present). When possible, uncalibrated dates are used in this thesis, but as Bell et al. (2005) used calibrated dates, they were used when citing from their article.

and Bell 2008). The nutrient level of the pond also rose significantly. Around the time of Phillip's Garden's abandonment at 1100 cal BP both the salinity and nutrient levels dropped back to their previous norm. Bell et al. (2005) and Renouf and Bell (2008) theorized that the changes in salinity and nutrient levels were the result of the Dorset using Bass Pond to soak seal skins for depilation. This hypothesis was supported by modern hide processing methods used on Newfoundland's Great Northern Peninsula, where sealskin boot-makers soak seal hides in freshwater ponds to dehair them through microbial activity. They also tan hides by submerging hides in water and a tanning solution in a tub. If the Dorset were processing hides in a similar manner, it would have resulted in increases in the salinity and nutrient levels of Bass Pond (Bell et al. 2005:124-125; Renouf and Bell 2008).

Renouf and Bell (2008) also examined the slate tools at Phillip's Garden by comparing ethnographic descriptions of skin processing procedures throughout the circumpolar region. Dorset slate tools were then examined and separated into two large categories: bevelled slate tools and rounded-tip tools. They thought that bevelled slate tools were used as hide scrapers, rounded-tip tools were used to create creases in leather, or were used to separate sinews (Renouf and Bell 2008).

Gracie (2004) classified slate tools from Phillip's Garden and suggested that bevelled slate tools were used as hide scrapers, based on similarities with Inuit uluit. She also examined slate points and pendants, which she hypothesized were not used in skin processing activities, but were used in hunting and for decoration/ritual purposes, respectively. The grooves, holes, and saw-marks that appear on some tools were also examined. She concluded that all grooves and saw-marks were the result of tool manufacture. She suggested that holes were used to haft or suspend a tool, since ethnographically holes are often used in tool/pendant hafting or suspension (Gracie 2004).

Culleton (1991) analysed the microwear of endscrapers found at Phillip's Garden. He noted that most endscrapers had microflaking, a usewear pattern shown by previous microwear research on endscrapers from a variety of sites to be indicative of scraping hard surfaces. He therefore hypothesized that the endscrapers were used to scrape bone, antler and/or soapstone (Culleton 1991). This study is discussed further in Chapter 4.

1.3 The Dorset Culture

Dorset marine-mammal oriented hunting and cooking assemblages, and the association of whalebone with dwelling features, emphasizes the cultural importance they placed on the ocean and the animals it provided (LeMoine 2003; Renouf 2007). Most Newfoundland Dorset sites are located on the coast, and faunal material found on these sites largely consists of marine animals. The Dorset hunting toolkit was also designed for exploiting marine resources, including harpoon components such as barbed points, harpoon heads and endblades (Figures 1.5, 1.6 and 1.7) (Maxwell 1985; McGhee 1990; Renouf 1993). Soapstone pots and lamps filled with seal fat were used for cooking, as well as heating and lighting the dwellings (Maxwell 1985; McGhee 1990; Renouf 1991, 1999a).

Figure 1.5: Dorset barbed points (Photo: Archaeology Project)

Figure 1.6: Dorset endblades (Photo: PAC PAC Archaeology Project)

Figure 1.7: Dorset harpoon heads (Photo: PAC Archaeology Project)

Dwelling construction also suggests an orientation toward the ocean. The Dorset usually oriented the axial features, the centre points of their dwellings, toward the ocean (LeMoine 2003; Renouf 2006, 2007). There is also evidence in the high Arctic and Newfoundland that the Dorset used whalebone to construct their dwellings, though no evidence has been found in Labrador. In the high Arctic, a whale mandible was found in an axial feature at the Arvic site on Little Cornwallis Island (LeMoine 2003). At Phillip's Garden in Newfoundland, curved postholes were found associated with three dwellings (Cogswell 2006; Renouf 1993b, 2007). These postholes appear to have been created for inward curving whale ribs, which would have formed the primary structural support for the dwelling walls (Figures 1.8 and 1.9) (Renouf 1993b; Renouf and Bell 2008). Another dwelling had three curved depressions in its axial

Figure 1.8: Modern whale rib in curved posthole at Feature 55 (Photo: Renouf 1999a)

Figure 1.9: Modern whale ribs in curved postholes in House 17 (Photo: Renouf 2007

Figure 1.10: Modern whale ribs in the axial feature of House 17 (Photo: R. Knapp)

feature that appear to accommodate three sets of whale ribs (Figure 1.10) (Renouf and Bell 2008).

1.4 Phillip's Garden

Phillip's Garden is a Middle Dorset Paleoeskimo site in the Port au Choix National Historic Site, on the western shore of Newfoundland's Great Northern Peninsula. Phillip's Garden is the largest Paleoeskimo site on Newfoundland, and one of the largest Dorset sites in the Canadian Arctic. It is a two hectare meadow bordered by tuckamore, 8 to 11 metres above sea level, adjacent to the current beach. The meadow is composed of three terraces, Bench 1, 2 and 3 (Harp 1964). Bench 1, the closest to the ocean, is culturally sterile. However, dwellings and middens are found throughout Bench 2, 6 m above sea level, and scattered on Bench 3, 11 m above sea level. Presently, 67 house features are mapped (Figure 1.11), but depressions have been informally identified in the tuckamore, and more may be buried by middens (Harp 1964; Renouf 2006; Renouf and Bell 2008).

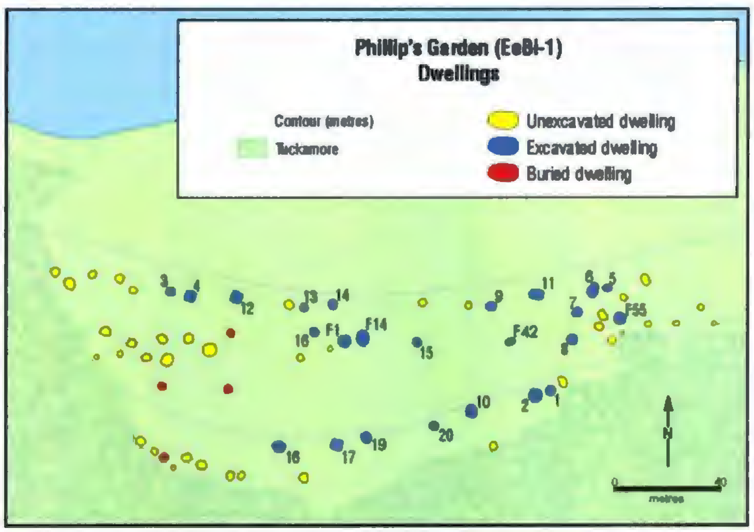

Figure 1.11: Identified dwellings at Phillip's Garden (Map: PAC Archaeology Project)

The first archaeologist to identify the site was William Wintemberg, who tested two house structures in 1929 (Wintemberg 1939, 1940). No further work was done until 1949, when Elmer Harp began excavations. During the summers of 1949 and 1950, Harp dug three test trenches. Two were located on Bench 2, one through a midden and one through House 3, and the third was located on Bench 3, through House 1 and the surrounding midden. Harp returned to Phillip's Garden in 1961 and continued excavations through 1963. During this time, he partially or fully excavated twenty house structures, Houses 1 to 20 (Harp 1964:20; Harp 1976). M. A. P. Renouf has excavated at Phillip's Garden from 1984 to present. Renouf has completely excavated three dwellings, Features 1, 14 and 55. She has further tested three houses previously excavated by Harp: Houses 2, 18 and 17 (Cogswell 2006; Renouf 1999b; Renouf 2006).

The 24 dwellings and surrounding middens have dates spanning approximately 800 years, between 1970±60 BP (Beta-23977) and 1250±60 BP (Beta-15639) (Renouf 2006:121,127). The site's occupation period is divided into three temporal phases, referred to as early, middle and late. These phases was further defined by overlapping radiocarbon dates from 29 charcoal samples taken from 15 house features and four middens (Renouf 2006:122,127). The early phase dates from 1970±60 BP (Beta-23977) to 1770±120 BP (Beta-42968), the middle from 1770± 120 BP (Beta-42968) to 1370±90 BP (Beta-66436) and the late from 1370±90 BP (Beta-66436) to 1250±60 BP (Beta-15639). The majority of the house structures excavated fall into the middle phase, but two late phase and six early phase structures and features were also tested and/or excavated (Renouf 2006:122,127).

There are notable variations in dwelling size among Phillip's Garden's temporal phases. The early and late phase dwellings are less than 80 m^2, and the single late phase dwelling less than 30 m^2. However, three middle phase dwellings are more than 90 m^2, and House 18 is approximately 104 m^2. Currently, more middle phase dwellings are identified than early and late phase. Due to the greater number and size of middle phase dwellings, it is proposed that this phase represents a rise in population at Phillip's Garden (Cogswell 2006; Erwin 1995; Harp 1976; Renouf 2006).

Phillip's Garden is an unusually large Dorset site, and was intensively occupied for at least 700 years; this long and intensive occupation was the result of the acquisition of abundant and reliable resources. During December and March/April, migrating harp seals pass by the site; due to a sudden drop in the sea floor, the seals are usually less than a kilometer offshore during the spring migration (Hodgetts et al. 2003; Renouf 1999a). The faunal material found at the site suggests that the Dorset settled at Phillip's Garden to hunt the migrating harp seals (Renouf 1999a), as the vast majority of bone found at the site is seal. In one early midden (1770±120 BP, Beta-42968), 99.4% of the faunal material recovered was seal (Hodgetts et al. 2003:108,110). Later middens (1520±90 BP, Beta-19084) produced 81.4% seal bone, and the latest (1360±80 BP, Beta-160977) 70.8% (Hodgetts et al. 2003:108,110). It is clear that seals were the primary resource harvested at Phillip's Garden throughout its occupation (Hodgetts et al. 2003:108,110; Renouf 1999a:408).

The seal migrations and the quantity of raw material they represented were economically crucial to the Dorset (Harp 1976; Renouf 1993a; Renouf and Bell 2008).

The seals provided the Dorset with large amounts of meat and fat. It is also likely that the Dorset used the seal hides to create clothing, dwelling coverings, and boat coverings, if hide boats were used (Bell and Renouf 2006; Renouf 1993a; Renouf and Bell 2008). Until Bell et al.'s (2005) and Renouf and Bell's (2008) articles on the effects of hide dehairing and tanning on Bass Pond, and the presence of slate scrapers at Phillip's Garden, research at Phillip's Garden has focussed on seal hunting (Erwin 1995; Hodgetts et al. 2003; Renouf 1993a, 1999b), but not skin processing activities. This thesis will continue the work Renouf and Bell (2008) and Bell et al. (2005) began with a further examination of slate tools.

1.5 Where to go from Here

As historical context has been established for the Dorset, Phillip's Garden, and past work on skin processing tools at Phillip's Garden, new research can now be discussed. Chapter 2 describes skin processing activities and their sociological role in circumpolar groups. This provides both ethnographic comparisons for skin processing tools and places them within a cultural context. Chapter 3 is a description of a new classification system for Dorset tabular slate tools from Phillip's Garden. Chapter 4 describes the microwear analysis of Phillip's Garden tabular slate tools. In Chapter 5, the form and function of slate tools from four other Newfoundland Dorset seal hunting sites are examined. Chapter 6 is a discussion of the spatial distribution of slate tools at Phillip's Garden. This thesis concludes with a summary of Dorset slate tool use at Phillip's Garden, and an examination of the probable role skin processing activities played within Dorset society.

Chapter 2: Skin Processing in the Arctic

> *"We were told by our parents that the clothing they made reflects the life-force and would prevail over the environment and climate"* (Palliser, from Issenman 1997).

This chapter examines the ethnographic context for skin processing tools, particularly scrapers and boot-sole creasers, skin processing procedures, the manufacture of hide clothing, and the gendered and cosmological importance of skin processing activities and tools for circumpolar cultures. Until recently, life in the Arctic depended upon the production of clothing and other hide objects from well-processed skins. If processed incorrectly, hides can rot, split, and/or lose their fur, making them unusable, and the manufacture of clothing from cured hides required a great deal of skill. Hide clothing, hide processing tasks, and hide processing tools were also closely tied with Arctic cosmology and gender (Issenman 1997). This chapter will discuss Arctic skin processing tools, the skin processing procedure, the practical importance of hide clothing, the ties between skin processing tools and tasks with cosmology and gender.

2.1 Skin Processing Tools

A typical arctic skin processing tool assemblage includes scrapers and scraping/cutting boards. This section will detail the function and cultural significance of these tools. Boot-sole creasers will also be discussed, as it is suggested in Chapter 4 that rounded-tip tools were boot-sole creasers.

Issenman (1997) and Oakes and Riewe (1998) describe different types of scrapers used by circumpolar peoples. Before the use of iron or steel, scrapers were typically made of stone or bone. Scrapers were also typically divided into two broad groups: sharp and blunt. Sharp scrapers were usually made from slate, though larger bones such as caribou or reindeer long bones and scapula were sometimes used as well. Currently, sharp scrapers are usually sharpened steel. Sharp scrapers are used to remove blubber, connective tissue and hair from hides, and their working edge is typically unifacially or bifacially bevelled. Many of these scrapers double as knives; for example, the Inuit scarp scraper, the ulu, is also a multi-purpose knife. Blunt scrapers can be made of slate, chert, bone, antler, iron or steel. These scrapers are only used on dry skins to remove tough bundles of tissue or soften stiff hides (Issenman 1997; Oakes and Riewe 1998).

Issenman (1997) and Oakes and Riewe (1998) state that scrapers hold special cultural significance for most, if not all, Arctic cultures. The Inuit attribute no cultural importance to blunt scrapers, but their semi-lunar sharp scrapers, or uluit, are central to women's work and identities. Uluit are used as sharp scrapers and multi-purpose knives by women, and were traditionally made from bevelled slate. The ulu is only used by women, and has come to represent Inuit womanhood and woman's work. Traditionally, every woman and girl had at least one ulu, and it was one of only two tools she carried to her husband's dwelling when they married (Issenman 1997). Among Siberian groups, scrapers, which were also associated with women, were believed to contain spirits. Women were viewed as the protectors of the tools' spirits (Oakes and Riewe 1998).

Scraping or cutting boards are flat stones or pieces of wood on which hides are scraped and cut. They are important tools, as a firm flat surface is necessary to properly scrape and cut hides (Balikci 1970; Issenman 1997; Oakes and Riewe 1995, 1998). Among the Inuit, scraping boards appear to have no spiritual significance (Balikci 1970;

Issenman 1997; Oakes and Riewe 1995). However, among Siberian groups, cutting boards are believed to possess strong spirits. Cutting boards can also become family heirlooms; every woman has her own cutting board, but one can be passed from mother to daughter. If it is not passed on, it is buried with its owner, as are her other skin processing and sewing tools (Oakes and Riewe 1998).

Boot-sole creasers or hide pressers are slim, flat, blunt edged tools used to create pleats or creases along the toes, heels and soles of hide boots. Traditionally, these were typically made of bone or ivory in both Siberia and the Canadian Arctic (Issenman 1997; Oakes and Riewe 1998). Hide pressers were not as universally used in the Arctic as scrapers or cutting boards. Though widely used by Siberian peoples (Oakes and Riewe 1998), only those Inuit living in Greenland, Labrador, Alaska and the Hudson Bay area use this type of tool. Other Inuit groups use their thumbnails for the same purpose (Issenman 1997). Hide pressers are culturally important to Siberian groups. As with scrapers and cutting boards, Siberian peoples hold that hide pressers contain spirits who can assist their owners (Oakes and Riewe 1998).

Hide working tools are socially significant items among many circumpolar societies, and this significance, while tied to gender and cosmology, is also a reflection of the tasks for which they were used. Part of the reason hide working tools have such social significance is because they are used to create hide clothing and other hide objects. The following section will examine why hide clothing was so vital to Arctic societies.

2.2 Hides: The Epitome of Arctic Attire

A number of different type of hides were used by circumpolar peoples, including caribou, seal, bird, and reindeer. Each of these types of hides have their own unique properties which make them suited to use as arctic clothing, though this chapter will only discuss the properties of sealskin and caribou hides in detail. Arctic clothing is made to suit three primary functions: heat conservation and temperature control, humidity control, and protection against wind and water.

Heat conservation is important because of the intense cold possible in circumpolar regions; during the winter, temperatures are often below -40E C. Therefore, heat conservation is necessary to survive in the winter Arctic. This is accomplished by a number of factors, including using hides that best conserve heat, layering clothing, wearing loose attire, and using clothes with few openings (Buijs 1997). The hides that best preserve heat in the Canadian Arctic are caribou, for reasons that will be discussed below, and thus most winter attire is created from caribou hides. Multiple layers are also employed. The inner layer of clothing has the hair facing inward, against the body, while the outer layer had the hair facing outward. This best retains body heat, as the heat is trapped between the skin and the non-porous hide. Cloth, on the other hand, is a porous material, which is inferior for heat retention (Buijs 1997; Issenman 1997).

As Buijs (1997) and Issenman (1997) describe, loose clothing helps retain heat because it traps warm air and forces it to rise. If the hood of a parka is raised, the captured heat will be trapped at the top of the parka, warming the face and head. Few and tight openings in clothes also assist in keeping warmed air from escaping. The only two openings on an Inuit parka which are not either tucked into another garment or pulled tight by drawstrings are the neck/head hole at the top, and the bottom edge of the parka.

Since the bottom of the parka is well below the waist of the trousers, there is little chance of rising heat escaping there. Unless the hood is lowered, little heat escapes from the neck/head area as well, as the neck opening is tight, and the hood traps heat around the head and face (Buijs 1997; Issenman 1997).

Temperature control is largely accomplished through the loosening or tightening of drawstrings and the raising and lowering of the parka hood. While heat conservation is desired, arctic hide clothing is so efficient for this purpose that the wearer sometimes becomes overheated. When this occurs, the hood is typically pushed back, allowing heat to escape. One can also loosen drawstrings at the top of one's boots to relieve overheated feet. This hot air will rise through the other clothes and escape from a lowered hood. Once an individual reaches a comfortable temperature, they can raise the hood and/or tighten their boot drawstrings to begin conserving heat again (Issenman 1997).

As Buijs (1997) and Issenman (1997) describe, humidity control largely refers to control of moisture released from the body, whether through transpiration or perspiration. When the outside temperature drops below a certain point, transpiration and perspiration freeze and become hoarfrost, which can appear inside or outside clothing. If one is wearing cloth clothing, moisture is absorbed by the cloth, and when cloth becomes wet, it not longer insulates. Eventually, the moisture freezes, and the cloth becomes difficult to move or remove. Some early European explorers died in this fashion, frozen within their own clothes. Hide clothing, however, does not absorb moisture, particularly when the fur is still attached. Instead, moisture beads on the hairs, and if it freezes the resulting ice or frost can be easily beaten or scraped off. Freezing moisture and removing the ice is the primary method Inuit use to dry their clothes. When one returns home with damp clothes, one need only lay them outside, allow the moisture to freeze, and brush the resulting frost off. Cloth, however, must be placed somewhere warm and dry for moisture to be removed. Also, whether damp or covered in hoarfrost, furs do not lose their insulating qualities. Only a thorough wetting will result in their becoming too moisture-laden to wear (Buijs 1997; Issenman 1997).

Buijs (1997) and Issenman (1997) state that hide and fur clothing also protects the wearer against wind and water. Hides are impervious to wind, and as arctic clothing generally covers all but the face, most of the body is protected. Among the Inuit, the face is surrounded by a ruff made of wolverine, wolf or dog fur. These furs have hairs that are long and uneven, which reduce wind velocity by creating eddies - places where air is trapped and turned back against the prevailing direction of the flow. These types of furs also assist in controlling moisture. Hides with hairs of even length, such as fox, will produce a solid sheet of ice when damp, whereas furs with hair of varied lengths produce a hoarfrost which is easily removed. As previously mentioned, all hides used by the Inuit are at least water resistant. This water resistance is increased by the stitches used to construct the clothes. Seams are sewn with small, tight stitches, and the threads are sinew. Small, tight stitches allow little water into the seam area, and when water does encroach, it swells the sinew, rendering the seams completely waterproof. Some fully waterproof skins are also created, but this requires the use of seal hide or sea mammal gut, as will be discussed below (Buijs 1997; Issenman 1997).

2.3 Hide Types and Clothing Forms

Buijs (1997) and Issenman (1997) describe the types of clothing made from seal hides. The Inuit generally wear seal hides during the spring and summer, as they weigh less than caribou hide and can be made completely waterproof (Issenman 1997). Seal hides are very oily, and thus naturally water resistant. If, during processing, the fur and dermis are removed, and sufficient oil is left on or rubbed back into the skin, seal hides can become completely waterproof. Despite its waterproof qualities, seal hides are also porous, which allows humidity to escape from the inside. Some seal hides are also far tougher than the hides of other species, which makes them ideal for boot soles. Thanks to its light, tough, waterproof nature, all seal hide is a superior material for boots; even now when other garments traditionally made with seal hide are made with imported materials, seal skin boots are still relatively popular. Previously, seal hides were also used to create what was essentially rain gear - waterproof garments that fitted over other clothes (Buijs 1997; Issenman 1997).

Issenman (1997) and Reed (2005) discussed sea mammal guts, which were also primarily used as rain gear. A variety of different portions of the sea mammal digestive systems could be used in the production of these parkas. The esophagus and intestines from seals, sea lions, walruses and whales were used, as were the tongue and liver membranes of whales. These garments were lightweight, waterproof and resilient. Intestines function by absorbing water and nutrients on their inner surface and distributing it through their exterior. This means that, if the inside of the intestines form the inside of the coat, heat and humidity can escape from the parka, but wind and water cannot enter. Due to their thin and porous nature, however, intestines make ineffective insulators, so they are typically made into parkas large enough to be worn over everyday attire. Gutskin parkas also make good outerwear because of their durability. Intestines constantly contract and expand while under pressure. This results in a tough, elastic and resilient material (Issenman 1997; Reed 2005).

The Inuit make caribou hides into clothes, bedding, and particularly winter garments. Caribou hides are the preferred hides for winter clothing primarily because of their warmth. This is derived from their fur, which consists of a dense undercoat covered by guard hairs. Individual guard hairs have cells with thin walls and an open structure. This structure produces fur that is very lightweight, and which acts as a superior insulator, as the thin cell walls trap heat. The guard hairs are also waterproof, strong and resilient, a combination that results in less damage to caribou hide clothing. The undercoat consists of short, fine, dense hairs. They mat together at the base of the guard hairs and block any cold and water that made it past the guard hairs. These qualities combine to make caribou hides warmer than others, as well as water resistant and lightweight (Issenman 1997; Meeks and Cartwright 2005).

2.4 Sealskin Processing Procedures

Though a variety of animals were used for hides or guts, this section will only discuss sealskin processing procedures. Sealskin would likely be the most common hide type at Phillip's Garden, as seal hunting was the primary focus (Renouf and Murray 1993; Hodgetts et al. 2003). Assuming that this is true, this thesis will, from here on, focus solely on seal hides, rather than all hide types.

Different types of seal hides are also used to create different hide objects. Balikci (1970) states that the hides of juvenile seals are preferred for Inuit parkas and trousers, though he does not provide a reason for this preference. Haired and dehaired seal pelts are also used for different types of clothing and have different processing procedures. If a haired hide is desired, the pelt's blubber is first removed (Balikci 1970; Oakes and Riewe 1995; Pendersen 2005). This is a delicate process, as the hypodermis, the top layer of the skin, must also be removed at this time, but the dermis, the lower layer of skin, must not be damaged. If the hypodermis is not removed, the skin will turn yellow and deteriorate quickly, but if the dermis is damaged, there is a hole in the hide (Pendersen 2005). Among the Inuvialuit and Copper Inuit, the hides are then washed seven times. The pelt is first washed three times with salt water, which draws the fat from the hide. The hide is then rinsed twice in fresh water, before being washed again in soapy water, which assists in removing oil from the skin. Before soap was available, the hide was instead rubbed with sand and gravel. The hide is rinsed a final time, and then immediately placed on a scraping board and scraped (Pendersen 2005).

Among other Canadian Inuit groups, the hides are not initially washed, but instead are scraped immediately with an ulu. This scraping can be done when the pelts are either wet or dry, and with or without the assistance of a scraping board. If a scraping board is not used, a flat rock, bared thigh or the ground are used to support the skin (Oakes and Riewe 1995; Pendersen 2005). After this step, processing procedures throughout the Canadian Arctic are fairly similar. The pelts are placed outside, just above the ground, stretched between wooden pegs, and allowed to dry (Balikci 1970). Colder temperatures are preferred, but the drying process can be undertaken at any time. When dry, the hides are washed to insure that all the fat has been removed and are scraped again. They are then lashed into a frame or staked out and allowed to dry. When the hides are dry once more, they are scraped with blunt scrapers, which soften the stiff pelts. They can then be sewn into clothing (Balikci 1970; Oakes and Riewe 1995; Pendersen 2005).

When dehaired seal hides are desired, as for the production of waterproof boots, seal hides are first dampened. When wet, the hide is spread on a board or across a woman's bare thigh, hair-side up, and the hair is shaved with an ulu. After the hair is removed, the hide is turned over so the blubber can be cut off with the ulu. The hide is then scraped with the ulu. Finally, hides are stretched out to dry on the snow. When dry, they are very stiff, and need to be chewed and scraped to soften them (Balikci 1970; Oakes and Riewe 1995). If dehaired hides are desired to create kayak covers, the pelts undergo a different processing procedure. Balikci (1970) states that adult female seal pelts are preferred for kayak covers, though other hides can be used, but he does not explain this preference. These hides are usually prepared in dwellings, during the late winter or spring. The blubber is first removed by spreading the skin across a scraping board or flat stone and cutting it from the hide with an ulu. When the blubber is removed, the skin is then chewed so that all fat particles are sucked out. The hide is rolled with the hair side out and placed on a drying rack above a lamp. When the hair is rotted, the skin is removed and the hair scraped off. If the hides are finished early, they are taken outside and buried in snow until it is time to make or repair kayaks (Balikci 1970).

Another method of making hairless, waterproof seal hides is through "aging." One first removes the blubber and part of the dermis with a sharp scraper; sometimes, the hide is soaked first, as it makes the blubber removal easier, but that step is unnecessary. The hide is then "aged" in one of two ways. The first way is to submerge the pelt in hot fresh or salt water for approximately 20 minutes. A hide can also be submerged and soaked in blubber for three or four days, which results in a fat-saturated, and thus more waterproof, hide. Both of these methods loosen the hair and epidermis, which can then be removed with a blunt scraper. These methods are preferred by some groups, as it results in an initially softer hide, so less scraping and/or chewing is needed to fully soften the skin (Oakes and Riewe 1995).

On the Northern Peninsula of Newfoundland, seal hides are still used to create clothing, particularly boots, and other goods. The first step is to salt and store the skins until one is ready to process them; while the procedure can occur at any time, warm weather speeds the drying process. When the processing begins, the skins are washed, laced into a wooden frame, and scraped to remove fat and tissue. The hides are then placed outside in the sun to dry. During this time they are scraped twice a day to remove oil. When the pelts are dry, they are sunk in a shallow freshwater pond, as bacteria in the water will loosen the hair. Finally, the hides are washed, scraped, and placed in a solution of bark and saltwater to tan (Genge et al. 2002).

2.5 Hide Clothing and Circumpolar Cosmology

Chaussonnet (1988) and Issenman (1997) describe the cultural role of skin clothing in circumpolar societies as directly linked to the cosmology of the group.

Through clothing form and decoration, seamstresses symbolically expressed their cultures' beliefs regarding this world, the spirit world(s) and the relationship between them. Clothing was a means of reaffirming identity, and communicating with others, whether those others were human or spirits. Hide clothing was also used to reaffirm humanity's link to the rest of the world, in particular that of animals and spirits. These concepts are expressed in clothing form, the way it is made, its ceremonial usage, and its decoration (Chaussonnet 1988; Issenman 1997).

Inuit cosmology holds that all animals have souls, and the soul remains after death. Thus, there are a number of taboos regarding the creation of clothing, so as not to offend the spirits of the animal(s) from which the hides came. Menstruating women, new mothers, and women who had miscarried were not permitted to work with any hides intended for the creation of boots and mitts. Likewise, menstruating women could not sew. These restrictions were in place because it was believed that human blood was offensive to the spirits of animals. If a bleeding human came into contact with boot or mitt skins, or participated in sewing activities, they would leave behind a spoor which would drive animals away (Issenman 1997).

Hides could also be prepared only during certain times. Taboos placed a division between land and sea animals. This meant that caribou and other land-animal hides were not prepared at seal hunting sites or on the ice. Likewise, seal hides were not prepared near salmon streams (salmon were considered land animals), at caribou crossings, other caribou hunting, or fishing sites. The life cycles of animals also effected the skin processing and sewing procedures. Caribou hides could only be sewn in the fall and winter, and seal hides could only be processed until the spring or summer, after the seal had their pups. If an important animal, such as a whale, were hunted, no skin could be sewn during the hunt. If these taboos were not followed, ill fortune such as accidents, sickness, unfavourable weather and the loss of game would result (Hall et al. 1994).

The Inuit believed that when a human dons hide clothing they take on the form of the animal they are wearing. The animal's strength, knowledge and powers are theirs. The design of clothing emphasizes the adoption of animal form by the wearer. For example, caribou ears and antler velvet are often incorporated into the hoods of parkas, the 'feathers' of a caribou's behind are placed on trousers, and the hide of a caribou's legs are incorporated into footwear. The transformation enacted by wearing clothing that actively imitates the animal it came from serves two purposes in Inuit cosmology. First, it provides the wearer with the abilities of the animal (Issenman 1997). Second, imitating animal form pleases the animal(s) who provided the hides used, as it transforms the human wearer into an animal. When pleased, animals will return to physical form and allow themselves to be hunted again, or allow themselves to be killed on an initial hunt. Wearing and making beautiful clothing is another way to please animal spirits. Animals are pleased by regular and perfects stitches, well-cut clothing, and fine decoration (Chaussonnet 1988; Issenman 1997).

Many Siberian groups, including the Koryak, Chukchi, Yupik, Nivkh, Nanai, Udegei, Nenets, and Khanty, also believe that hide clothing confers the power of the animal to the wearer (Chaussonnet 1988; Van Deusen 1997). The most powerful pieces of hide clothing are those that remain close to their original form. If possible, seamstresses leave the hides complete, and sews the clothes so that the part of the animal formerly covered corresponds to the part of the human currently covered. For example, Chugach men wear combination suits made from bear skins, where the head of the bear forms the hood, the back of the hide covered the wearer's back, and the legs covered the man's arms and legs (Chaussonnet 1988).

2.6 Gender and Skin Processing

When discussing Inuit groups, ethnographers will often take two seemingly contradictory positions: both men and women could perform all tasks necessary survival, and Arctic peoples had strict gendered divisions of labour (Hall et al. 1994; Issenman 1997; McIntyre 2005). Both statements are true; both men and women could perform all tasks necessary to survival because survival in the Arctic was difficult, and one sometimes needed to perform tasks not associated with one's gender to survive. Women did not go out with male hunting parties, so men needed to be able to fix their own clothing (Issenman 1997). Likewise, women needed to be able to perform tasks such as hunting and tool-making, as men were not always present or able to fulfill all the needs of a family. However, labour was generally divided into female and male tasks, and typically only one gender was extensively trained in a particular task (Hall et al. 1994; Issenman 1997; McIntyre 2005).

Among circumpolar peoples, skin processing was women's work. In Siberia, both men and women would participate in skin processing activities, but skin processing tools belonged to women, and women were preeminent. Among the Inuit, male involvement with skin processing and the creation of clothing typically ended with the removal of the hide from the animal and, if necessary, its transportation to a man's female family members. Skin processing and sewing were the domain of women (Hall et al. 1994; Oakes and Riewe 1998).

Since hide clothing was necessary for survival in the Arctic, and well-made clothing was necessary for good health, mobility and hunting, skin processing and sewing ability became markers of status for circumpolar women. Among the Inuit, the quality of clothing and the skillfulness of its design were a source of pride for women and their male family members. Some Inuit groups also attributed a hunter's success to the skill with which his clothes were made, as well-made clothes were considered respectful of and pleasing to the spirits of animals. If animals were pleased, they would allow a hunter to kill them, but they would not show themselves if displeased (Hall et al. 1994; Issenman 1997).

Skill in skin processing and sewing were also valued by Siberian groups, though some peoples placed special emphasis on these talents. The level of skin processing and sewing skills possessed by young Nenet women determines her dowery and bride price. If she cannot sew or process skins, or is unskilled, her parents must provide she and her husband with hides until she becomes proficient. If a woman can sew and process skins, this dowery is unnecessary, and the number of reindeer her betrothed presents to her parents increases. If a young woman is a very skilled seamstress, her future husband must be an excellent herder to supply the necessary number of reindeer (Oakes and Riewe 1998). Amongst the Dene, a sub-arctic North American people, skin processing and sewing skills also increase the marriageability of women. A highly skilled Dene seamstress and skin processor had high status and was very marriageable. Ethnographic accounts record that Dene men were sometimes known to have contests of skill or staged fights to win the right to marry a highly-skilled seamstress (Thompson 1994).

Among the Yupik of Alaska, women's skin processing and sewing skills are also highly valued. Like the Inuit, the Yupik believe that an animal gives itself to a hunter when it is killed; the animal's spirit, rather than the hunter, decides the outcome of the hunt. Women are thought to communicate best with the spirits of animals through dreams, visions, and clothing. Well-made clothing is one way in which women show respect to animals and ensure a successful hunt. This status does have a downside; if a hunt is unsuccessful, it is the fault of the women, as they did not adequately communicate with the animals. The Nanai of Siberia also believed that women's power, expressed through attire, insured the success of the hunt. The Nanai, unlike the Yupik do not appear to have places sole blame on the women if a hunt went badly, however (Oakes and Riewe 1998).

Hide processing tools are also associated with women in arctic groups. In Siberia, women are regarded as the guardians of the spirits of scrapers, cutting boards and skin pressers. In return, the spirits of these objects will do their best to protect the woman and her family. Skin processing and sewing tools are so tied to their owners that they become grave goods; most Siberian groups will bury a woman's scrapers, cutting boards, needles, beads and sewing bags with her (Oakes and Riewe 1998). Inuit women also share a special connection with a certain skin processing tool. The sharp scraper called an ulu is the symbol of Inuit women. It is technically an all-purpose blade, but it was the predominant tool in many skin processing tasks. Ulus are used for most scraping activities, and to cut sinews for sewing and hides for clothing patters. The ulu plays a central role in the life of Inuit women; little girls are first given toy uluit to play with, and are given real ones when they are older. In the past, only a woman's uluit and soapstone pot would follow her to her husband's house. Like Siberian skin processing tools, uluit are also buried with the women who owned them (Hall et al. 1994; Issenman 1997).

In modern Greenland, skin processing and sewing has also become a matter of cultural identity for women. Greenland's "national costume," clothes made of traditional materials, including hides, and decorated with beads around the neck in the traditional manner, have become associated with the Native Greenland woman. The skin processing, sewing and beading skills necessary to make these costumes have become integral to the identity of Greenlandic persons; those women who can make the National Costume are generally accepted as arbiters of who may wear the national costume, when it may be worn, and other representations of Greenlandic tradition (Sorensen 1998).

2.7 The Dorset and Skin Processing

Well-made hide clothing was necessary to survival in the Arctic around the world. In northern Eurasia, North America and Greenland, women cut, scraped and sewed the hides of those local animals best suited to warmth and waterproofness to protect herself and her family from Arctic conditions. Because of the importance of hide attire, a great deal of emphasis was placed on skin processing and sewing functionally, cosmologically, socially. Thus hide processing and sewing became not only a practical necessity but also an integral part of circumpolar cultures.

I hypothesize that the Dorset also placed a functional and social emphasis on skin processing and sewing activities. As the Dorset were also an Arctic- and sub-arctic-adapted culture, they would have required hide clothing. A partial set of Dorset skin garments has even been found in the high Arctic (Issenman 1997). Dorset skin-processing and sewing tools, including endscrapers, awls, needles and needlecases, have also been discovered throughout the eastern Canadian Arctic, Greenland, Newfoundland and Saint Pierre et Miqueleon. Thus far no Dorset equivalent of the ulu or other sharp scrapers has been definitively identified, though I suggest that bevelled slate tools fulfilled that function, as described in Chapter 4. The Dorset skin processing tools and the remains of Dorset clothing recovered indicate that skin processing was functionally important in Dorset culture.

Because ideas are not as well preserved as objects, it is more difficult to support the hypothesis that skin processing and sewing activities were socially important to the Dorset. Currently, we can only extrapolate from ethnographic research of modern Arctic groups. Archaeologists have long used ethnographic, and it has proved useful to varying degrees. The most useful type of ethnographic analogy is that which is well supported by artifact data, and the least that which states that *x* hypothesis is supported or correct because some cultures from around the globe have practiced *x* (Ember and Ember 1995:105-106). As it is used here, ethnographic analogy falls between these two extremes. There is no direct artifact data correlating gender, cosmology and skin processing tools, but the cultures from which the analogy is drawn were not randomly chosen, and share common bonds such as environment. However, it should be acknowledged that the ethnographic analogies used in this thesis are not ideally strong.

Additionally, ethnographic analogy as a methodology has its flaws. Even within the same region, cultures can be dramatically different from one another, individual cultures change over time, sometimes dramatically (Ember and Ember 1995), and bias on the part of archaeologists and ethnographers can skew data in such a way that there appear to be similarities between cultures, when there are in fact none (Lyman and O'Brein 2001:332). Thus, one cannot be certain that ethnographic analogy will provide an accurate picture of life within a precontact culture, even in cases such as this, where multiple cultures from similar regions share similar values and actions as they relate to a certain aspect of culture (Ember and Ember 1995; Lyman and O'Brein 2001).

That said, there are a limited number of tools available in this instance, so ethnographic analogy, flawed as it is, must be used to gain a better potential understanding of the Dorset conception of skin processing tools and activities as they particularly relate to gender and cosmology. In this case, it is hypothesize that the Dorset considered skin processing to be integral to their everyday life and cosmology, as did other Arctic cultures. To determine whether slate tools from Phillip's Garden were used in skin processing activities, however, one must first have a means of communicating your results to other researchers, which involves the use or development of a classification system.

Chapter 3: Tabular Slate Tool Classification

> *"Classification is basic to all comparative analyses. The classification is generally the first and most tedious analytic step, and it can be one of the most dangerous in terms of the introduction of bias"* (Beck and Jones 1989:244).

Devising a sound classification system is a necessary first step to the further examination of the tabular slate tools from Phillip's Garden. Previously, Gracie (2004) and Renouf and Bell (2008) presented preliminary classification systems for slate tools from Phillip's Garden. A third is created here to further examine the variation within the tabular slate tool collection. This is a typology based on tool morphology, and was created through the examination and analysis of the tabular tool and fragmentary Phillip's Garden slate assemblage.

3.1 Archaeological Typologies: Historical Context and Discussion

To better understand typologies, their historical context and past and current discussions of the nature and use, a review of the history of typologies, discussions of the nature of typologies, and current typological research is provided. This review provides context for the use of a typology in this chapter, and what choices were made in determining its construction.

Historical Context

Classification has a long history in archaeology, stretching from the late 19th century to the present, but the heyday of archaeological classification research was during the culture history period, from the early 20th century to the 1950s and 1960s. During this time, the concept of a typology was developed. A typology is a form of classification system specifically developed in archaeology to identify and sort artifacts. Typologies are usually based on a number of factors selected by the researcher, most often including culture, space, time and form. These factors are used to organize artifacts into different groups, or types. Initially, it was thought that ancient toolmakers also envisioned the types identified by archaeologists, but this idea was later challenged (Cahen and Noten 1971; Kreiger 1944; Rouse 1960).

During the 1970s and 1980s, when the processual paradigm was dominant, classification systems were no longer considered an important theoretical issue. However, artifact classification was an important methodological issue, and so the purpose and nature of typologies were still discussed (Cahen and Noten 1971; Clay 1976; Flenniken and Wilke 1989). Some typologies began integrating quantitative methods, reflecting the general turn toward science and math during the processual period (Christenson and Read 1977; Meltzer 1981; Read 1974; Whallon 1972).

The first serious doubts as to the consistency and accuracy of typologies, as well as the bias of researchers, were also raised during the processual period. Flenniken and Raymond (1986) questioned the idea that classification systems identified emic tool types, as they found that retouching one type of projectile point could result in the artifact taking on the appearance of another type (Flenniken and Raymond 1986). Although others doubted the likelihood of this scenario, as broken projectile points have been found hafted to arrow or spear shafts (Thomas 1986), this idea is still considered by some archaeologists (Odell 2001). Other archaeologists began to question the consistency of typologies and the influence researcher bias has on classification. In particular, it was suggested that different researchers using the same formal typology place artifacts in different types due to their differing perceptions of the type's nature (Beck and Jones 1989; Fish 1978).

The 1990s and 2000s, which were dominated by the post-processual paradigm, produced studies largely relating to the issue of bias and consistency in typologies. Whittaker et al. (1998) continued the work of Fish (1978), studying the consistency of artifact classification within a single typology. Their results suggested that researcher bias influences classification, and that archaeologists are not consistent in artifact classification (Whittaker et al. 1998). Tomaskova (2005) took a different route, and examined the variation in the use and form of artifacts identified as burins. Tomaskova (2005) concluded that, though burins are discussed as a monolithic group, with a single form and function, artifacts identified as burins do not all share a form or function. Thus, there is not one conception of a burin, but many (Tomaskova 2005). There were also some archaeologists who developed, reworked or further analysed typologies from specific regions (e.g. Bettinger and Eerkens 1999; Chauhan 2007; Dibble 1991).

The Nature of a Typology

Archaeologists generally agree that typologies are a useful way of classifying artifacts. Typologies can assist in describing a collection, or individual pieces within the collection, and they allow archaeologists to communicate more efficiently by providing a set of terms and descriptions that are commonly understood and accepted (Lyman et al. 1997; Whittaker et al. 1998). Despite this general agreement, throughout the culture history and processual eras archaeologists discussed what constitutes a typology and how best to construct one.

Krieger (1944) was one of the first archaeologists to define the purpose of a typology and discuss how one should be constructed. He thought that classification systems in general and typologies in particular were important because they standardized descriptions, saved archaeologists time in sorting and describing artifacts, provided standardized terms for various forms, and facilitated communication between researchers. However, Krieger (1944) was not satisfied with many existing typologies. He thought that an artifact type should represent a cultural practice or ideal, as related to tool use and construction, but also be flexible enough to allow for individual variations among tools (Kreiger 1944).

Krieger (1944) also detailed a methodology he thought ideal for the creation of a type or typology. He thought a type must consist of a number of artifacts created by a number of different individuals, as different individuals creating similar tools indicates that there was a general understanding within the village, culture, and/or region as to how that particular tool should look. He added that there should be no primary criteria defining a type, as this limits the variations acceptable in a type. Kreiger (1944) also stated that identified types should be clearly identifiable and describable to other researchers, and that the researcher must name and describe any type they identify.

Ford (1954) approached the discussion of types from the perspective of an ethnographer. He doubted that archaeological types reflected a cultural concept of type. While clearly identifiable types are cultural products, and as such do reflect cultural ideals, cultural ideals and artifact forms can and do change over time and space, so there may be some overlap between two or more archaeologically identified artifact types in the minds of those that created the tools. Ford (1954) also suggested that typologies based on artifact function were better indicators of the intent of the tool maker(s) than artifact form, as function may be a better indication as to how a past culture envisioned the tool.

Rouse (1960), like Ford (1954), did not think that types were inherent in artifact collections. Instead, he argued that types were collections of "modes," a term he defined as a cultural concept that determines the behaviour of tool makers, and thus is reflected in their tools. He stated that modes are inherent in the tools, while types are imposed on the tools through collections of modes selected by the researcher. Therefore, it was possible to have two (or more) valid and useful typologies for the same set of tools, if the researchers who created the typologies selected different modes for defining types. He also stated that there were two different kinds of types, historical and descriptive. Historical types were those based on differences and similarities in time and space, while descriptive types detailed physical differences among artifacts, such as morphology, (perceived) function, and/or raw material. Historical and descriptive types served a number of purposes in archaeology, including defining cultural periods, association, components, dates, distribution, and change (Rouse 1960).

Cahen and Noten (1971) thought that the aims of a typology were to describe and classify artifacts and to assist in identifying precontact industries. They also identified different typological forms. The first typological form was based solely on artifact morphology. The second was based on the manufacturing technique, and the third on both tool morphology and manufacturing technique. Cahen and Noten (1971) also detailed what they thought a typology should include. They argued that all terms and names need to be clearly defined, as do the factors on which the typology was based. If possible the complete lithic assemblage should be examined, as should all excavated material from the site in question. Cahen and Noten (1971) also argued that types should be restricted in place and time, and should be based on at least three other factors, such as form, raw material(s), and function (Cahen and Noten 1971).

Despite the different perspectives on the nature of typologies and how best to create one, there were points of agreement. The first is that good communication is necessary; the researcher who defines a typology must explicitly describe their methodology and name and describe the identified types. Likewise, the terminology used in the typology and the tool types themselves should be transparently described. Second, typologies should be confined to particular regions and time periods inhabited by a specific culture. Finally, it is agreed that typologies should be flexible enough to allow for variations in the artifacts (Cahen and Noten 1971; Rouse 1960; Kreiger 1944). Due to the general disagreement and discussion on what, exactly, a type should be based (use, form or manufacture), it appears that researchers must decide themselves what other factors should be included in their typology.

Current Issues in Typolological Studies

There are two primary foci in current typological studies. The first is the effects of researcher bias in typing artifacts, and the inaccuracy of some current typological systems. The second is finding new and better ways to create typologies. These two foci are linked; as researchers became aware that their bias affects classification, they began to look for ways to alleviate the effects of that bias, and repair or change typologies that have proved unreliable.

Inaccuracies in typologies were generally revealed through usewear analysis. Recently, usewear analysis has revealed that significant numbers of tools with similar forms were not used for the same or similar tasks, while formal typologies have usually assumed that form and function are directly related (Tomaskova 2005). Additionally, similarities in form can be and are understood differently by different archaeologists, resulting in differing formal classifications between archaeologists (Whittaker et al. 1998; Tomaskova 2005). Even in well-defined and well-established formal typologies, different archaeologists will place artifacts in different types. In particular, archaeologists tend to fall into two categories: "lumpers" and "splitters." Some archaeologists will classify artifacts through small variations, while others instead focus on the larger form. Neither lumpers nor splitters are incorrect in their classification, but this divide can and does influence the classification of artifacts to an extent that two archaeologists given the same artifact will have a 40% chance of placing it in a different type if they do not work together, and a 20% chance of differential typing if they do (Whittaker et al. 1998).

Because of the perceived unreliability of solely formal typologies, archaeologists are finding different ways to create typologies. Currently, using usewear to create, change or bolster typologies is the focus of most research. Determining use through microwear theoretically greatly reduces the margin of error, as usewear is testable and verifiable, and tools used for the same task, if made from the same or similar materials, will display similar usewear across time, space and culture (Odell 2001). Though constructing typologies based on function verified through microwear analysis was suggested more than 30 years ago (Cahen and Noten 1971), actually basing typologies on function is a relatively new development (Odell 2001).

Some archaeologists have recently suggested that qualities other than form and/or function are more useful for creating typologies in some areas. For example, Dibble (1991) suggested that the primary sources behind artifact variability in the Middle Palaeolithic were the intensity of site occupation and the raw materials used to create artifacts. Traditionally, form was used to classify artifacts, but Dibble (1991) saw these as flawed methods for artifact identification in the Middle Palaeolithic, as "they reflect arbitrary slices through a continuum of variability" (Dibble 1991:239) rather than reflecting the underlying factors that cause variability in the assemblages. Dibble (1991) suggested that raw material is a better way of typing artifacts from this time period, as raw materials dictate how large tool blanks are, and what form they take, which in turn dictates the form and possibly the function of the tools produced.

For more than 60 years, archaeologists have encouraged the creation of typologies that are restricted to a specific region, culture, and time period. Recent research in lithic classification suggests that a purely formal typology is more open to researcher bias and less likely to accurately reflect variation among tools than one based on function, form and function, or raw material (Dibble 1991; Odell 2001; Whittaker et al. 1998). The tabular slate tool typology developed in this chapter is based on tools from a single

Dorset site, and thus is constrained in time, space, and culture. As the tools classified in this chapter are made of slate, raw material is not a useful factor in creating a typology. Ideally, the following classification system would then be based on form and function. However, no previous microwear research has been performed on slate tools from Phillip's Garden, so the function of the tools is unknown. This thesis will include microwear analysis of tabular slate tools, but before that is possible, there must be a way of identifying slate tools and differentiating between them. A classification system of some sort must be devised before further research can be performed. Thus, the Phillip's Garden slate classification system can only be based on artifact form, and as a typology was selected as the type of classification system, a formal typology was developed. This typology was additionally intended to fully explore the formal variability in the tabular slate tool collection, and include more detail on this variability than the previously presented.

3.2 Previous Classification of Slate Tools from Phillip's Garden

Two previous classification systems have been developed for the slate tools at Phillip's Garden. Gracie (2004) was the first to classify slate tools from Phillip's Garden. She separated the artifacts into bevelled slate, slate pendants, slate points and cat's tongues. Gracie (2004) defined bevelled slate tools as pieces of ground slate with at least one unifacially bevelled edge. Slate pendants were "a piece with no apparent practical function, normally including a gouged hole likely for suspension" (Gracie 2004:13). Slate points were defined as flat, triangular ground slate pieces with a sharpened distal point. Finally, cat's tongues were long, thin ground slate tools with rounded or bifacially bevelled lateral edges and a rounded, tapered distal end; this shape was like a cat's tongue. Gracie (2004) also separated fragmentary slate into two categories: unidentifiable tool fragments and fragments. Unidentifiable tool fragments were those with attributes that indicated they were once part of a larger tool. What attributes might indicate their former association with a tool were not mentioned. Fragments were ground slate pieces that did not have tool attributes (Gracie 2004).

Renouf and Bell (2008) developed the second classification system used to sort slate tools from Phillip's Garden. Unlike Gracie (2004), they only classified tabular slate tools rather than all slate tools. They separated slate tools into two categories: bevelled-edge and rounded-tip tools. Bevelled-edge tools are tabular rectangular tools with at least one straight, unifacially bevelled edge. Rounded-tip tools are tabular tools at least three times as long as they are wide. They usually have at least one rounded-tip, though some have pointed tips or a bevelled end (Renouf and Bell 2008).

3.3 Tabular Slate Classification

Like Renouf and Bell's (2008) classification system, the typology presented here deals only with tabular slate tools, though this typology also includes tool fragments. For reasons discussed above, the classification system presented here is a typology based on tool morphology.

Figure 3.1: Bevelled tools (Photo: R. Knapp)

Figure 3.2: Rounded-tip tools (Photo: R. Knapp)

Figure 3.3: Multi-characteristic tools (Photo: R. Knapp)

Tabular Slate Tool Types

Tabular slate tools and fragments have flat, ground dorsal and ventral faces that are usually parallel to one another. The identifiable tabular slate tools in the Phillip's Garden collection were classified into three types and six sub-types. The types are bevelled tools, rounded-tip tools, and multi-characteristic tools. The bevelled tool sub-types are stemmed bevelled tools and unstemmed bevelled tools. The rounded-tip tool sub-types are common rounded-tip tools, greater rounded-tip tools, pointed tools and perforated rounded-tip tools. Multi-characteristic tools have no sub-types.

The types and sub-types identified encompass a wide range of variation; the only characteristic shared by all tool types are that they are tabular ground slate implements, though slate tools and fragments are also almost universally thin. The average thickness of slate tools and fragments is 3.44 mm, 88% are less than 5 mm thick, and only 0.9% of the collection is more than 1 cm thick. Beyond these factors, there are considerable variations among the tools. The most common variations are captured by the sub-types, but some less frequent variables are not.

Figure 3.4: Bevelled tools (Photo: R. Knapp)

Bevelled slate tools (n=133) have one or more unifacially bevelled edges and a quadrilateral, triangular, or semi-lunar body (Figure 3.1). There is significant variation in the lengths and widths of bevelled tools. Bevelled tool lengths fall between 11.80 mm 93.61 mm (Figure 3.2), with a mean of 42.83 mm and a mode of 40.64 mm. Bevelled tool widths fall between 12.43 mm and 44.97 mm, with a mean of 24.3 mm and a mode of 23.63 mm. The bevelled slate tools were separated into two sub-types: stemmed bevelled tools and unstemmed bevelled tools.

Stemmed bevelled tools (n=46) usually have rectangular or semi-lunar bodies and bevelled distal and lateral edges. The proximal edge of each tool has a stem, which was presumably inserted into a shaft or handle. The distal edges are always unifacially bevelled (Figure 3.3). Among those tools with a rectangular body, 38 have unifacially or bifacially bevelled lateral edges. Some tools have rounded lateral edges, and others have one lateral edge that is rounded or bevelled, one lateral edge of a different type (Figure 3.4). The lengths and widths of stemmed bevelled tools are also variable. Stemmed bevelled tool lengths fall between 11.8 mm and 63.82 mm (Figure 3.5), and have a mean of 36.93 mm and a mode of 37.52 mm. Stemmed bevelled tool widths fall between 12.43 mm and 44.97 mm (Figure 3.5), and have a mean of 23.09 mm and a mode of 22.46 mm.

Figure 3.5: Lengths and widths of complete bevelled tools. Those catalogue numbers beginning with EeBi-1 represent those tools excavated by Harp, who catalogued artifacts by the site number, EeBi-1, and the order of artifacts found. Those numbers beginning with 7A represent tools excavated by Renouf, whose artifacts are catalogued by the Parks Canada system, where 7A refers to the Port au Choix National Historic Site, the following three numbers and one letter refer to Phillip's Garden, and the final number is the specimen number.

Catalogue #	Length (mm)	Width (mm)
7A249B138	47	27.19
7A249C7	43.62	28.55
7A259A1048	46.72	22.46
7A259A1091	11.8	12.43
7A259A119	20.1	16.94
7A259A331	25.56	19.24
7A259A603	33.21	30.18
7A259A800	28.13	32.02
7A259D684	51.48	25.45
7A270B111	38.81	27.76
7A283A0380	61.08	42.74
7A348D52	23.3	12.8
7A349D369	40.74	13.04
EEBI-1:03562	34.48	18.51
EEBI-1:06363	24.01	18.73
EEBI-1:06364	43.9	14.65
EEBI-1:06365	48.12	25.67
EEBI-1:06367	39.13	33.97
EEBI-1:06369	40.57	27.55
EEBI-1:07441	31.55	24.42
EEBI-1:08809	40.7	20.33
EEBI-1:09076	34.04	36.05
EEBI-1:09248	32	23.15
EEBI-1:11312	45.55	23.24
EEBI-1:11845	67.53	32.1
EEBI-1:13835	57.81	14.06
EEBI-1:14016	32.84	30.09
EEBI-1:14072	73.78	31.97
EEBI-1:14074	43.91	24.01
EEBI-1:16195	44.57	22.47
EEBI-1:17053	57.82	30.08
EEBI-1:17108	30.86	18.01
EEBI-1:17772	67.71	36.63
EEBI-1:19302	51.28	19.54
EEBI-1:19318	93.61	29.88
EEBI-1:19319	33.15	17.16
EEBI-1:19320	38.55	14.61
EEBI-1:20558	27.89	13.39
EEBI-1:20560	63.82	44.97
EEBI-1:29553	37.52	15.72
EEBI-1:30283	35.48	15.79
EEBI-1:30361	54.98	32.84

Figure 3.6: Stemmed bevelled tools (Photo: R. Knapp)

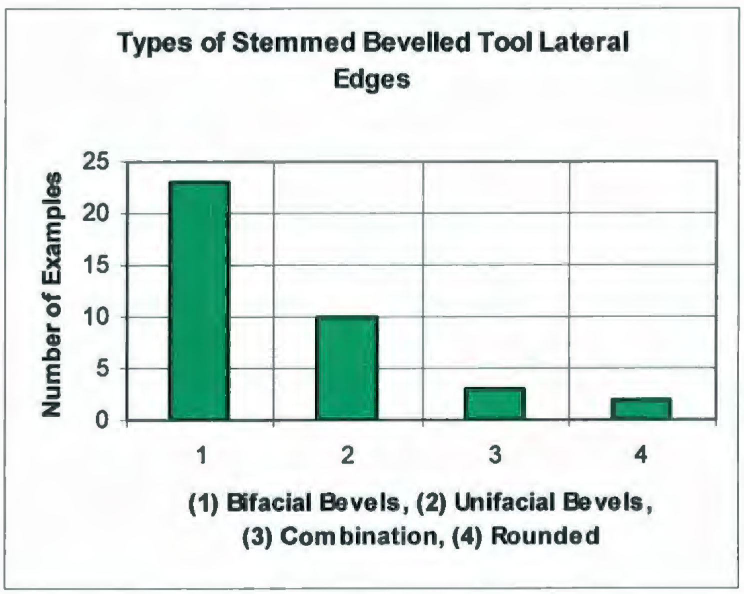

Figure 3.7: Type of stemmed bevelled tool lateral edges from most common (left) to least common (right). "Combination" refers to tools that have one rounded lateral edge and one bevelled lateral edge, or tools that have one unifacially bevelled lateral edge and one bifacially bevelled lateral edge.

Figure 3.8: Lengths and widths of complete stemmed bevelled tools

Catalogue #	Length (mm)	Width (mm)
7A259D684	51.48	25.45
7A283A0380	61.08	42.74
7A349D369	40.74	13.04
EEBI-1:07441	31.55	24.42
EEBI-1:08809	40.7	20.33
EEBI-1:09076	34.04	36.05
EEBI-1:11312	45.55	23.24
EEBI-1:11845	67.53	32.1
EEBI-1:13835	57.81	14.06
EEBI-1:14072	73.78	31.97
EEBI-1:14074	43.91	24.01
EEBI-1:16195	44.57	22.47
EEBI-1:17108	30.86	18.01
EEBI-1:17772	67.71	36.63
EEBI-1:19318	93.61	29.88
EEBI-1:30283	35.48	15.79
EEBI-1:30361	54.98	32.84

Figure 3.9: Unstemmed bevelled tools (Photo: R. Knapp)

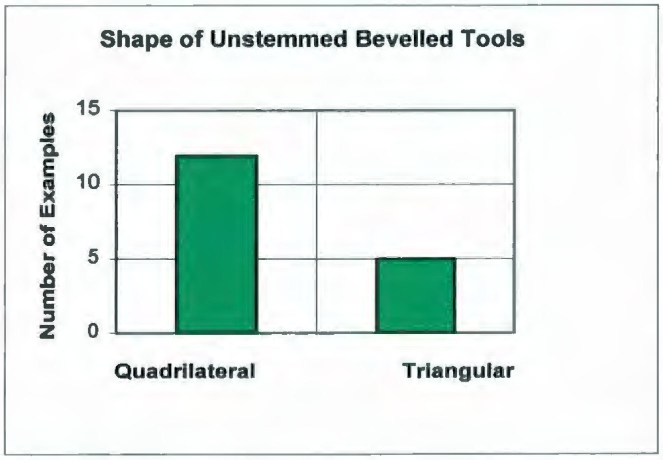

Figure 3.10: Shape of unstemmed bevelled tools, including only complete examples, *n*=17

Unstemmed bevelled tools (n=87) have no stems or other evidence of hafting. They have a tabular triangular or quadrilateral body (Figure 3.6). Between one and four edges are bevelled, and the bevels are usually unifacial (Figure 3.7, Figure 3.8, Figure 3.9). Most unstemmed bevelled tools are quadrilaterals with more than one unifacially bevelled edge, but there is considerable variation in the number of bevelled edges, sides and bevel types. Complete unstemmed bevelled tool lengths fall between 30.86 mm and 93.61 mm (Figure 3.10), and have a mean of 51.49 mm and a mode of 45.55 mm. The widths fall between 13.04 mm and 42.74 mm (Figure 3.10), and have a mean of 26.06 mm and a mode of 24.42 mm.

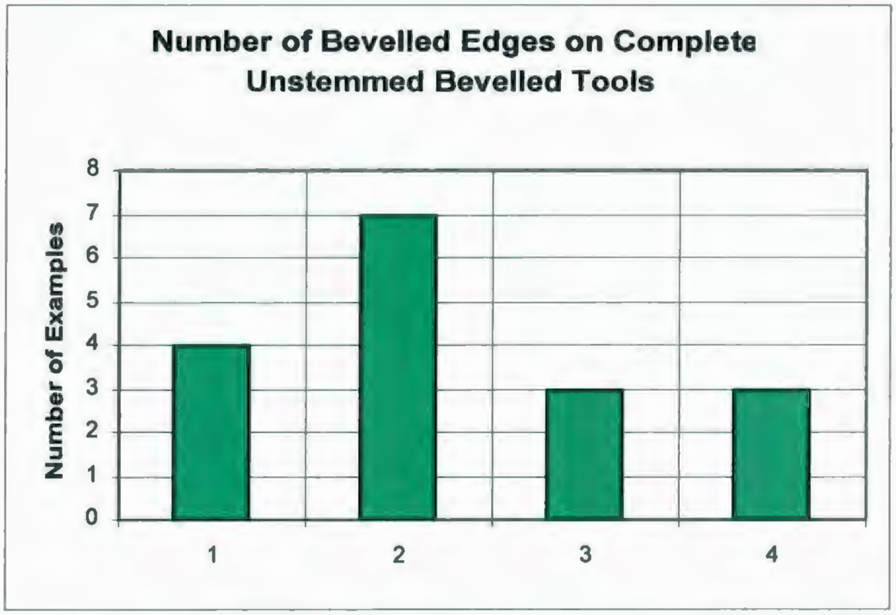

Figure 3.11: Number of bevelled edges on complete unstemmed bevelled tools, n=17.

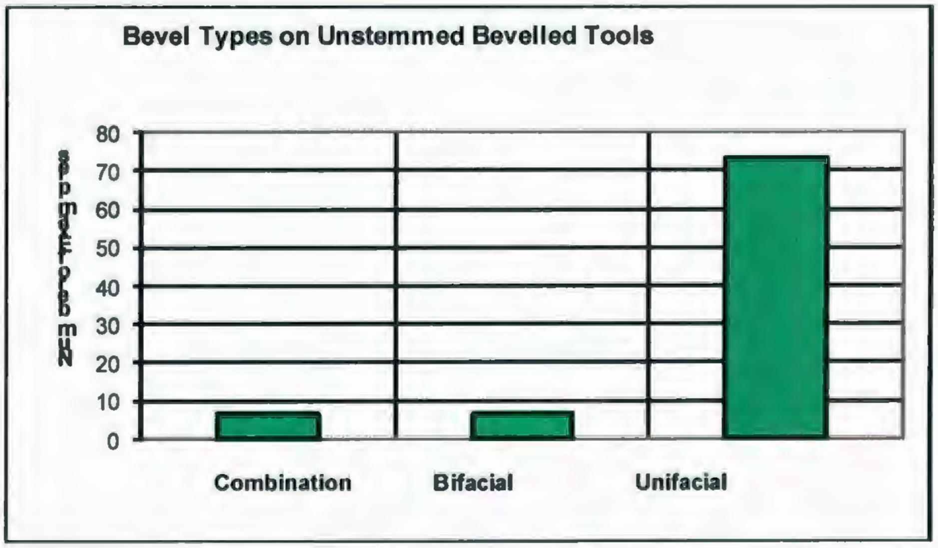

Figure 3.12: Bevel types on unstemmed bevelled tools, including both complete and incomplete examples. "Combination" refers to those tools with both unifacially and bifacially bevelled edges.

Figure 3.13: Lengths and widths of complete unstemmed bevelled tools

Catalogue #	Length (mm)	Width (mm)
EeBi-1:08809	40.7	20.33
7A283A0380	61.08	42.74
EeBi-1:07441	31.55	24.42
EeBi-1:09076	34.04	36.05
7A349D369	40.74	13.04
EeBi-1:19318	93.61	29.88
7A259D684	51.48	25.45
EeBi-1:17772	67.71	36.63
EeBi-1:17108	30.86	18.01
EeBi-1:30361	54.98	32.84
EeBi-1:30283	35.48	15.79
EeBi-1:14072	73.78	31.97
EeBi-1:13835	57.81	14.06
EeBi-1:11845	67.53	32.1
EeBi-1:11312	45.55	23.24
EeBi-1:14074	43.91	24.01
EeBi-1:16195	44.57	22.47

Rounded-tip tools (n=155) are ground slate implements always at least twice as long as they are wide, with straight or curved lateral edges. In 95% of complete examples (*n*=19), rounded-tip tool widths are only 2/5 or less of the length (Figure 3.11). Rounded-tip tools usually have a rounded distal end (74%), though some tools have pointed distal ends (25%). All rounded-tip tools with a pointed distal end have a flattened proximal end, as do most rounded-tip tools with a rounded distal end. However, there are some rounded-tip tools that have two rounded ends or a rounded end and a pointed end, neither of which can be identified as the distal or proximal end (Figure 3.12, Figure 3.13). Rounded-tip tools have lateral edges that are rounded or unifacially or bifacially bevelled. Bifacial bevels are the most common lateral edge type, although a significant minority of rounded-tip tools have rounded edges. Unifacially bevelled lateral edges are less common, but still notably present, and a small number of rounded-tip tools have one lateral edge with a unifacial bevel and one lateral edge with a bifacial bevel, or have one bevelled lateral edge and one rounded lateral edge (Figure 3.14). The width of the tools may be greatest in the middle and tapering toward the edges, or relatively consistent throughout. Complete rounded-tip tool lengths (Figure 3.11) fall between 26.73 mm and 103.69 mm, and have a mean of 55.95 mm and a mode of 51.15 mm. Complete rounded-tip tool widths fall between 5.31 mm and 23.16 mm, and have a mean of 13.86 and a mode of 13.1.

Figure 3.14: Rounded-tip tools (Photo: R. Knapp)

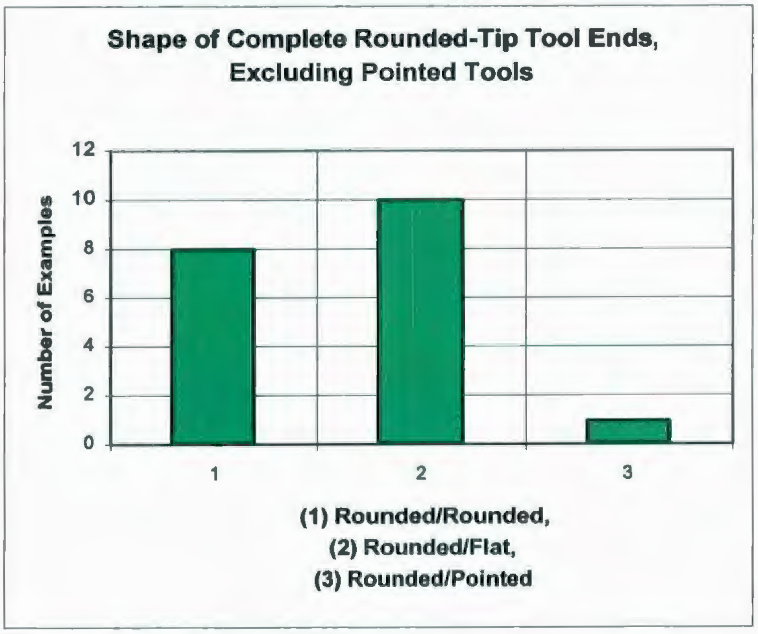

Figure 3.15: Shape of complete rounded-tip tools ends, excluding pointed tools, *n*=19.

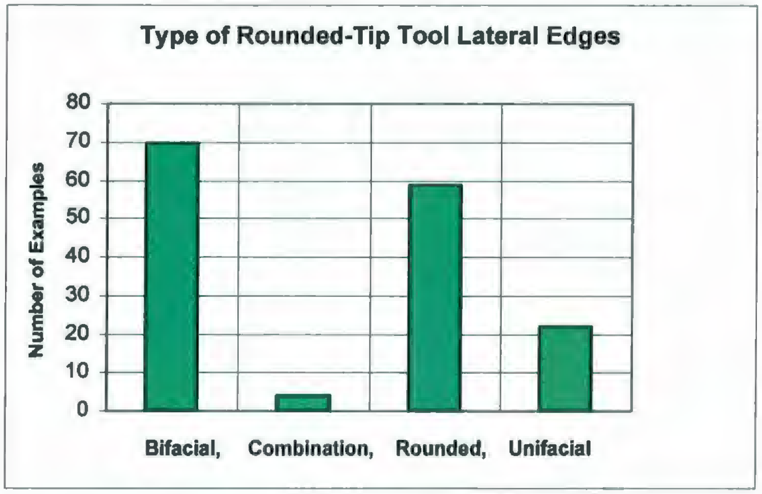

Figure 3.16: Type of rounded-tip tool lateral edges, including complete and incomplete examples. "Combination" refers to tools that have one rounded lateral edge and one bevelled lateral edge, or tools that have one unifacially bevelled lateral edge and one bifacially bevelled lateral edge.

Figure 3.17: Lengths and widths of complete rounded-tip tools, and the percentage the size of the width is of the size of the length

Catalogue #	Length (mm)	Width (mm)	% of Length to Width
EEBI-1:33287	44.5	11.22	25%
EEBI-1:14287	86.23	13.39	16%
EEBI-1:15416	103.69	18.37	18%
EEBI-1:00489	40.3	14.06	35%
EEBI-1:19236	72.23	15.39	21%
EEBI-1:15413	45.47	13.1	29%
EEBI-1:30040	51.15	14.59	29%
7A349D611	26.73	10.21	38%
EEBI-1:19301	72.31	23.16	32%
7A368D313	58.33	20.93	36%
EEBI-1:07554	43.68	11.9	27%
EEBI-1:28433	31.86	15.79	50%
EEBI-1:07556	74.08	12.08	16%
EEBI-1:08961	49.13	8.83	18%
EEBI-1:08960	47.83	11.08	23%
EEBI-1:00487	56.78	9.71	17%
EEBI-1:15418	68.17	23.02	34%
EEBI-1:30933	33.39	5.31	16%
EEBI-1:19016	57.12	11.15	20%

Figure 3.18: Common rounded-tip tools (Photo: R. Knapp)

Common rounded-tip tools (n=81) are the most numerous of the rounded-tool sub-types. All common rounded-tip tools have one rounded end; the second end can be either rounded or flattened (Figure 3.15). Of complete examples (n=8), 63% have a flat proximal end and 38% have two rounded ends. Common rounded-tip tools are always less than 19.5 mm in width (Figure 3.16). Upon initial examination, a difference was noted between the widths of those rounded-tip tools with at least one rounded end and no perforations. A stem-and-leaf graph shows the distribution of the widths, which form a bimodal distribution (Figure 3.17). Common rounded-tip tools form the first normal distribution, that between 9 mm and 19.99 mm. The widths have a mean of 13.79 mm and a mode of 13.73. The lengths of complete examples fall between 26.73 mm and 103.69 mm (Figure 3.17), and have a mean of 58.79 mm and the mode of 48.31 mm.

Greater rounded-tip tools (n=25) are at least 19.5 mm in width (Figure 3.16), and all complete examples (n=3) have two rounded ends (Figure 3.18). The lengths of complete greater rounded-tip tools (Figure 3.19) fall between 58.33 mm and 72.31 mm, and have a mean of 66.27 mm and a mode of 68.17 mm. The widths fall between 20.93 mm and 23.16 mm, and have a mean of 22.37 mm and a mode of 23.06 mm.

Figure 3.19: Stem and leaf graph of common and greater rounded-tip tool widths, showing a bimodal distribution. The column of numbers on the right represent groups of rounded-tip tool lengths. The numbers on the left are numbers assigned to individual rounded-tip bevelled tools; they are placed beside the group of lengths that includes that of tool they represent. Common rounded-tip tool widths are shown in blue and greater rounded-tip tool widths are shown in red. The point of overlap is shown in purple.

Numbers Representing Individual CRTT and GRTT	Width in mm	
87	5 to 5.99	
	6 to 6.99	
	7 to 7.99	
	8 to 8.99	
82	9 to 9.99	
9, 34, 41, 49, 86, 28	10 to 10.99	**Common**
11, 15, 20, 21, 38, 42	11 to 11.99	**Rounded-Tip**
6, 19, 22, 23, 31, 48, 65, 81, 101, 104	12 to 12.99	**Tools**
3, 8, 17, 18, 24, 25, 26, 39, 40, 44, 45, 46, 50, 57, 88, 102	13 to 13.99	
4, 5, 7, 10, 12, 29, 30, 32, 35, 36, 77, 79, 96	14 to 14.99	
14, 16, 37, 43, 61, 71, 100, 103	15 to 15.99	
13, 27, 53, 55, 60, 72	16 to 16.99	
33, 52, 58, 74, 76	17 to 17.99	
57, 62, 78, 90, 95	18 o 18.99	
51, 59	19 to 19.99	
68, 75, 80, 94, 99	20 to 20.99	
69, 83, 84, 85, 91, 97	21 to 21.99	
54, 64, 70, 73, 93, 98	22 to 22.99	**Greater**
56, 63	23 to 23.99	**Rounded-Tip**
66, 67, 92	24 to 24.99	**Tools**
89	25 to 25.99	
	26 to 26.99	

Figure 3.20: Lengths and widths of complete common rounded-tip tools

Catalogue #	Length (mm)	Width (mm)
7A349D611	26.73	10.21
EEBI-1:00489	40.3	14.06
EEBI-1:14287	86.23	13.39
EEBI-1:15413	45.47	13.1
EEBI-1:15416	103.69	18.37
EEBI-1:19236	72.23	15.39
EEBI-1:30040	51.15	14.59
EEBI-1:33287	44.5	11.22

Figure 3.21: Greater rounded-tip tools (Photo: R. Knapp)

Figure 3.22: Lengths and widths of complete greater rounded-tip tools

Catalogue #	Length (mm)	Width (mm)
EEBI-1:19301	72.31	23.16
7A368D313	58.33	20.93
EEBI-1:15418	68.17	23.02

Perforated rounded-tip tools (n=9) are distinguished from other rounded-tip tools by their perforation, always located near the proximal end. All perforated rounded-tip tools have a rounded distal end. The proximal end is most often flattened, but a significant percentage is rounded; of the five complete examples, 60% are blunt and 40% rounded (Figure 3.20). Perforated rounded-tip tools are unique among the sub-types in that two non-slate objects are included in their number. Two organic artifacts are morphologically identical to slate perforated rounded-tip tools, and resemble no other organic artifacts in the Phillip's Garden collection. Thus, they are included in this sub-type, despite their raw material. Complete perforated rounded-tip tool lengths (Figure 3.21) fall between 31.86 mm and 56.78 mm, and have a mean of 45.86 mm and a mode of 47.83 mm. The widths fall between 8.83 mm and 15.79 mm, and have a mean of 11.46 mm and a mode of 11.08 mm.

Pointed tools (n=39) have pointed distal ends. Few complete pointed tools have been found (n=3), but two-thirds of these have blunt proximal ends; one third have two pointed ends (Figure 3.22). Even with the small number of complete examples, it is notable that pointed tools are the only type of rounded-tip tool to have no examples in which either end is rounded. The few complete pointed tools have lengths (Figure 3.23) between 33.39 mm and 74.08 mm, with a mean of 54.86 and a mode of 57.12. The widths are between 5.31 mm and 12.08 mm, and have a mean of 9.51 mm and a mode of 11.15 mm.

Figure 3.23: Perforated rounded-tip tools (Photo: R. Knapp)

Figure 3.24: Lengths and widths of complete perforated rounded-tip tools

Catalogue #	Length (mm)	Width (mm)
EEBI-1:00487	56.78	9.71
EEBI-1:07554	43.68	11.9
EEBI-1:08960	47.83	11.08
EEBI-1:08961	49.13	8.83
EEBI-1:28433	31.86	15.79

Figure 3.25: Pointed tools (Photo: R. Knapp)

Figure 3.26: Lengths and widths of complete pointed tools

Catalogue #	Length (mm)	Width (mm)
EEBI-1:07556	74.08	12.08
EEBI-1:19016	57.12	11.15
EEBI-1:30933	33.39	5.31

Multi-characteristic tools (n=12) have attributes of both bevelled and rounded-tip tools. Multi-characteristic tools have one rounded or pointed end and one unifacially bevelled end (Figure 3.24). The body of the tool can have parallel or tapering lateral edges, 50% (n=6) of multi-characteristic tools have parallel lateral edges, and 50% (n=6) have tapering lateral edges. Those with tapered edges are always widest at the bevelled end. A multi-characteristic tool's lateral edges may be rounded, bifacially or unifacially bevelled, or have a combination of bevels (Figure 3.25). Multi-characteristic tool lengths (Figure 2.26) are between 25.01 mm and 71.8 mm, and have a mean of 47.77 mm and a mode of 49.24 mm. Multi-characteristic tool widths are between 9.02 mm and 47.76 mm, and have a mean of 17.97 mm and a mode of 14.25 mm.

Figure 3.27: Multi-characteristic tools (Photo: R. Knapp)

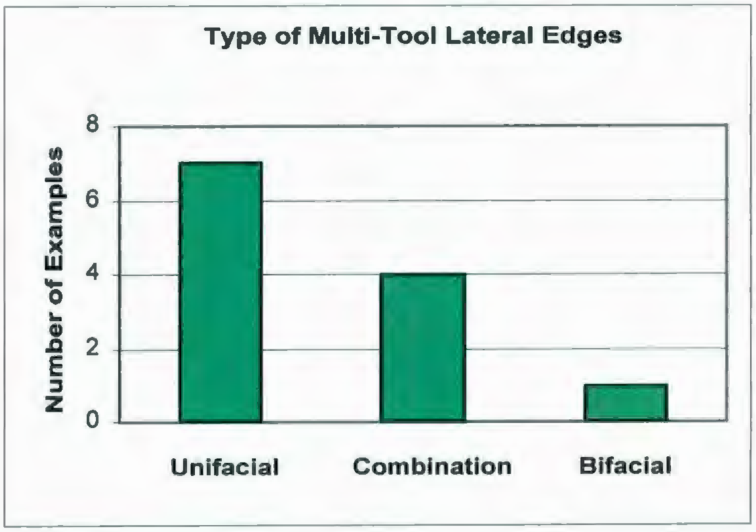

Figure 3.28: Type of multi-characteristic tool lateral edges. "Combination" refers to tools that have one rounded lateral edge and one bevelled lateral edge, or tools that have one unifacially bevelled lateral edge and one bifacially bevelled lateral edge.

Figure 3.29: Lengths and widths of complete multi-characteristic tools

Catalogue #	Length (mm)	Width (mm)
7A259A766	33.68	9.73
EEBI-1:16486	25.01	9.56
EEBI-1:15895	57.24	14.28
EEBI-1:19002	43.67	14.89
7A294C0049	56.98	20
7A355D6	41	33
EEBI-1:20033	54.81	11.34
EEBI-1:13836	58.09	11.44
EEBI-1:08792	66.12	47.76
7A249C524B	27.34	9.02
EEBI-1:09123	37.54	14.22
EEBI-1:15417	71.8	20.35

Figure 3.30: Bevelled fragments (Photo: R. Knapp)

Figure 3.31: Narrow fragments (Photo: R. Knapp)

Slate Fragments

Slate fragments were divided into five types, with no sub-types: bevelled fragments, narrow fragments, handles, tabular fragments and irregular fragments. Bevelled fragments (n=373) are tabular ground slate pieces with at least one unifacially or bifacially bevelled edge (Figure 3.27). Narrow fragments (n=44) are tabular, ground pieces that have two rounded or bifacially bevelled lateral edges, and no ends. The lateral edges can be parallel, tapering toward both ends or tapering toward a single end. All narrow fragments are 23 mm in width or less (Figure 3.28). Handles (n=16) are tabular, ground fragments with two sides and an end present, that are greater than 23 mm in width and/or attached to a portion of a tool body (Figure 3.29). These were presumably once pieces of stemmed bevelled tools, and the sizes of most handles suggests they were from the larger examples of this type. Tabular fragments (n=641) are ground and tabular. Most do not have edges; when they are present, they are not bevelled (Figure 3.30). Irregular fragments (n=100) have even fewer markers, as they are not tabular. Most irregular fragments are not ground, though a few have some polishing (Figure 3.31).


1Figure 3.32: Handles (Photo: R. Knapp)


2Figure 3.33: Tabular fragments (Photo: R. Knapp)


3Figure 3.34: Irregular fragments (Photo: R. Knapp)

3.4 Summary

The tabular slate tools from Phillip's Garden were separated into three types and six sub-types; types were determined through tool form. The types are bevelled tools, rounded-tip tools, and multi-characteristic tools. The bevelled tool sub-types are stemmed bevelled tools and unstemmed bevelled tools. The rounded-tip tool sub-types are common rounded-tip tools, greater rounded-tip tools, pointed tools, and perforated rounded-tip tools. Slate fragments were separated into five groups: bevelled fragments, narrow fragments, handles, tabular fragments, and irregular fragments. No differences in tool form were noted between different dwellings or among different temporal phases.

Bevelled tools have triangular, semi-lunar, or quadrilateral bodies with at least one unifacially bevelled edge. Stemmed bevelled tools have semi-lunar or rectangular bodies, a unifacially bevelled distal edge, and a stemmed proximal edge. Unstemmed bevelled tools have quadrilateral or triangular bodies with at least one unifacially bevelled edge.

Rounded-tip tools have rounded or pointed distal ends, and rounded, pointed or flattened proximal ends. All rounded-tip tools are at least twice as long as they are wide. Common rounded-tip tools have one rounded distal end, a rounded or flattened proximal end, and are less than 19.5 mm in width. Greater rounded-tip tools have rounded proximal and distal ends, and are more than 19.5 mm in width. Perforated rounded-tip tools have a perforation located near their flattened or rounded proximal ends, and have rounded distal ends. Pointed tools have a pointed distal end and a flattened or pointed proximal end.

Multi-characteristic tools have unifacially bevelled distal ends, rounded or pointed proximal ends, and are usually at least twice as long as they are wide.

Bevelled fragments are tabular ground slate pieces with at least one unifacial- or bifacially bevelled edge. Narrow fragments are tabular, ground pieces less than 23 mm in width that have two rounded or bifacially bevelled lateral edges, and no ends. Handles are tabular, ground fragments with two lateral edges and an end present, that are wider than 23 mm or are attached to a portion of a tool body. Tabular fragments are ground, tabular pieces with no edges, or unbevelled edges. Irregular fragments are not tabular, and are rarely ground.

The tabular slate tool and fragments from Phillip's Garden encompass a great deal of variability, which resulted in their division into a number of types and sub-types. If there was a mental template that ancient tool-makers adhered to, as Krieger (1944) suggests, then the Dorset ideal allowed for quite a bit of leeway in regards to morphology. This may indicate that the Dorset template for slate tools placed less emphasis on the appearance of the tools and more on their usefulness, though the uses of tabular slate tools have yet to be examined.

CHAPTER 4: MICROWEAR ANALYSIS OF TABULAR SLATE TOOLS FROM PHILLIP'S GARDEN

> *"...[Microwear analysis] is not a magical method that will provide quick and secure answers to whatever questions we might like to ask concerning the use of specific artifacts. In reality, it is an approach founded on interpretation by analogy and based on the observations of clusters of wear attributes that are considered to be relevant to functional inference. The question of relevance of observed wear traces is explored and estimated with the help of experimentation..."* (Juel Jensen 1988:60)

This chapter deals with the microwear analysis of tabular slate tools from Phillip's Garden. Microwear analysis was performed on a sample of slate tools from Phillip's Garden to determine their use; no previous usewear experiments have been performed on this tool type. It is hypothesized that bevelled slate tools, rounded-tip tools, and multi-characteristic tools were used in hide processing activities, specifically as scrapers and hide creasers or cutters.

The two primary excavators of Phillip's Garden both suggested that some or all slate tools were used for hide processing (Harp 1964; Renouf and Bell 2008). In his notes, Harp divided the identifiable slate tools into four different categories: slate points, slate knives, slate chisels, and slate scrapers. Slate points are non-tabular slate tools that appear to belong to the hunting assemblage, and will not be discussed further. The tools Harp (1964 field notes) referred to as slate chisels are called rounded-tip tools or multi-characteristic tools in this thesis. Both Harp's (1964 field notes) slate knives and slate scrapers are bevelled slate tools in this thesis. Renouf and Bell's (2008) discussed those Phillip's Garden slate tools believed to have been involved in skin processing activities. They argued that both "bevelled edge tools" (akin to my bevelled tools) and rounded-tip tools (including my multi-characteristic tools) were used in skin processing activities (Harp 1964 field notes; Renouf and Bell 2008).

It is suggested that bevelled tools were used as hide scrapers. Both Harp (1964 field notes) and Renouf (Renouf and Bell 2008) thought that some or all of the unifacially bevelled tools were scrapers. Bevelled tool morphology, and the comparison between that morphology and those of ethnographic examples, also suggests that they were used as scrapers. Bevelled tools have between one and four bevelled edges; those edges with unifacial bevels were likely used as scrapers, as unifacial bevels are commonly used for hide scraping activities, while bifacially bevelled edges, if working edges, are used for cutting (Renouf and Bell 2008).

The ethnographic tool type that bevelled tools are most similar to, and to which they are most often compared (Gracie 2004; Renouf and Bell 2008), are Inuit uluit. The Inuit woman's ulu is another tool found in the Canadian Arctic that is made of slate and has a unifacially or bifacially bevelled working edge; uluit are frequently used in hide-preparation tasks. All uluit have a working edge that is unifacially or bifacially bevelled; unifacial bevels are preferred in the eastern Arctic, while bifacial bevels are preferred by the Copper Inuit in the central Arctic (Oakes and Riewe 1995). Uluit also come in a variety of sizes, which are used to perform different tasks (Oakes and Riewe 1995). Dorset slate tools also come in a variety of sizes, ranging from relatively very large to tiny. Because of the similarity in material, bevelling, and differential sizing, it is suggested that bevelled tools were used as hide scrapers.

It is thought that rounded-tip tools were used as hide creasers on the basis of morphology and ethnographic comparison. Some Siberian boot-sole creasers are morphologically similar to rounded-tip tools, though the Siberian tools are generally made of bone or antler rather than slate (Oakes and Riewe 1998). Siberian boot-sole creasers were the only ethnographically recorded Arctic tool found that resembled slate rounded-tip tools.

4.1 Microwear Analysis in Archaeology

As Ackerly (1978) and Keely (1974) describe, microwear analysis is the study of microscopic and macroscopic marks on tools. Archaeologists typically examine these marks to determine how pre-contact lithic tools were used, but usewear is not the only type of microwear. Microwear is the result of the removal of portions of a tool's base material through friction, and can be caused by tool manufacture or retouching, as friction is a common aspect of both processes. Wear can also be created or altered through trampling and other post-depositional processes. Therefore, one of the challenges in microwear analysis is determining what microwear is the result of use, and what is the result of other processes (Ackerly 1978; Keely 1974).

The most common types of microwear are polish, edge scarring, edge rounding, and striations[1]. Polish is frequently found on artifacts made from crystalline materials, and can be useful in determining on which material a tool was used. There are also

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[1] Forms of microwear are sometimes referred to by different names in other publications. Edge rounding (or simply rounding), polish and striations are the most common terms for those types of wear. However, the terms used for edge scarring are more variable, and the most common term used for this type of wear is microflaking (Culleton 1991, Hayden 1979, Brink 1978).

several levels of polish, the least of which is caused by light abrasion. Polish caused by light abrasion does not indicate on which material a tool was used, but if one continues to work with an abrasive material, distinctive forms of polish will develop, from which both use and the material on which the tool was used can be determined (Juel Jensen 1988). Edge scarring is represented by chipping or flaking on the use-edges of tools. The degree of edge scarring can also be useful in determining on which material a tool was used; harder materials, such as bone or wood, produce a greater amount of edge scarring than softer materials, such as hides (Brink 1978, Culleton 1991, Hayden 1979). Edge rounding refers to use-edges that are rounded and smoothed by friction, and is usually the result of using a tool on a softer material. Striations are grooves or scratches caused by grit or other abrasive particles rubbing against the surface of a tool (Juel Jensen 1988).

Archaeologists tend to take similar steps when conducting microwear research. The first step generally taken is to reproduce and use stone tools, or to acquire utilized tools. The use-edges of the tools are then examined and photographed under a microscope. Next, the pictures are examined and the wear recorded, and the wear compared to artifacts with unknown usewear, or to records of known usewear discussed in previous research. Finally, archaeologists describe and discuss the results of their own research (Brink 1978, Culleton 1991, Hayden 1979). Despite these similarities, there are some variations in microwear methodologies. The two primary points of variation are in the level of magnification and type of microscope used, and in whether artifacts are reproduced. These variations, and the reasons behind them, are discussed below.

One can observe and photograph microwear under high or low magnification (Keely 1974; Yerkes and Kardulias 1993). High magnification microscopic examination of artifacts and microwear is generally performed under metallurgical microscopes using incident lights, and the artifacts are magnified between 50x and 500x (Yerkes and Kardulias 1993). Low magnification examination of tools occurs under a magnification of 10x to 60x, and only a stereomicroscope, a binocular microscope with an outside light source, need be used (Keely 1974; Yerkes and Kardulias 1993).

There are advantages and disadvantages to examining artifacts under high or low magnification. The limitation of low magnification studies is that one can observe less detail than high magnification studies, which makes it more difficult to determine on which material(s) the tool was used (Yerkes and Kardulias 1993). However, examining tools under low magnification is faster than examining tools under high magnification, and thus a larger sample of tools can be examined in the same amount of time. Low magnification studies proceed more quickly than high magnification because tools used in high magnification studies must be cleaned with an ultrasonic cleanser to remove all traces of dirt. Tools examined under low magnification need only be cleaned with soap and/or water. The materials one can examine under high magnification are also limited; only fine-grained crystalline lithics such as chert, quartz and obsidian can be examined under incident light microscopes, whereas any material can be examined under low magnification (Yerkes and Kardulias 1993).

The replication of artifacts and use of the replicas is another aspect of methodology that varies between microwear studies. When microwear studies were first conducted, artifacts were always or almost always replicated and the replicas used to perform a task. The microwear of the replicas was then compared to that of the artifacts and through this comparison it was determined whether the artifacts were used in the same manner as the tested replicas. Some researchers still use replications in their analyses, but others no longer take this step (Brink 1978, Silva and Keely 1994; Hayden 1979). This is because usewear markers are now established for common tasks, such as cutting or scraping, on frequently studied materials such as chert or obsidian. The different forms of wear formed by performing the same task on various materials is also often known. Therefore, archaeologists working with chert artifacts may not always find it necessary to replicate their artifacts and test the replications. Instead, they can examine the literature dealing with the types of tools they are studying, and identify the wear on their artifacts through these past studies (Cassell 2005; Culleton 1991). Some researchers also examine tools made and used by aboriginal groups in ethnographic contexts. The use of these tools are known and can be compared to other tools with unidentified usewear patterns (Hayden 1979; LeMoine 1994; Rots and Williamson 2004).

4.2 Usewear Analysis of Skin Processing Tools

A number of studies have been performed on the microwear of skin processing tools, most often snub-nosed endscrapers (Silva and Keely 1994). A sample of recent and influential studies are described below. One study specifically dealing with Phillip's Garden endscrapers is included. There were no studies found that examined the microwear of slate skin processing tools. That said, the methodologies of these studies provided background for the development of the methodology described in this chapter.

The studies also provided some background on the types of wear patterns produced by hide scraping.

Silva and Keely (1994) examined "frits," a Belgian neolithic chert tool. Frits are large burin spalls with triangular or trapezoidal cross-sections that are characterized by polish on part of one or both lateral edges. At the time the study was conducted, the use of frits was unknown. The polish on frits resembled that found on sickles, but frits' lateral edges were only partially polished whereas sickles have wear marks along their entire lateral edges. The frits also had uneven wear, with patches of both rough and smooth polish. Upon close examination of the polish, the researchers determined that it was similar to that of other chert tools used to scrape dry hides, and that the uneven polish might be caused by hides treated with plant matter or paste, used to soften the pelt (Silva and Keely 1994).

To test this hypothesis, Silva and Keely (1994) made and tested reproduction frits. Deer hides were obtained and given an initial scraping while damp with another tool, allowed to dry, and treated with local grasses to soften them. The reproduction frits were then used to scrape the treated, dry hides. This process did not result in identical wear, but the wear on the reproduction frits included rough and smooth polish, similar to the artifacts. Silva and Keely (1994) concluded that, despite the minor differences between the artifacts and replicas, frits were most likely used to scrape hides previously treated with plant matter or paste.

Weedman (2002) examined spurred or beaked scrapers from the Paleoindian period from a variety of sites across North America. Spurred or beaked scrapers are a tool type characterized by a sharp point on the working edge of an endscraper. Though considered characteristic of the period, spurred scrapers typically do not make up more than 10% of any Paleoindian assemblage, and are not always present. These scrapers were previously verified as hide working tools through microwear analysis, but the spur's function was undetermined. Various uses were suggested for the spurs, including tattooing, piercing, hide-ribbing or tearing, and engraving organics such as bone, antler, wood or ivory. Microwear studies of spurred scrapers have only noted two characteristics of spur wear, first that they were very worn, and second that they had parallel grooves (Weedman 2002).

Weedman (2002) did not expand on these microwear analyses, but instead turned to ethnoarchaeology to explain the problem of spurs. An indigenous group in Ethiopia, the Gamo, were known to produce expedient and formal hide scrapers morphologically similar to those of the North American Paleoindians. Of particular interest were the spurs found on some Gamo endscrapers. These spurs were not created intentionally, but were the unintentional result of scraper creation or retouch. All hide-workers and creators of hide-working tools produced some spurred scrapers, but they were most often produced by inferior knappers. Most spurred scrapers were produced by those who had worked hides for less than three years, the elderly, and those with vision problems. Spurs are also an undesired trait, as they can tear hides. If a spur is too large, the scraper is discarded, as it can no longer be used. Weedman (2002) suggested that the spurs on Paleoindian endscrapers were also accidentally created during the initial tool-making or in retouching, and that they were an undesired trait (Weedman 2002).

Rots and Williamson (2004) combined ethnoarchaeology and microwear analysis to examine ethnographic and archaeological hide scrapers through microwear and residue analysis. This summary will only deal with their findings relating to microwear. The ethnographic tool samples were chert or quartz scrapers obtained from an indigenous group in Ethiopia, the Konso. Skilled tool-makers and hide-workers among the Konso created and utilized the tools, so their microwear was not obscured by amateur mistakes. Rots and Williamson (2004) recorded the amount a tool was used as well as who used it. The archaeological samples were obtained from a recently abandoned Konso site. All the scrapers were examined under high magnification with a metallurgical microscope (Rots and Williamson 2004).

Rots and Williamson (2004) found that the ethnographic examples showed differing usewear with each stage of its history, including production, use, retouch, and reuse. The factor that most influenced the amount of usewear present was the amount of time a tool was used after its latest resharpening. Sharpening obliterated or obscured usewear, so the tool would only accurately record the amount of use since its last sharpening session. Other identifiable types of wear found on the ethnographic tools were those resulting from production and hafting. Production wear largely consisted of a bulb of percussion and striations resulting from being struck with a metal hammer. Hafts are made from wood and attached to the tools with resin. As this hafting method does not encourage friction, and thus wear, the researchers suggest that any hafting polish was likely created when the scraper was first hafted or when the handle was removed (Rots and Williamson 2004).

Rots and Williamson's (2004) archaeological examples displayed microwear similar enough to that of the ethnographic tools that various stages of use could still be detected on the tools. Production wear was still recorded on non-used edges, and microwear information was obtained on all the examples on which the use-edge was preserved. Polish, rounding and scarring were found on many of the tools, but striations, a significant presence in the ethnographic examples, were not present. Polish caused by hafting was found in greater numbers on the archaeological tools. Rots and Williamson (2004) attribute this increase in hafting wear to the wooden hafts being attached to tools with resin that was not as hot as that used by the modern Konso, or through the intentional or unintentional addition of abrasive particles to the resin. Finally, evidence of retouch was less common on the archaeological tools than on the modern, and those archaeological examples that were retouched generally showed less damage than the modern retouched tools (Rots and Williamson 2004).

Cassell (2005) analysed 15 chert endscrapers from the Inupiat component of the historic Kelly's Station site in northern Alaska. The use-edges of these 15 endscrapers were examined under low magnification to determine use. Cassell (2005) examined the literature regarding usewear, and found that, under low magnification, rounding and polish are signs of scraping wet hides, rounding; polish and pitting are signs of scraping dry hides; and solely pitting or polish are signs of scraping another organic material such as bone or antler. Cassell found that seven hides were used to scrape wet hides, two to scrape dry hides, and three to scrape non-hide organics. Three scrapers had ambiguous usewear, and may have been used to scrape both dry and wet hides (Cassell 2005).

Kelly's Station was a historic trading post, and Cassell (2005) wished to determine how the wear patterns of scrapers in this setting compared to those found on more traditional Inupiat occupation sites. The variety in scraping materials and the varying dampness of hides at Kelly's Station were similar to that found on historic occupation sites. Ethnographic data showed that hides were generally scraped when wet and dry, so endscrapers used in hide working typically displayed wet-hide wear, dry-hide wear, and a combination. Other studies of endscraper usewear have indicated that these tools were multi-material scrapers, so those used to scrape non-hide organics are also typical. However, only three of the Kelly's Station scrapers showed evidence of heavy use, whereas middens from solely Inupiat sites in northern Alaska generally produce only broken endscrapers or those that reached the end of their use-life. Only one-fifth of the endscrapers found at Kelly's Station, however, are even arguably at the end of their use life, and only one recovered scraper was broken. Thus, there was less conservation of tools at the trading post than at typical habitation sites (Cassell 2005).

Brink (1978) performed microwear analysis on endscrapers from the Smoky Site in Alberta, which was occupied three times between 5000 and 1500 BP. He replicated and tested the reproductions of the endscrapers found at the Smoky Site in an effort to document the formation of usewear patterns. Reproductions were used to scrape bone, antler, wood, and hide. All used reproductions displayed combinations of rounding, polishing and microflaking, but no tools had striations. The wear patterns varied depending on the type of material on which the scrapers were used. Woodworking scrapers displayed significant microflaking and rounding, and a polished edge. Those scrapers used on soft hides had rounded edges and bands of polish behind the edge. Bone scrapers had intense microflaking, but little or no rounding or polish, except at the immediate edge. The scrapers used on antler and dry hides had rounded edges and patches of polish (Brink 1978).

The wear patterns of the test scrapers were then compared to those of 14 endscrapers from the Smoky Site. It was determined that six tools were used on soft hides, two on wood, two on bone, and three on an unknown substance. Four tools were identified as antler-scrapers, though they may have been used on dry hides (Brink 1978).

Hayden (1979) wanted to definitively identify endscraper microwear associated with hide scraping. To do this, he analysed 22 chipped stone Alaskan Inuit endscrapers under low power; all endscrapers were collected in an ethnographic context and positively identified as hide scrapers. Hayden (1979) first examined the edges of the tools' working ends. Then, he identified striations, polish, and linear depressions, which sometimes extended beyond the edge of the tool. The ventral faces of the artifacts showed little wear; only minor striations and polish were observed. Fractures were also often minor on the ventral face, and even those tools with notable fractures on their ventral face had considerably more on their dorsal face. The dorsal faces of the tools frequently displayed polish, striations, ridges and fracturing (Hayden 1979).

Hayden (1979) was puzzled by the general lack of wear on the ventral side of the endscrapers he studied, as the ventral surface of the tool was that in contact with the hide. To determine if this wear pattern could be replicated, Hayden (1979) reproduced a hafted Inuit-type obsidian endscraper and used it to scrape fat and tissue from a deer hide, bringing the endscraper toward himself, with the ventral surface against the hide. When this scraper was examined under a low power microscope, it too had very little wear on its ventral side and a great deal on the dorsal side. He hypothesized that this wear pattern was due to the semiplastic nature of the hide. When the scraper was pressed against the hide, it would become taut and only make contact along the edge, not the ventral face. As the hide would curve upward after the point of impact (at the edge of the endscraper), it would come into contact with the dorsal face of the scraper, forming wear on that surface (Hayden 1979). Hayden (1979) also noted that most of the wear was formed after the hide was dry or almost dry; while used on a still wet or damp hide, the scraper had comparatively little wear.

Culleton (1991) examined the usewear of 50 chert endscrapers from Phillip's Garden under low magnification. Most wear was located on the dorsal face of the scrapers; 58% had no wear on the ventral surface, and 82% no or minimal wear. This indicates that Dorset endscrapers were pushed toward the user with the ventral surface against the hide, as proved by Hayden's (1979) experiment in hide scraping (Culleton 1991).

Culleton (1991) found that microflaking was the most common form of wear on the Phillip's Garden endscrapers, though polish and striations were also observed. After studying the position of these wear types, Culleton (1991) concluded that the polish and striations discovered on the artifacts were not wear caused by use, as neither were associated with the use-edges of the tools, but were on the body of the tool. Microflaking, however, appeared on the use-edges of tools in a generally consistent pattern, indicating that it was caused by use. Most tools examined had significant microflaking along their use-edges, including step fractures and scalar fractures. As these types of fractures are usually only observed on tools used to scrape hard materials, Culleton (1991) concluded that the Phillip's Garden endscrapers were used to scrape materials such as antler, bone, wood and soapstone rather than hides (Culleton 1991).

These studies display some similarities in their methodologies, and establish common terms, expectations and styles used in microwear research. These methodologies, terms, expectations and styles were used to create the methodology described below.

4.3 Methodology

To test the hypothesis that some or all slate tools were used to process seal hides, replicas of the three slate tool types from Phillip's Garden were made. The tools replicated were 7A249C363, 7A283A380, EeBi-1:6365, EeBi-1:7554, EeBi-1:7556, EeBi-1:9745, EeBi-1:10853 and 10854, EeBi-1:14016, EeBi-1:14287, EeBi-1:15416, EeBi-1:15417, EeBi-1:19236, EeBi-1:19318 (Figure 4.1 to 4.13). All the artifacts are from Phillip's Garden; the differences in the catalogue numbers are the result of differences in Renouf and Harp's cataloguing systems. Harp's artifacts are catalogued by the site's Borden number, EeBi-1, and the order of artifacts found and recorded, while Renouf's are catalogued by the Parks Canada provenience system. In the Parks Canada system, 7A refers to the Port au Choix National Historic Site, the following three numbers and the single letter (200-381 and A-D) refer to Phillip's Garden, and the final number is the specimen number, in the order in which the artifacts were found and recorded.

Two replicas of each tool were made, with the exception of EeBi-1:10853/54, which was replicated only once. One of each pair of replications was intended for use, while the other was not used, and acted as a control as to what microwear was the result of manufacture. Photographs were taken of the use-edges of both the control reproductions and artifacts under the microscope. Two seal hides were used, Hide A and Hide B. Skin processing procedures from two cultural contexts were used as sources of skin processing methodologies for this experiment: the Canadian Inuit and Newfoundlanders from the Great Northern Peninsula. As described in Chapter 2, the Inuit typically process hides through repeated episodes of washing the hide, scraping it, and allowing it to dry (Balikci 1970; Issenman 1997). The Newfoundlanders, however, lash a stretched hide into a frame, leave it outside to dry and scrape it several times a day for two weeks to remove the oil (Genge et al. 2002).

Before the replica tools could be used to scrape the hides, the blubber needed to be removed. Initially, a Palaeoeskimo microblade from the multi-component Spence site at Port au Choix, previously used to butcher a beached porpoise, and a biface from Phillip's Garden were selected for use as flensing knives. These two tool types were chosen as they matched the criteria for potential flensing knives, sharpness and a curved blade (Oakes and Riewe 1995, 1998). The microblade was chosen for sharpness, while the biface was chosen because many bifaces have curved lateral edges.


Figure 4.1: EeBi-1:06365


Figure 4.2: EeBi-1:07554


Figure 4.3: EeBi-1:07556

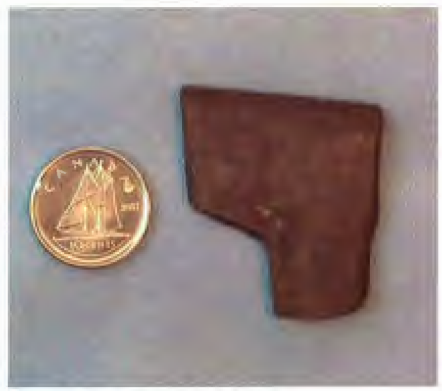


Figure 4.4: EeBi-1:14016


Figure 4.5: EeBi-1:14287


Figure 4.6: EeBi-1:15416

Figure 4.7: EeBi-1:15417

Figure 4.8: EeBi-1:19236

Figure 4.9: EeBi-1:19318

Figure 4.10: EeBi-1:19745

Figure 4.11: EeBi-1:10853-54

Figure 4.12: 7A249C363

Figure 4.13: 7A283A380

A table, placed outside, was used both as a butchering surface and as a scraping board. A tupperware tote was filled with salted water in preparation for the hide's first washing. Hide A was laid on the table. The microblade was the first tool tested on the pelt, but it did not make a significant impression on the blubber layer. The microblade was difficult to use, as it was small and unhafted. The biface was then tested as a cutting tool. However, the biface was less effective than the microblade, as it did not succeed in cutting the blubber layer. A secondary obsidian flake was then used, and worked well as a flensing knife; obsidian was used as it was the only modern worked lithic material available at the time. Since this experiment proved a success, several primary obsidian flakes were used. The primary flake removed the blubber at a faster rate than the secondary flake, and thus flensing work continued using obsidian primary flakes (Figure 4.14). Blubber was removed in large chunks, working from one side of the hide to the other.

When the flensing was finished, the hide was washed in the tote filled with salted water. Salt was added to the water because it removes fat from the hide (Figure 4.15). After the washing, the hide was set aside, the tote was dumped, and refilled with salted water. This process was repeated two more times. After the final salt water wash, the hide and tote were taken to an industrial shower, where the tote was filled with fresh water. The hide was rinsed and placed to the side. The tote was refilled with fresh water, and the hide was rinsed again. After the tote was dumped, it was filled with soapy water, and the pelt was washed in the solution. The tote was dumped and refilled with the same solution, and the hide was washed again. Finally, the tote was dumped, rinsed, and refilled with fresh water. The hide was rinsed, and it and the water-filled tote were taken back to the table.

The hide was again laid on the table, and reproductions of 7A283A380, EeBi-1:19318, and 7A249C363 (Figures 4.12, 4.15, 4.16) were selected for testing. The ventral faces of the scrapers were placed against the hide, and the tools were pushed toward the user, as was done in Hayden's (1979) experiment. All selected scrapers proved effective, but 7A283A380 and EeBi-1:19318 appeared to be more effective and easier to use. Most of the remaining blubber was removed from the hide during this scraping (Figure 4.16). When the scraping was completed, the hide was again placed in the tote and rinsed. After rinsing, it was placed back on the table and the tote was dumped. Six pieces of nylon cord were then cut, and six stakes selected. Five holes were then cut around the perimeter of the hide. Due to a conveniently placed bullet hole, the creation of a sixth cut was unnecessary. The hide was then placed on the ground, stretched, and lashed to the stakes with the cords, and the stakes placed so as to stretch the hide to its fullest extent (Figure 4.17). This concluded the initial work on Hide A.

Hide B was then placed on the table. A second primary obsidian flake was selected for blubber removal and flensing began. This time, blubber was removed from both sides in large chunks, working toward the centre. This method of blubber removal proved less effective than that employed on Hide A. When the blubber was removed, the hide was placed in the tote and carried in to the industrial shower. There, the pelt was washed three times in salt water, rinsed twice in fresh water, washed twice in soapy water, and rinsed twice again in fresh water. The final rinse water was left in the tote when it and the hide were taken back to the table.

The hide was removed from the tote and placed back on the table. Reproductions of EeBi-1:06365, EeBi-1:10853/54, EeBi-1:15417, and EeBi-1:14016 (Figures 4.1, 4.13, 4.7 and 4.4) were selected to scrape Hide B (Figure 4.18). All the tested tools were effective. When scraping was completed, the hide was rinsed in the tote and again placed on the table. Six pieces of nylon rope were cut, and six holes were made in the hide, two near the flippers, two at the head, two at the tail, and two equidistant between the flipper holes and the tail. The hide was then tied to a makeshift wooden frame. The tools were left to soak in a lab sink overnight, then washed and photographed under a microscope the next morning.

Over the next 13 days, both hides were scraped with those tools that were relatively easy to use without hafting, generally twice a day, once in the morning and once in the afternoon. These tools were 7A283A380 and EeBi-1:19318, tested on Hide A, and EeBi-1:6365, EeBi-1:10853-54, EeBi-1:15417, tested on Hide B (Figure 4.19). Exceptions to this scraping pattern were days 4, 7 and 10, on which the hides were scraped once. After each use, the slate tools were washed and allowed to dry. Their use-edges were then photographed under a microscope at 15x to 20x magnification to create a record of the changes in microwear over their period of use. The bevelled tools and multi-tool were sharpened once, using a whetstone, after their seventh use. This resulted in the elimination of the previous edge rounding, and generally increased the amount of edge scarring. Little or no effect was had on the edge striations.


Figure 4.14: Blubber removal, hide A


Figure 4.15: Washing, hide A


Figure 4.16: Scraping, hide A


Figure 4.17: Hide A stretched to dry


Figure 4.18: Scraping, hide B


Figure 4.19: Scraping, stretched and dry, hide B

On day 14 of the microwear experiment, the rounded-tip tools were tested a single time. Both sides and the tips of the rounded or pointed edges of these tools were used to crease the hides. The tools proved effective for this task, but the short duration of their use resulted in little microwear. Hide B was tanned by another researcher. When the tanned hide was returned, the six rounded-tip tools and one multi-tool were tested, EeBi-1:07554, EeBi-1:07556, EeBi-1:09745, EeBi-1:14287, EeBi-1:15416, EeBi-1:15417, and EeBi-1:19236 (Figures 4.2, 4.3, 4.5, 4.6, 4.7, 4.8, 4.10). After each use, the tools were photographed at 15x to 30x magnification; tools with narrower working ends were photographed under higher magnifications than tools with broader working ends.

The testing for rounded-tip tools was organized on arbitrary numbers of strokes rather than a replication of hide creasing procedures, as an instance of hide creasing is difficult to replicate, and would likely not form sufficient usewear on the replicas. All tools were tested three times on day 1, twice on days 2 and 3, and three times on day 4. Each test included 25 strokes on each corner of each working tip. On day 5, testing was discontinued completely on EeBi-1:07754, and on EeBi-1:15416 and EeBi-1:15417 after only one test, as sufficient information regarding the change and development of microwear on these tools was obtained. A total of six tests were performed on the remaining tools on day 5. On all the tests completed on day 5, the number of strokes was increased to 50, to increase the amount of wear on the tools. On day 6, one further test was done on EeBi-1:09745, and three on EeBi-1:07556, EeBi-1:14287, and EeBi-1:19236. Three tests were also completed on EeBi-1:07554, as further consideration determined that more tests were necessary to identify changes in and development of microwear.

As with the bevelled tools previously tested, some of the rounded-tip tools were more effective than others. The distal ends of EeBi-1:07554 and EeBi-1:14287, and the rounded end of the multi-tool EeBi-1:15417, were very effective in creasing the hide. EeBi-1:19236 had one end that was narrower than the other, and the narrower end was far superior for creating folds than the wider ends. EeBi-1:07556 and EeBi-1:09745 were both reproductions of pointed tools. When dulled after multiple uses, they were effective for creasing the hides; before they were dulled, they were best for cutting hides. Even when they were dulled, the pointed tool reproductions could still be used to cut the hides.

4.4 Results

Before describing the identified wear, the terms used for different parts of the tools need to be described. Terms used for parts of the tool are: distal end, proximal end, lateral sides, dorsal face, and ventral face. The distal end of the tool is that held away from the user, and the proximal end is that hafted or held by the user. On the tools with one or two narrower ends, the end with the bevel, point, rounded end, or end without the perforation are referred to as the distal end, and the opposite is called the proximal. On those artifacts whose narrower ends are identical, a distal and proximal end were not assigned. The lateral sides of the tools are those that are longer; these are not usually working edges. Dorsal and ventral faces refer to the "back" face and "front" face of the artifacts, respectively. In this context, only some bevelled tools are referred to as having dorsal and ventral faces, as the direction of the distal bevel was used to determine the front and back faces of the tools. The face with the distal bevel is referred to as the dorsal face, and the opposite face is referred to as the ventral face (Figure 4.20a, b, and c).

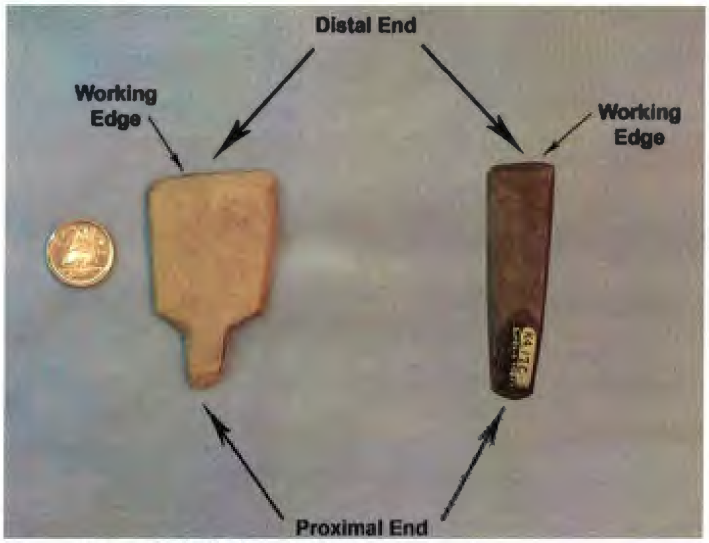


Figure 4.20a: Labelled diagram of tool parts

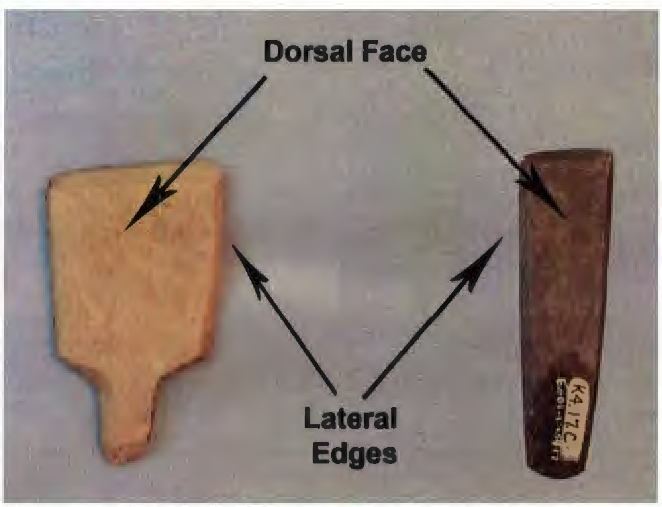


Figure 4.20b: Labelled diagram of tool parts continued

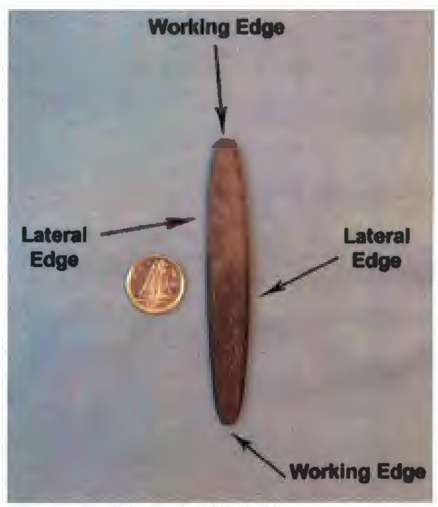


Figure 4.20c: Labelled diagram of tool parts continued

Bevelled Tools

Replicas

The replicated artifacts included four stemmed bevelled tools, 7A249C363, EeBi-1:06365, EeBi-1:10853/54, and EeBi-1:14016, two unstemmed bevelled tools, 7A283A380 and EeBi-1:19318, and one multi-tool, EeBi-1:15417. All replicas, control tools, and artifacts were examined and photographed, and the microwear on their working edges was recorded (Figures 4.21 and 4.22). All the working edges of the used replicas, hereafter referred to simply as replicas, had edge scarring on their dorsal faces, and edge scarring and edge rounding on their ventral faces. As edge scarring also appears on one or both faces of some control tools it is not, by itself, indicative of hide-working activities. However, as edge scarring is present on one or both faces of all replicas it was determined to be evidence of hide scraping activity, when combined with edge rounding on the ventral face.

Striations were also present on either the dorsal or ventral faces of all the replicas' working edges. However, there is a lack of consistency in the location and direction of the striations, which may indicate that they are primarily cause by manufacture rather than use. Two replicas, 7A283A380 and EeBi-1:14016, only have striations on their dorsal faces, three replicas 7A249C363, EeBi-1:06365, and EeBi-1:10853/54, only have striations on their ventral faces, and two replicas, EeBi-1:15417 and EeBi-1:19318, have striations on both faces. The direction of the striations also differs among the tools. Tools 7A249C363, EeBi-1:15417, and the ventral face of EeBi-1:19318 have striations diagonal to their working edge, while 7A283A380, EeBi-1:06365, EeBi-1:10853/54, EeBi-1:14016, and the dorsal face of EeBi-1:19318 have striations perpendicular to the working edge.

Striations were identified on five control tools, EeBi-1:06365, EeBi-1:10853/54, EeBi-1:14016, EeBi-1:15417, and EeBi-1:19318. Between this and the different striation patterns on the replicas, it was determined that striations are not indicative of hide scraping activity. However, they often appear on tools used as hide scrapers, so their presence does not indicate that a tool was *not* used as a hide scraper either.

Those artifacts that had edge scarring and edge rounding visible on their ventral face were determined to be hide scrapers. Five of the seven artifacts, 7A249C363, 7A283A380, EeBi-1:06365, EeBi-1:15417, and EeBi-1:19318, had microwear consistent with hide scraping activities. EeBi-1:10853/54 was missing its distal end and working edge, so its wear could not be compared to that of the replicas. EeBi-1:14016 did not have edge scarring, edge rounding or striations; as some control tools also lacked edge scarring, edge rounding, and striations, it appears that EeBi-1:14016 was not used.

The bevelled tools and multi-tool replicas were sharpened once, after their seventh use. This resulted in the elimination of the previous edge rounding, and generally increased the amount of edge scarring. Little or no effect was had on the striations. However, evidence of sharpening disappeared or was reduced with further use, and the replicas were used ten times after they were sharpened.

Figure 4.21: Wear present on the dorsal working edges of bevelled slate tools from Phillip's Garden, and their control and used reproductions

Designation	Edge Scarring	Edge Rounding	Striations
7A249C363 Artifact	Y	N	N
7A249C363 Control	Y	N	N
7A249C363 Replica	Y	N	N
7A283A380 Artifact	Y	N	Y
7A283A380 Control	Y	N	N
7A283A380 Replica	Y	N	Y
EeBi-1:06365 Artifact	Y	N	N
EeBi-1:06365 Control	Y	N	N
EeBi-1:06365 Replica	Y	N	N
EeBi-1:10853/84 Artifact	n/a	n/a	n/a
EeBi-1:10853/84 Control	Y	N	N
EeBi-1:10853/84 Replica	Y	N	N
EeBi-1:14016 Artifact	N	N	N
EeBi-1:14016 Control	N	N	Y
EeBi-1:14016 Replica	Y	N	Y
EeBi-1:15417 Artifact	Y	N	N
EeBi-1:15417 Control	Y	N	N
EeBi-1:15417 Replica	Y	N	Y
EeBi-1:19318 Artifact	Y	N	Y
EeBi-1:19318 Control	Y	N	N
EeBi-1:19318 Replica	Y	N	Y

Figure 4.22: Wear present on the ventral working edges of bevelled slate tools from Phillip's Garden, and their control and used reproductions

Designation	Edge Scarring	Edge Rounding	Striations
7A249C363 Artifact	Y	Y	Y
7A249C363 Control	Y	N	N
7A249C363 Replica	Y	Y	Y
7A283A380 Artifact	Y	Y	Y
7A283A380 Control	N	N	N
7A283A380 Replica	Y	Y	N
EeBi-1:06365 Artifact	Y	Y	N
EeBi-1:06365 Control	N	N	Y
EeBi-1:06365 Replica	Y	Y	Y
EeBi-1:10853/84 Artifact	n/a	n/a	n/a
EeBi-1:10853/84 Control	Y	N	Y
EeBi-1:10853/84 Replica	Y	Y	Y
EeBi-1:14016 Artifact	N	N	N
EeBi-1:14016 Control	Y	N	Y
EeBi-1:14016 Replica	Y	Y	N
EeBi-1:15417 Artifact	Y	Y	Y
EeBi-1:15417 Control	Y	N	Y
EeBi-1:15417 Replica	Y	Y	Y
EeBi-1:19318 Artifact	Y	Y	Y
EeBi-1:19318 Control	Y	N	Y
EeBi-1:19318 Replica	Y	Y	Y

7A249C363, Dorsal Face

Types of Wear Found on the Tools

7A249C363	Artifact	Control	Replica
Working edge, dorsal face	significant edge scarring	edge scarring	significant edge scarring

Artifact: Working edge, dorsal face

Control: Working edge, dorsal face

Replica: Working edge, dorsal face

7A249C363, Ventral Face

Types of Wear Found on the Tools

7A249C363	Artifact	Control	Replica
Working edge, ventral face	edge scarring, edge rounding, striations diagonal to edge	edge scarring	edge scarring, edge rounding, striations diagonal to edge

Artifact: Working edge, ventral face

Control: Working edge, ventral face

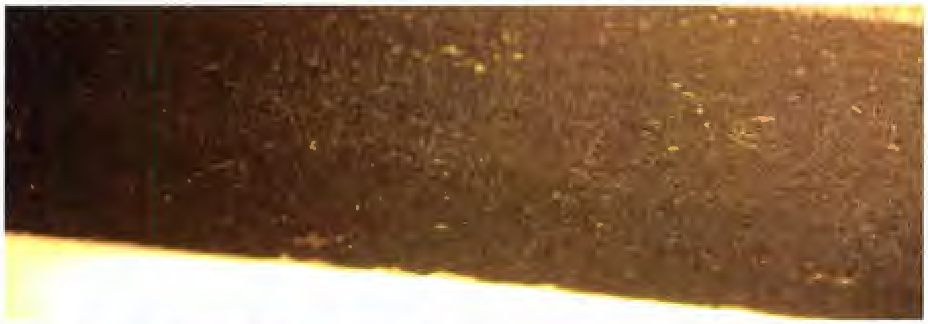
Replica: Working edge, dorsal face

7A283A380, Dorsal Face

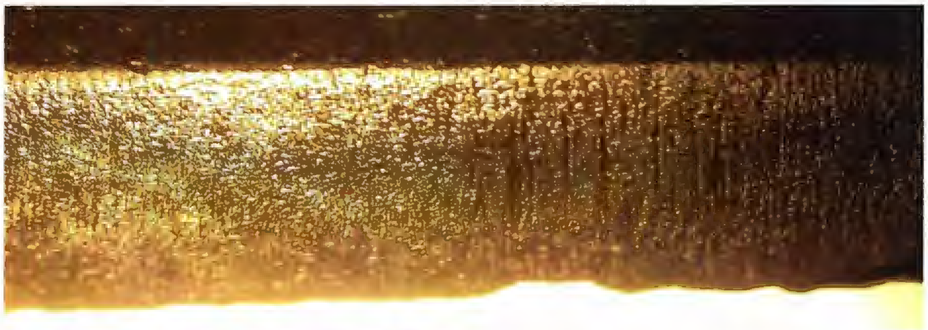
Types of Wear Found on the Tools

7A283A380	Artifact	Control	Replica
Working edge, dorsal face	edge scarring, striations perpendicular to edge	edge scarring	edge scarring, striations perpendicular to edge

Artifact: Working edge, dorsal face



Control: Working edge, dorsal face



Replica: Working edge, dorsal face

7A283A380, Ventral Face

Types of Wear Found on the Tools

7A283A380	Artifact	Control	Replica
Working edge, ventral face	edge scarring, edge rounding, striations diagonal to edge	none	edge scarring, edge rounding

Artifact: Working edge, ventral face

Control: Working edge, ventral face

Replica: Working edge, dorsal face

EeBi-1:06365, Dorsal Face

Types of Wear Found on the Tools

EeBi-1:06365	Artifact	Control	Replica
Working edge, dorsal face	edge scarring	edge scarring	edge scarring

Artifact: Working edge, dorsal face

Control: Working edge, dorsal face

Replica: Working edge, dorsal face

EeBi-1:06365, Ventral Face

Types of Wear Found on the Tools

EeBi-1:06365	Artifact	Control	Replica
Working edge, ventral face	edge scarring, edge rounding	striations perpendicular to edge	edge scarring, edge rounding, striations perpendicular to edge

Artifact: Working edge, ventral face

Control: Working edge, ventral face

Replica: Working edge, dorsal face

EeBi-1:10853/54, Dorsal Face

Types of Wear Found on the Tools

EeBi-1:10853/54	Artifact	Control	Replica
Working edge, dorsal face	n/a	edge scarring	edge scarring

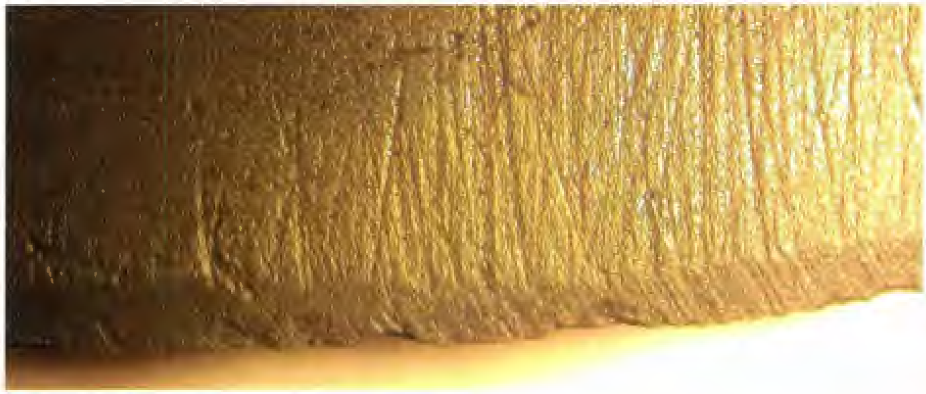
Control: Working edge, dorsal face

Replica: Working edge, dorsal face

EeBi-1:10853/54, Ventral Face

Types of Wear Found on the Tools

EeBi-1:10853/54	Artifact	Control	Replica
Working edge, ventral face	n/a	edge scarring, many deep striations perpendicular to the edge	edge scarring, edge rounding, few shallow striations perpendicular to the edge



Control: Working edge, ventral face

Replica: Working edge, ventral face

EeBi-1:14016, Dorsal Face

Types of Wear Found on the Tools

EeBi-1:14016	Artifact	Control	Replica
Working edge, dorsal face	none	striations diagonal to edge	edge scarring, striations perpendicular to edge

Artifact: Working edge, dorsal face

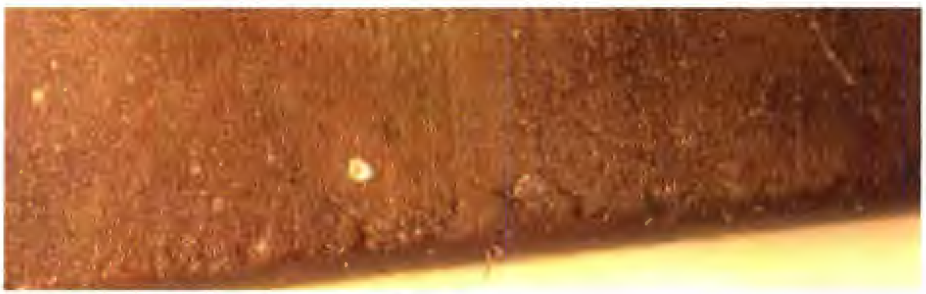
Control: Working edge, dorsal face

Replica: Working edge, dorsal face

EeBi-1:14016, Ventral Face

Types of Wear Found on the Tools

EeBi-1:14016	Artifact	Control	Replica
Working edge, ventral face	none	edge scarring, striations perpendicular to edge	edge scarring, edge rounding



Artifact: Working edge, ventral face

Control: Working edge, ventral face

Replica: Working edge, ventral face

EeBi-1:15417, Dorsal Face

Types of Wear Found on the Tools

EeBi-1:15417	Artifact	Control	Replica
Working edge, dorsal face	edge scarring	edge scarring	edge scarring, striations perpendicular to edge

Artifact: Working edge, dorsal face

Control: Working edge, dorsal face

Replica: Working edge, dorsal face

EeBi-1:15417, Ventral Face

Types of Wear Found on the Tools

EeBi-1:15417	Artifact	Control	Replica
Working edge, ventral face	edge scarring, edge rounding, striations diagonal to edge	edge scarring, striations diagonal to edge	edge scarring, edge rounding, striations diagonal to edge

Artifact: Working edge, ventral face

Control: Working edge, ventral face

Replica: Working edge, ventral face

EeBi-1:19318, Dorsal Face

Types of Wear Found on the Tools

EeBi-1:19318	Artifact	Control	Replica
Working edge, dorsal face	edge scarring	edge scarring	edge scarring, striations perpendicular to edge

Artifact: Working edge, dorsal face

Control: Working edge, dorsal face

Replica: Working edge, dorsal face

EeBi-1:19318, Dorsal Face

Types of Wear Found on the Tools

EeBi-1:19318	Artifact	Control	Replica
Working edge, dorsal face	edge scarring, striations diagonal to edge	edge scarring	edge scarring

Artifact: Working edge, dorsal face

Control: Working edge, dorsal face

Replica: Working edge, dorsal face

EeBi-1:19318, Ventral Face

Types of Wear Found on the Tools

EeBi-1:19318	Artifact	Control	Replica
Working edge, ventral face	edge scarring, striations perpendicular to edge	striations perpendicular to edge	edge scarring, edge rounding, striations diagonal to edge

Artifact: Working edge, ventral face

Control: Working edge, ventral face

Replica: Working edge, ventral face

EeBi-1:19318, Ventral Face

Types of Wear Found on the Tools

EeBi-1:19318	Artifact	Control	Replica
Working edge, ventral face	edge scarring, edge rounding	edge scarring	edge scarring, edge rounding

Artifact: Working edge, ventral face

Control: Working edge, ventral face

Replica: Working edge, ventral face

Bevelled Tool and Multi-Characteristic Tool Samples

The replication experiment demonstrated that a combination of edge scarring and edge rounding indicates hide scraping. Edge striations may or may not be present on slate tools used as hide scrapers. Although the comparison between the used reproductions and artifacts suggested that bevelled tools were used to scrape hides, the sample was too small to represent the entire collection. Therefore, the ventral faces of 30 bevelled tool artifacts' working edges were examined and photographed under a microscope. Only the ventral faces of bevelled tools were photographed because edge rounding is only visible on the ventral face, and the combination of edge rounding and edge scarring indicates hide scraping activity. As edge scarring is visible on the ventral faces of tools, it was determined that a view of only the ventral artifact face was necessary to determine whether they were used as hide scrapers. The ventral faces of the working edges of five multi-tool artifacts were also examined and photographed. This small sample was deemed sufficient for multi-tool assemblage because there are only 12 examples in the collection, one of which was used in the reproduction experiment.

Fourteen stemmed bevelled tools, Samples 1-6 and 8-15, have edge scarring and edge rounding on their ventral surfaces. The remaining tool, Sample 7, has neither edge scarring nor edge rounding. Seven samples, 3, 6, 7, 10, 11, 14 and 15 have striations (Figure 4.23). The 14 sampled tools with edge scarring and edge rounding were determined to be hide scrapers. The remaining sample, 7, has no edge scarring, edge rounding, or striations, and as such, like EeBi-1:14016, appears to have not been used.

All the unstemmed bevelled tool samples have edge scarring on their ventral surfaces. Only thirteen, Samples 2-3 and 5-15, also have edge rounding. Six samples, 1, 2, 6, 8, 12 and 14, also have striations (Figure 4.24). Those 13 samples with both edge scarring and edge rounding were determined to be hide scrapers. Sample 1 has striations and edge scarring, but no edge rounding. Some of the control replicas had both edge scarring and striations, so Sample 1 may not have been used; alternatively, it may have been used for a task other than hide scraping. Sample 4 has edge scarring, but not striations or edge rounding. Due to the small amount of edge scarring, it was likely either unused or minimally used.

All five multi-characteristic tool samples display edge scarring on their ventral surfaces. Four samples, 1 and 3-5 have edge rounding. No multi-tool samples have striations (Figure 4.25). Those four tools with both edge scarring and edge rounding were determined to be hide scrapers. The final tool has edge scarring, but no edge rounding. As some control replica tools have edge scarring, it may not have been used, or Sample 2 may have been used for a different task.

Figure 4.23: Microwear on the working edges of sampled stemmed bevelled tools from Phillip's Garden

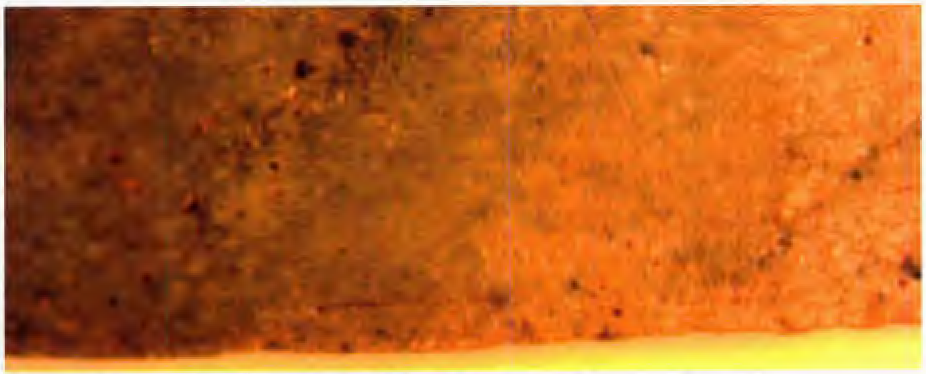
Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A249B138	Y	Y	N
2	7A259A119	Y	Y	N
3	7A259A603	Y	Y	Y
4	7A259A800	Y	Y	N
5	7A259A1048	Y	Y	N
6	7A330C1	Y	Y	Y
7	EeBi-1:00486	N	N	Y
8	EeBi-1:06299	Y	Y	N
9	EeBi-1:06362	Y	Y	N
10	EeBi-1:06363	N	N	Y
11	EeBi-1:06364	N	N	Y
12	EeBi-1:19319	Y	Y	N
13	EeBi-1:20560	Y	Y	N
14	EeBi-1:20559	Y	Y	Y
15	EeBi-1:29553	Y	Y	Y

Microwear of Stemmed Bevelled Tool Samples, n=15

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A249B138	Y	Y	N
2	7A259A119	Y	Y	N
3	7A259A603	Y	Y	Y

Stemmed bevelled tool sample 1: 7A249B138 ventral face, working edge



Stemmed bevelled tool sample 2: 7A259A119, ventral face, working edge

Stemmed bevelled tool sample 3: 7A259A603, ventral face, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
4	7A259A800	Y	Y	N
5	7A259A1048	Y	Y	N
6	7A330C1	Y	Y	Y

Stemmed bevelled tool sample 4: 7A259A800, ventral face, working edge

Stemmed bevelled tool sample 5: 7A259A1048, ventral face, working edge

Stemmed bevelled tool sample 6: 7A330C1, ventral face, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
7	EeBi-1:00486	N	N	Y
8	EeBi-1:06299	Y	Y	N
9	EeBi-1:06362	Y	Y	N

Stemmed bevelled tool sample 7: EeBi-1:00486, ventral face, working edge

Stemmed bevelled tool sample 8: EeBi-1:06299, ventral face, working edge

Stemmed bevelled tool sample 9: EeBi-1:06362, ventral face, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
10	EeBi-1:06363	N	N	Y
11	EeBi-1:06364	N	N	Y
12	EeBi-1:19319	Y	Y	N

Stemmed bevelled tool sample 10: EeBi-1:06363, ventral face, working edge

Stemmed bevelled tool sample 11: EeBi-1:06364, ventral face, working edge

Stemmed bevelled tool sample 12: EeBi-1:19319, ventral face, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
13	EeBi-1:20560	Y	Y	N
14	EeBi-1:20559	Y	Y	Y
15	EeBi-1:29553	Y	Y	Y

Stemmed bevelled tool sample 13: EeBi-1:20560, ventral face, working edge

Stemmed bevelled tool sample 14: EeBi-1:20559, ventral face, working edge

Stemmed bevelled tool sample 15: EeBi-1:29553, ventral face, working edge

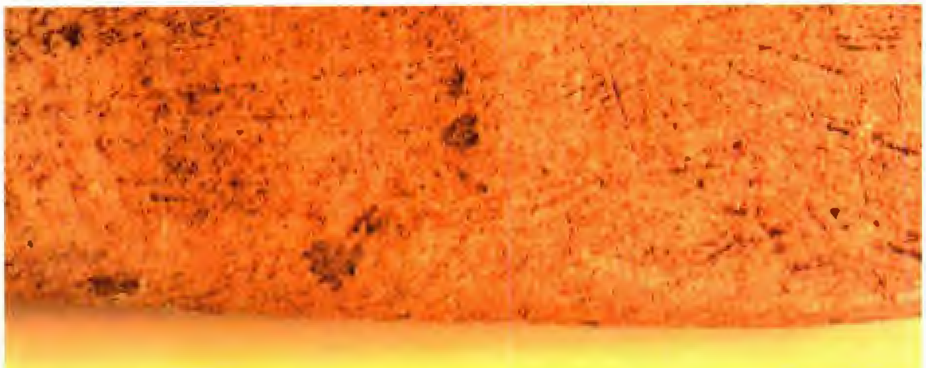
Figure 4.24: Microwear on the working edges of sampled unstemmed bevelled tools from Phillip's Garden

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A259D584	Y	N	N
2	7A270C88	Y	Y	Y
3	EeBi-1:00494	Y	Y	N
4	EeBi-1:06308	Y	N	N
5	EeBi-1:06309	Y	Y	N
6	EeBi-1:06310	Y	Y	Y
7	EeBi-1:07441	Y	N	N
8	EeBi-1:08808	Y	Y	Y
9	EeBi-1:08809	Y	Y	N
10	EeBi-1:08916	Y	Y	N
11	EeBi-1:15450	Y	N	N
12	EeBi-1:15450	Y	Y	Y
13	EeBi-1:19264	Y	Y	N
14	EeBi-1:19321	Y	Y	Y
15	EeBi-1:20579	Y	Y	N

Microwear of Unstemmed Bevelled Tool Samples, n=15

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A259D584	Y	N	N
2	7A270C88	Y	Y	Y
3	EeBi-1:00494	Y	Y	N



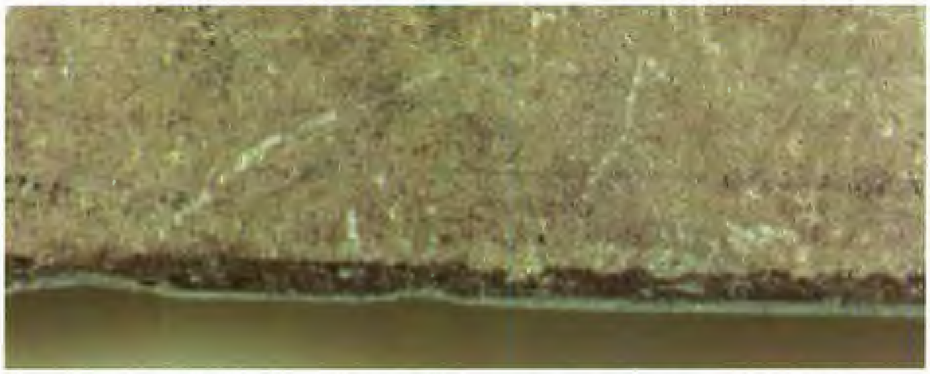
Unstemmed bevelled tool sample 1: 7A259D584, ventral face, working edge

Unstemmed bevelled tool sample 2: 7A270C88, ventral face, working edge

Unstemmed bevelled tool sample 3: EeBi-1:00494, ventral face, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
4	EeBi-1:06308	Y	N	N
5	EeBi-1:06309	Y	Y	N
6	EeBi-1:06310	Y	Y	Y



Unstemmed bevelled tool sample 4: EeBi-1:06308, ventral face, working edge

Unstemmed bevelled tool sample 5: EeBi-1:06309, ventral face, working edge

Unstemmed bevelled tool sample 6: EeBi-1:06310, ventral face, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
7	EeBi-1:07441	Y	N	N
8	EeBi-1:08808	Y	Y	Y
9	EeBi-1:08809	Y	Y	N

Unstemmed bevelled tool sample 7: EeBi-1:07441, ventral face, working edge

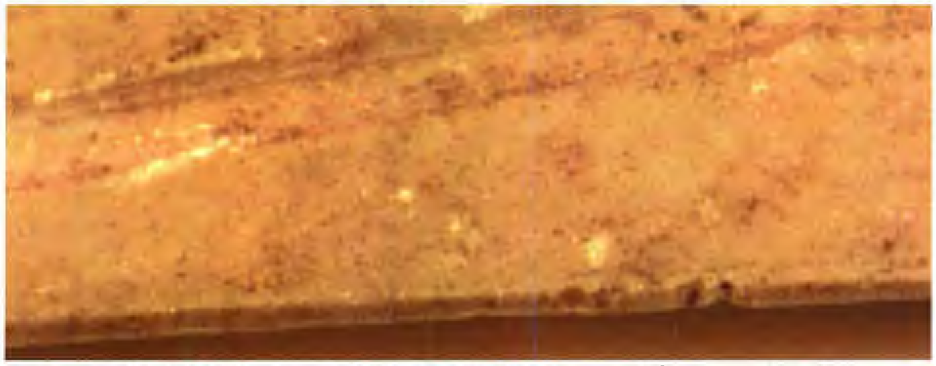
Unstemmed bevelled tool sample 8: EeBi-1:08808, ventral face, working edge

Unstemmed bevelled tool sample 9: EeBi-1:08809, ventral face, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
10	EeBi-1:08916	Y	Y	N
11	EeBi-1:15450	Y	N	N
12	EeBi-1:15450	Y	Y	Y

Unstemmed bevelled tool sample 10: EeBi-1:08916, ventral face, working edge



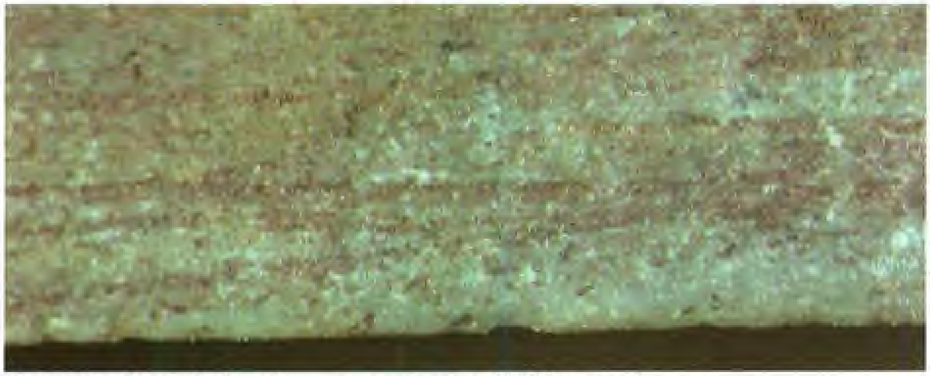
Unstemmed bevelled tool sample 11: EeBi-1:15450, ventral face, working edge

Unstemmed bevelled tool sample 12: EeBi-1:15450, ventral face, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
13	EeBi-1:19264	Y	Y	N
14	EeBi-1:19321	Y	Y	Y
15	EeBi-1:20579	Y	Y	N

Unstemmed bevelled tool sample 13: EeBi-1:19264, ventral face, working edge



Unstemmed bevelled tool sample 14: EeBi-1:19321, ventral face, working edge

Unstemmed bevelled tool sample 15: EeBi-1:20579, ventral face, working edge

Figure 4.25: Types of microwear on the working edges of sampled multi-characteristic tools from Phillip's Garden

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A249C49	Y	Y	N
2	7A249C524	Y	N	N
3	EeBi-1:13836	Y	Y	N
4	EeBi-1:19002	Y	Y	N
5	EeBi-1:20033	Y	Y	N

Microwear of Multi- Tool Samples, n=5

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A249C49	Y	Y	N
2	7A249C524	Y	N	N
3	EeBi-1:13836	Y	Y	N

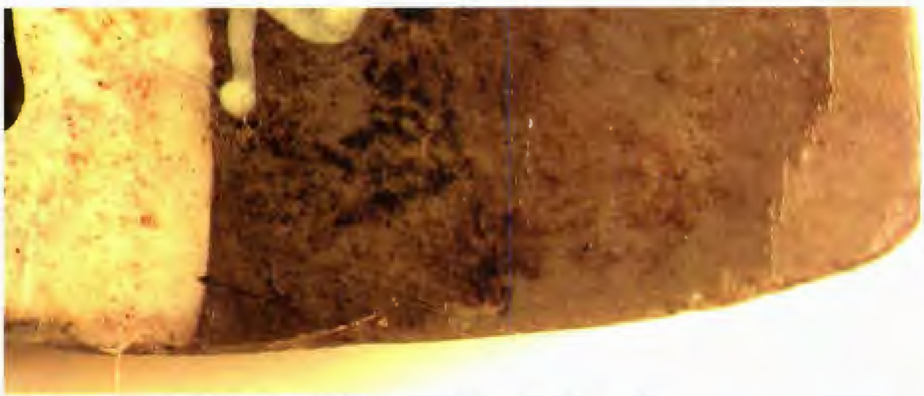
Multi-tool sample 1: 7A249C49, ventral face, working edge

Multi-tool sample 2: 7A249C524, ventral face, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
4	EeBi-1:19002	Y	Y	N
5	EeBi-1:20033	Y	Y	N

Multi-tool sample 3: EeBi-1:13836, ventral face, working edge



Multi-tool sample 4: EeBi-1:19002, ventral face, working edge

Multi-tool sample 5: EeBi-1:20033, ventral face, working edge

Rounded-Tip Tools

Replicas

The replicas included six rounded-tip tools, EeBi-1:07554 EeBi-1:07556, EeBi-1:14287, EeBi-1:15416, EeBi-1:19236, and EeBi-1:19745; and one multi-tool, EeBi-1:15417. The rounded-tip tools included three common rounded-tip tools, EeBi-1:14287, EeBi-1:15416, and EeBi-1:19236; two pointed tools, EeBi-1:07556 and EeBi-1:19745; and one perforated rounded-tip tool, EeBi-1:07554. The working edges on all replicas, control tools, and artifacts were examined and photographed, and the microwear recorded (Figure 4.26). No division was made between the ventral and dorsal surfaces of the tools because there are no distinguishable features that differentiate between them; both sides are equally likely to be either the dorsal or ventral side. There was also usually no difference between the microwear on both faces of a rounded-tip tool's working edge.

All the replicas' working edges had edge rounding. One replica, EeBi-1:15416, had edge scarring, and one replica, EeBi-1:07556, had striations. None of the control tools had edge rounding. Because the only type of wear that appeared consistently on the replicas and did not appear on the control tools was edge rounding, this was determined to be the only type of wear indicative of hide creasing or cutting on slate tools.

Four of the seven artifacts, EeBi-1:07554, EeBi-1:07556, EeBi-1:14287, and EeBi-1:15416, have edge rounding. Three artifacts, EeBi-1:15417, EeBi-1:19236, and EeBi-1:19745 do not have edge rounding. EeBi-1:15417 has edge scarring, and its control has edge scarring and striations. Due to the similarity between the edge scarring of the control tool and artifact, it was determined that the rounded working edge of EeBi-

1:15417 was unused. EeBi-1:19236 has significant edge scarring and striations on one of its working ends; its other working edge is badly damaged. As the control of EeBi-1:19236 lacks edge scarring, the artifact EeBi-1:19236 was likely either used for another task or damaged after deposition. EeBi-1:19745 has striations, and its control has edge scarring and striations. Due to the prominent striations on both tools, and the lack of other wear on EeBi-1:19745, it was determined that EeBi-1:19745 was likely unused.

Two of the artifacts with edge rounding, EeBi-1:15416 and EeBi-1:07554, also have edge scarring. This is atypical of hide creasing or cutting wear, and indicates that EeBi-1:15416 and EeBi-1:07554 were not used for these activities. However, the replica of EeBi-1:15416 also has edge scarring, though it is minor in comparison to that of the artifact. Theoretically, further use of the EeBi-1:15416 replica may have resulted in edge scarring as significant as that of the artifact, but with current evidence, it appears that EeBi-1:15416 and EeBi-1:07554 were used for an activity other than hide creasing.

EeBi-1:07556 has another wear marker, a blunted end. Its replica also has a blunted end, but as the replica's blunted end was caused by dropping the tool, it is likely that this is the cause of the blunted end of the artifact. Thus, blunted ends on pointed tools are not indicative or inconsistent with hide cutting activities.

To conclude, hide creasing or cutting generally only results in edge rounding wear, and smoothes away striations and edge scarring. Thus, tools without edge rounding, or with edge scarring and/or striations are not considered hide creasers or cutters. Thus, only two artifacts, EeBi-1:07556, and EeBi-1:14287, were determined to be used in hide scraping or cutting activities, as they have only edge rounding.

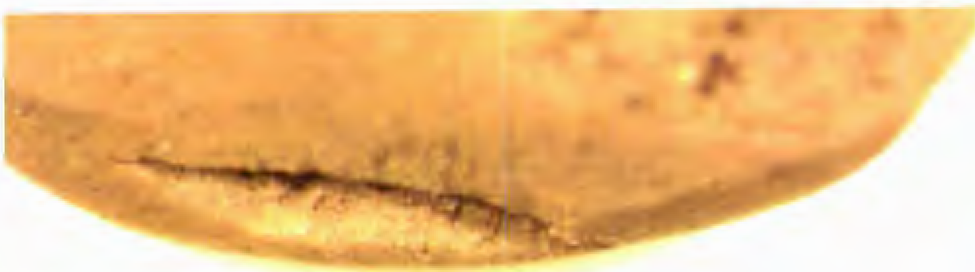
Figure 4.26: Types of microwear on the working edges of replicated rounded-tip tools from Phillip's Garden

Designation	Edge Scarring	Edge Rounding	Striations
EeBi-1:07554 Artifact	Y	Y	N
EeBi-1:07554 Control	N	N	Y
EeBi-1:07554 Used Reproduction	N	Y	N
EeBi-1:07756 Artifact	N	Y	N
EeBi-1:07756 Control	N	N	Y
EeBi-1:07756 Used Reproduction	N	Y	Y
EeBi-1:14287 Artifact	N	Y	N
EeBi-1:14287 Control	N	N	Y
EeBi-1:14287 Used Reproduction	N	Y	N
EeBi-1:15416 Artifact	Y	Y	N
EeBi-1:15416 Control	N	N	Y
EeBi-1:15416 Used Reproduction	Y	Y	N
EeBi-1:15417 Artifact	Y	N	N
EeBi-1:15417 Control	Y	N	Y
EeBi-1:15417 Used Reproduction	N	Y	N
EeBi-1:19236 Artifact	Y	N	Y
EeBi-1:19236 Control	N	N	Y
EeBi-1:19236 Used Reproduction	N	Y	N
EeBi-1:09745 Artifact	N	N	Y
EeBi-1:09745 Control	Y	N	Y
EeBi-1:09745 Used Reproduction	N	Y	N

EeBi-1:07554

Types of Wear Found on the Tools

EeBi-1:07554	Artifact	Control	Replica
Working edge	edge scarring, edge rounding	striations, diagonal to edge	edge rounding



Artifact: Working edge

Control: Working edge

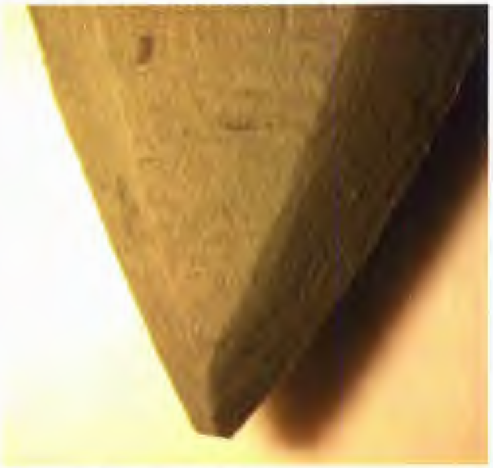
Replica: Working edge

EeBi-1:07556

Types of Wear Found on the Tools

EeBi-1:07556	Artifact	Control	Replica
Working edge	edge rounding	striations, parallel to edges	edge rounding, striations parallel to edges

Artifact: Working edge



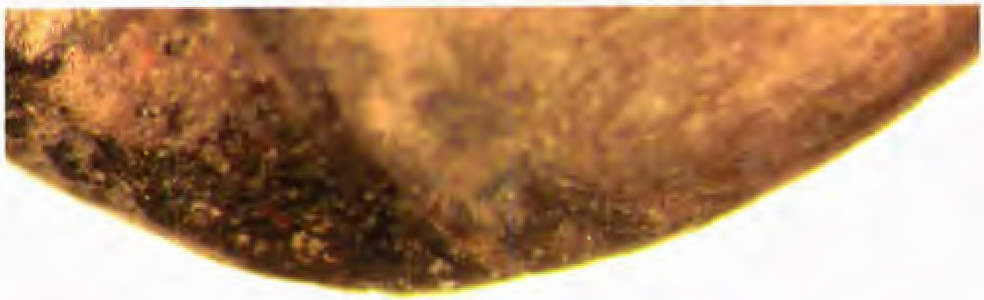
Control: Working edge

Replica: Working edge

EeBi-1:14218

Types of Wear Found on the Tools

EeBi-1:14287	Artifact	Control	Replica
Working edge	edge rounding	striations, diagonal to edge	edge rounding



Artifact: Working edge

Control: Working edge

Replica: Working edge

EeBi-1:15416

Types of Wear Found on the Tools

EeBi-1:15416	Artifact	Control	Replica
Working edge	edge scarring, edge rounding	striations, diagonal to edge	edge scarring, edge rounding

Artifact: Working edge

Control: Working edge

Replica: Working edge

EeBi-1:15417

Types of Wear Found on the Tools

EeBi-1:15417	Artifact	Control	Replica
Working edge	edge scarring	edge scarring, striations, diagonal to edge	edge rounding

Artifact: Working edge

Control: Working edge

Replica: Working edge

EeBi-1:19236

Types of Wear Found on the Tools

EeBi-1:19237	Artifact	Control	Replica
Working edge	edge scarring, striations diagonal to edge	striations, diagonal to edge	edge rounding

Artifact: Working edge

Control: Working edge

Replica: Working edge

EeBi-1:19745

Types of Wear Found on the Tools

EeBi-1:19745	Artifact	Control	Replica
Working edge	striations, diagonal to edges	edge scarring, striations, parallel to edges	edge rounding

Artifact: Working edge

Control: Working edge

Replica: Working edge

Rounded-Tip Tool and Multi-Tool Samples

The microwear of a rounded-tip tool sample were also examined, which included 15 common rounded-tip tools, 10 greater rounded-tip tools, 10 pointed tools, five perforated rounded-tip tools, and the rounded ends of five multi-characteristic tools.

Eleven common rounded-tip tool samples, 3, 5-10, and 12-15, have edge scarring. Thirteen samples, 1-5, 7-10, and 12-15, have edge rounding. No samples have striations (Figure 4.27). Only three samples, 1, 2, and 4, have only edge rounding, which is consistent with hide scraping activities. Six of the greater rounded-tip tool samples, 2, and 5-9, have edge scarring. Three samples, 1, 3 and 5, have edge rounding, and four samples, 2, 4, 6 and 10, have striations (Figure 4.28). Only two greater rounded-tip tool samples, 1 and 3, have only edge rounding, which is consistent with hide creasing.

All perforated rounded-tip tool samples have edge scarring, and four samples, 2-5, have edge rounding. No samples have striations (Figure 4.29). No perforated rounded-tip tools have only edge rounding. Five pointed tool samples, 1, 2, 5, 7 and 10, display edge scarring. Nine pointed tool samples, 1-9, have edge rounding, and one sample, 10, has striations associated with its working edges (Figure 4.30). Five pointed tool samples, 3, 4, 6, 8 and 9, have only edge rounding, which is consistent with hide cutting activities.

The rounded or pointed ends of 5 multi-characteristic tools were also examined. Of the five sampled multi-characteristic tools, four samples, 1 and 3-5 have edge scarring. Two samples, 2 and 5, have edge rounding. One sample, 1, has striations (Figure 4.31). Only one tool, sample 2, has solely edge rounding, which is consistent with hide creasing activities.

Figure 4.27: Microwear on the working edges of sampled common rounded-tip tools from Phillip's Garden

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A348D63	N	Y	N
2	EeBi-1:00489	N	Y	N
3	EeBi-1:04681	Y	Y	N
4	EeBi-1:06177	N	Y	N
5	EeBi-1:06181	Y	Y	N
6	EeBi-1:07555	Y	N	N
7	EeBi-1:07557	Y	Y	N
8	EeBi-1:08802	Y	Y	N
9	EeBi-1:09101	Y	Y	N
10	EeBi-1:09872	Y	Y	N
11	EeBi-1:10532	N	N	N
12	EeBi-1:10532	Y	Y	N
13	EeBi-1:13809	Y	Y	N
14	EeBi-1:17759	Y	Y	N
15	EeBi-1:19237	Y	Y	N

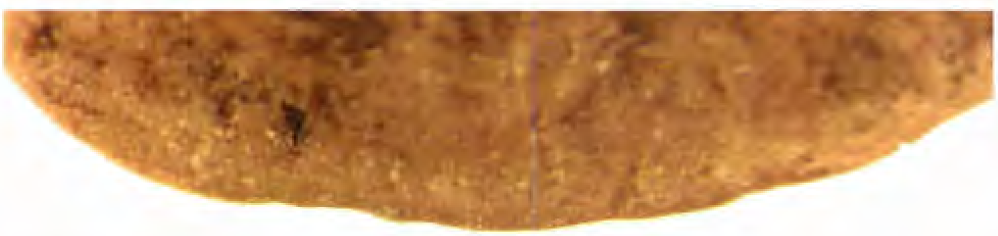
Microwear of Common Rounded-Tip Tool Samples, n=15

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A348D63	N	Y	N
2	EeBi-1:00489	N	Y	N
3	EeBi-1:04681	Y	Y	N
4	EeBi-1:06177	N	Y	N

Common rounded-tip tool sample 1: 7A348D63, working edge

Common rounded-tip tool sample 2: EeBi-1:00489, working edge

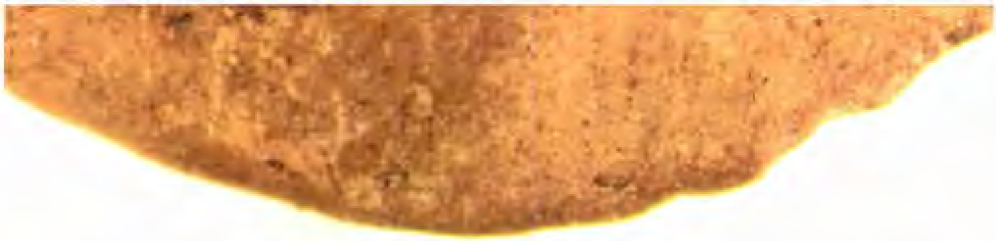


Common rounded-tip tool sample 3: EeBi-1:04681, working edge

Common rounded-tip tool sample 4: EeBi-1:06177, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
5	EeBi-1:06181	Y	Y	N
6	EeBi-1:07555	Y	N	N
7	EeBi-1:07557	Y	Y	N
8	EeBi-1:08802	Y	Y	N



Common rounded-tip tool sample 5: EeBi-1:06181, working edge

Common rounded-tip tool sample 6: EeBi-1:07555, working edge

Common rounded-tip tool sample 7: EeBi-1:07557, working edge

Common rounded-tip tool sample 8: EeBi-1:08802, working edge

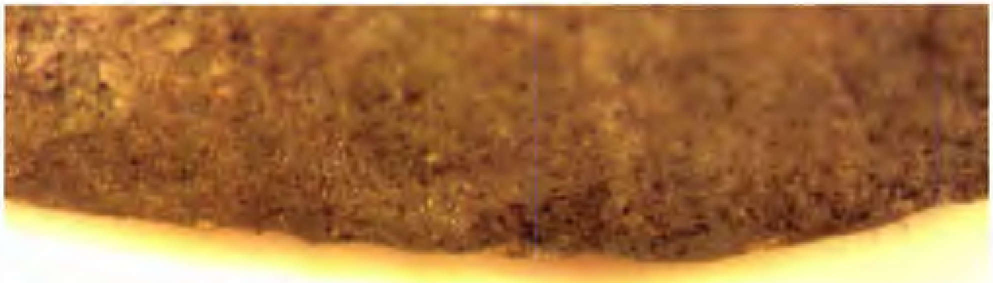
Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
9	EeBi-1:09101	Y	Y	N
10	EeBi-1:09872	Y	Y	N
11	EeBi-1:10532	N	N	N
12	EeBi-1:10532	Y	Y	N

Common rounded-tip tool sample 9: EeBi-1:09101, working edge

Common rounded-tip tool sample 10: EeBi-1:09872, working edge

Common rounded-tip tool sample 11: EeBi-1:10532, working edge



Common rounded-tip tool sample 12: EeBi-1:10532, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
13	EeBi-1:13809	Y	Y	N
14	EeBi-1:17759	Y	Y	N
15	EeBi-1:19237	Y	Y	N

Common rounded-tip tool sample 13: EeBi-1:13809, working edge

Common rounded-tip tool sample 14: EeBi-1:17759, working edge

Common rounded-tip tool sample 15: EeBi-1:19237, working edge

Figure 4.28: Microwear on the working edges of sampled greater rounded-tip tools from Phillip's Garden

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A221C40	N	Y	N
2	7A250A37	Y	N	Y
3	7A270C146	N	Y	N
4	7A351D2	N	N	Y
5	EeBi-1:06176	Y	Y	N
6	EeBi-1:06185	Y	N	Y
7	EeBi-1:15414	Y	N	N
8	EeBi-1:15418	Y	N	N
9	EeBi-1:19130	Y	N	N
10	EeBi-1:19301	N	N	Y

Microwear of Greater Rounded-Tip Tool Samples, n=10

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A221C40	N	Y	N
2	7A250A37	Y	N	Y

Greater rounded-tip tool sample 1: 7A221C40, working edge

Greater rounded-tip tool sample 2: 7A250A37, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
3	7A270C146	N	Y	N
4	7A351D2	N	N	Y
5	EeBi-1:06176	Y	Y	N
6	EeBi-1:06185	Y	N	Y

Greater rounded-tip tool sample 3: 7A270C146, working edge

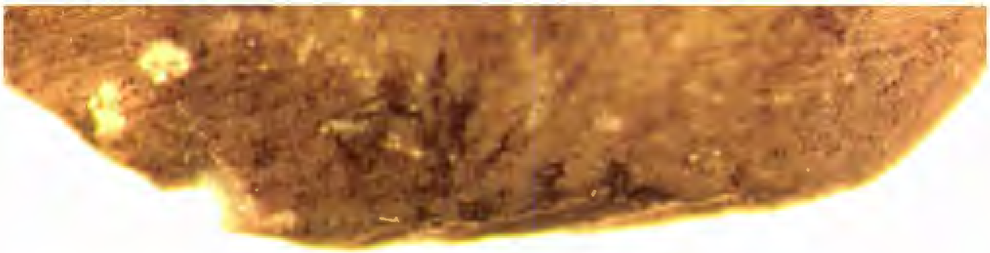
Greater rounded-tip tool sample 4: 7A351D2, working edge

Greater rounded-tip tool sample 5: EeBi-1:06176, working edge

Greater rounded-tip tool sample 6: EeBi-1:06185, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
7	EeBi-1:15414	Y	N	N
8	EeBi-1:15418	Y	N	N
9	EeBi-1:19130	Y	N	N
10	EeBi-1:19301	N	N	Y



Greater rounded-tip tool sample 7: EeBi-1:15414, working edge

Greater rounded-tip tool sample 8: EeBi-1:15418, working edge

Greater rounded-tip tool sample 9: EeBi-1:19130, working edge

Greater rounded-tip tool sample 10: EeBi-1:19301, working edge

Figure 4.29: Microwear on the working edges of sampled perforated rounded-tip tools from Phillip's Garden

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	EeBi-1:00487	Y	N	Y
2	EeBi-1:08360	N	Y	N
3	EeBi-1:08361	Y	N	N
4	EeBi-1:11365	Y	N	N
5	EeBi-1:28878	Y	Y	N

Microwear of Perforated Rounded-Tip Tool Samples, n=5

Types of Wear on Sampled Tools

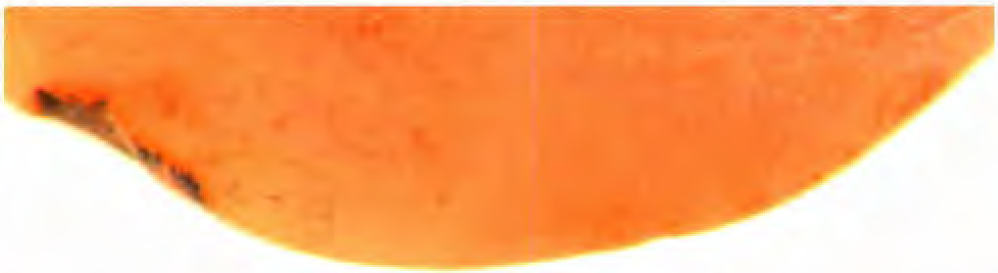
Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	EeBi-1:00487	Y	N	Y
2	EeBi-1:08360	N	Y	N

Perforated rounded-tip tool sample 1: EeBi-1:00487, working edge

Perforated rounded-tip tool sample 2: EeBi-1:08360, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
3	EeBi-1:08361	Y	N	N
4	EeBi-1:11365	Y	N	N
5	EeBi-1:28878	Y	Y	N



Perforated rounded-tip tool sample 3: EeBi-1:08361, working edge

Perforated rounded-tip tool sample 4: EeBi-1:11365, working edge

Perforated rounded-tip tool sample 5: EeBi-1:28878, working edge

Figure 4.30: Microwear on the working edges of sampled pointed tools from Phillip's Garden

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A221C9	Y	Y	N
2	7A249B346	Y	Y	N
3	7A270C353	N	Y	N
4	EeBi-1:07565	N	Y	N
5	EeBi-1:08587	Y	Y	N
6	EeBi-1:08588	N	Y	N
7	EeBi-1:08917	Y	Y	N
8	EeBi-1:19016	N	Y	N
9	EeBi-1:19291	N	Y	N
10	EeBi-1:19744	Y	N	Y

Microwear of Pointed Tool Samples, n=10

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	7A221C9	Y	Y	N
2	7A249B346	Y	Y	N

Pointed tool sample 1:
7A221C9, working edge

Pointed tool sample 2:
7A249B346, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
3	7A270C353	N	Y	N
4	EeBi-1:07565	N	Y	N
5	EeBi-1:08587	Y	Y	N
6	EeBi-1:08588	N	Y	N

Pointed tool sample 3:
7A270C353, working edge

Pointed tool sample 4:
EeBi-1:07565, working edge

Pointed tool sample 5:
EeBi-1:08587, working edge

Pointed tool sample 6:
EeBi-1:08588, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
7	EeBi-1:08917	Y	Y	N
8	EeBi-1:19016	N	Y	N
9	EeBi-1:19291	N	Y	N
10	EeBi-1:19744	Y	N	Y

Pointed tool sample 7:
EeBi-1:08917, working edge

Pointed tool sample 8:
EeBi-1:19016, working edge

Pointed tool sample 9:
EeBi-1:19291, working edge

Pointed tool sample 10:
EeBi-1:19744, working edge

Figure 4.31: Microwear on the rounded edges of sampled multi-characteristic tools from Phillip's Garden

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	EeBi-1:08792	Y	N	Y
2	EeBi-1:13836	N	Y	N
3	EeBi-1:15845	Y	N	N
4	EeBi-1:19002	Y	N	N
5	EeBi-1:20033	Y	Y	N

Microwear of Multi-Tool Samples, n=5

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
1	EeBi-1:08792	Y	N	Y
2	EeBi-1:13836	N	Y	N

Multi-tool sample 1: EeBi-1:08792, working edge

Multi-tool sample 2: EeBi-1:13836, working edge

Types of Wear on Sampled Tools

Sample #	Catalogue #	Edge Scarring	Edge Rounding	Striations
3	EeBi-1:15845	Y	N	N
4	EeBi-1:19002	Y	N	N
5	EeBi-1:20033	Y	Y	N

Multi-tool sample 3: EeBi-1:15845, working edge

Multi-tool sample 4: EeBi-1:19002, working edge

Multi-tool sample 5: EeBi-1:20033, working edge

4.5 Discussion

The hide processing experiments demonstrated that scraping and creasing/cutting hides produces identifiable wear on slate tools. The seven bevelled tools and multi-tool reproductions used to scrape hides display two consistent wear makers: edge rounding and edge scarring on the ventral face. Edge rounding appeared on all used replicas and no control tools. Edge scarring was present on control tools, but scars were generally wider and deeper on the used replicas. The edge scarring present on control tools is also different than the type of scarring is seen on the used replicas. The edge scarring on control tools is jagged, and is relatively narrow and deep, while the edge scarring on used reproductions, even those with significant scarring, is relatively shallow and wide. Some used replicas also have striations not seen on the control tools, but this type of wear is not consistently displayed by all tools used as hide scrapers. Therefore, striations on slate tools are likely caused by friction unrelated to hide scraping, such as manufacture.

The seven replica rounded-tip tools and multi-characteristic tools used to crease or cut hides consistently display edge rounding, and a *lack* of striations. All control tools lack edge rounding, and all used replicas display it. The striations present on all control tools were not present in six of the seven replicas. The single replica that has striations, EeBi-1:07556, has fewer than the control. Thus, hide creasing and cutting do not form striations, but removes them. Hide creasing and cutting also rarely form edge scarring, and in at least two cases, EeBi-1:15417 and EeBi-1:19745, edge scarring present on the control tools is no longer present on the used replicas. However, the replica of EeBi-1:15416 did have minor edge scarring, so it is possible, though unusual, for hide creasing activity to cause at least minor edge scarring. This might occur if, for example, a dry, unsoftened hide was creased, as Hayden (1979) noted that more wear was formed on scrapers when working with a dry hide than when working with a wet hide.

Eight of the 12 complete reproduced artifacts had microwear consistent with hide processing activities, including four bevelled tools, one multi-tool, and three rounded-tip tools. Four of the five complete reproduced bevelled tools, 7A249C363, 7A283A380, EeBi-1:06365, and EeBi-1:19318, have microwear consistent with hide scraping. The bevelled end of the single multi-tool tested, EeBi-1:15417, also has microwear consistent with hide scraping. Three of the six reproduced rounded-tip tools, EeBi-1:07554, EeBi-1:07756, and EeBi-1:14287, have microwear consistent with hide creasing or cutting. The rounded end of the single multi-tool tested, EeBi-1:15417, has microwear inconsistent with hide creasing or cutting; its microwear is consistent with no use.

The majority of the bevelled tools from the later sample, 27 of 30, also have microwear consistent with hide scraping activities (Figure 4.32). This total includes 14 stemmed bevelled tools and 13 unstemmed bevelled tools. Adding the replicated tools to the sampled tools does not significantly change these results, as the majority of bevelled tools as a whole and stemmed and unstemmed bevelled tools individually still have hide scraping wear (Figure 4.33). At least two of the three sampled bevelled tools that did not display wear consistent with hide scraping had little or no wear, as did EeBi-1:14016, the single replicated bevelled tool with wear inconsistent with hide scraping. Because of the lack of wear, it was determined that these tools were not used. Thus, only one of all the bevelled tools examined had wear that suggested a use other than hide scraping. This in turn indicates that the bevelled slate tools at Phillip's Garden were used almost exclusively as hide scrapers.

Only one third of the replicated rounded-tip tools have microwear consistent with hide creasing or cutting, and only a quarter of the sampled rounded-tip tools have microwear consistent with hide creasing or cutting. Thus, only 13 of all rounded-tip tools examined were potentially used as hide creasers or cutters, suggesting that hide working activities were not the sole or primary task for which this tool type was used. However, there was considerable variation among the four rounded-tip tool sub-types as to the percentage of tools used in hide scraping activities. The sampled pointed tools (*n*=10) had the highest percentage of tools with wear consistent with hide cutting, 50% (*n*=5). The sampled common rounded-tip tools (*n*=15) and greater rounded-tip tools (*n*=10) had the same percentage of tools with hide creasing wear; 20% (*n*=3 and *n*=2, respectively) of both sub-types have wear consistent with hide creasing. Finally, no perforated rounded-tip tools had hide creasing wear (Figure 4.32).

When one combines the results from the replicated rounded-tip tools and the sample tools, one finds the numbers much the same. Of the total tested pointed tools (*n*=12), 50% (*n*=6) have hide cutting wear. Of the total tested common rounded-tip tools (*n*=18), 22% (*n*=4) had hide creasing wear. Of total tested greater rounded-tip tools (*n*=10), 20% (*n*=2) have hide creasing wear. None of the replicated and sampled perforated rounded-tip tools (*n*=6) had hide creasing wear (Figure 4.33).

The wear on the bevelled ends and rounded or pointed ends of five sampled multi-characteristic tools were also examined, and one multi-tool was replicated. The bevelled ends were examined for hide scraping wear, and the rounded or pointed ends for hide creasing/cutting wear. The majority, 80% (*n*=4), of the sampled tools (*n*=5) had wear consistent with hide scraping, as did the single replicated multi-tool. The majority, 80% (*n*=4) sampled tools (*n*=5) did not have wear consistent with hide creasing or cutting; the rounded end of the single replicated multi-tool also had wear inconsistent with hide creasing or cutting (Figure 4.34). Thus, the combined total of sampled and replicated multi-characteristic tools (*n*=6) shows that the majority, 83% (*n*=5), were used to scrape hides, but a minority, 17% (*n*=1) were used to crease or cut hides (Figure 4.33). The fact that multi-characteristic tools were largely used as hide scrapers may indicate that they should be classified as a sub-type of bevelled tool rather than as their own type.

4.6 Conclusions

The majority of bevelled tools and multi-characteristic tools from Phillip's Garden were used as hide scrapers, as were the majority of multi-characteristic tools. This suggests that, as with the Inuit uluit, slate tools with unifacial bevels were primarily used as hide scrapers. While it is possible, or even likely, that bevelled tools were used for tasks other than or in addition to hide scraping, these tasks were infrequent or leave wear very similar to that of hide scraping, as only 3% (*n*=1) of sampled bevelled tools and 17% (*n*=1) of sampled multi-characteristic tools had wear inconsistent with hide scraping or disuse. If multi-characteristic tools were made a sub-type of bevelled tools, as is suggested above, on the basis of their unifacially bevelled edge and usewear, then only 5% (*n*=2) of the sampled bevelled tools had microwear inconsistent with hide scraping or disuse.

Figure 4.32: Number and percentage of sampled slate tools from Phillip's Garden with hide processing wear

Tool Type	*n* Tools with Hide Working Wear	*n* Tools with Other Wear	Total Tools	% Tools with Hide Working Wear
Bevelled Tool	27	3	30	90%
Stemmed Bevelled Tool	14	1	15	93%
Unstemmed Bevelled Tool	13	2	15	87%
Rounded-Tip Tool	10	30	40	25%
Common Rounded-Tip Tool	3	12	15	20%
Greater Rounded-Tip Tool	2	8	10	20%
Perforated Rounded-Tip Tool	0	0	5	0%
Pointed Tool	5	5	10	50%
Multi-Tool, Bevelled End	4	1	5	80%
Multi-Tool, Rounded End	1	4	5	20%

n= number

Figure 4.33: Number and percentage of sampled and replicated slate tools from Phillip's Garden with hide processing wear

Tool Type	*n* Tools with Hide Working Wear	*n* Tools with Other Wear	Total Tools	% Tools with Hide Working Wear
Bevelled Tool	31	4	35	89%
Stemmed Bevelled Tool	16	2	18	88%
Unstemmed Bevelled Tool	15	2	17	88%
Rounded-Tip Tool	12	34	46	26%
Common Rounded-Tip Tool	4	14	18	22%
Greater Rounded-Tip Tool	2	8	10	20%
Perforated Rounded-Tip Tool	0	6	6	0%
Pointed Tool	6	6	12	50%
Multi-Tool, Bevelled End	5	1	6	83%
Multi-Tool, Rounded End	1	5	6	17%

n= number

The results for rounded-tip tool use are more diverse than those of bevelled tools and multi-characteristic tools, but all results suggested that most rounded-tip tools were not used to crease or cut hides. Pointed tools had the highest number (*n*=5) and percentage (50%) of artifacts apparently used to crease or cut hides. At least 75% of the total sampled common rounded-tip tools, greater rounded-tip tools, and perforated rounded-tip tools were not used for hide creasing or cutting. Thus, while some rounded-tip tools, particularly pointed tools, were likely used to crease or cut hides, the majority of tools appear to have been used for different tasks. Unfortunately, due to the lack of literature addressing forms of usewear, and the causes behind them, on slate tools, what form(s) of use these wear markers indicate is unknown. Once it was established that a variety of slate tools were used in skin processing activities, even if some were used for other tasks, the spatial distribution of slate tools, as they relate to skin processing activities can be examined.

CHAPTER 5: TABULAR SLATE AT OTHER NEWFOUNDLAND DORSET SITES

> *"These [technological] choices will of course be guided by physical/ natural constraints (raw material availability, the intended function of the object and so on) but they will also and mostly be made within a specific social context. Each group of people will make their own choices that will result in the development of their own technological practices, the development of their own technological tendencies"* (Leblanc 2000:102)

In previous chapters, the slate tools from Phillip's Garden were examined through classification, microwear analysis, and spatial distribution. This chapter addresses the question of whether these findings are applicable outside Phillip's Garden. To determine whether the tabular slate typology could be expanded to include tools from other Newfoundland Dorset sites, the slate tool assemblages from four other sites were examined and placed into the Phillip's Garden typology, if it was applicable. The microwear of a small sample of bevelled tools and rounded-tip tools from two other Newfoundland Dorset sites were also examined, to determine if tools of the same type were used in the same manner at different Dorset sites. Spatial distribution analysis was not performed on any other site, however, as a brief survey of the literature and tools could not supply adequate information for detailed spatial analysis.

5.1 Classification

A brief survery of other Newfoundland Dorset sites revealed that slate tools or fragments are typically found on Dorset sites, but in very small numbers. However, in the assemblages of three other Dorset sites, Point Riche, Chest Head, and Cape Ray (Figure 5.1), slate tools and fragments were found in similar percentages to the 4% of Phillip's Garden (PAC Archaeology Project database). It is thought that these three sites were primarily used for seal hunting (Eastaugh 2002; Linnamae 1975; Renouf et al.

Figure 5.1: Sample of Dorset Sites (Map: PAC Archaeology Project)

2006); further information regarding each site is provided below. These sites also had well-documented slate assemblages and accessible collections. The artifacts from each collection were examined, and pictures were taken of identifiable slate tools. It was then determined whether the slate tools fit into the typology presented in Chapter 3. Slate fragments were generally not examined.

The Point Riche site, excavated by Eastaugh (2002), is on the Point Riche Peninsula, on the western coast of the Northern Peninsula (Figure 5.1). Point Riche was primarily a seal hunting site, as demonstrated by through the faunal assemblage; 92.6% of the recovered faunal material was identified as seal, and 98% of the sampled seal bone was identified as harp seal. This indicates that Point Rice was inhabited during the harp seal migrations in the winter and spring (Eastaugh 2002). It produced 2586 artifacts; 4% (n=112) of the collection is slate (Eastaugh 2002). Photographs were taken of the identifiable slate tools. The site also produced numerous slate fragments, which were not photographed or examined in detail. A cursory examination suggested that most of the fragmentary collection consisted of tabular or bevelled fragments.

Figure 5.2: Slate tools from Point Riche, Feature 1 (Photo: R. Knapp)

The Point Riche site had slate tools in midden Feature 1, house Features 7 and 8, and in test pits in unknown locations. Feature 1 had two identifiable slate tools (Figure 5.2). The tool on the left is a common rounded-tip tool, and the tool on the right is an unstemmed bevelled tool, as it has four unifacially bevelled edges. However, it is far larger than any unstemmed bevelled tool found at Phillip's Garden. Feature 8 had two tools (Figure 5.3); the tool on the left is a common rounded-tip tool, and the tool on the right a stemmed bevelled tool. Feature 7 produced, from top left to right: an unstemmed bevelled tool, two common rounded-tip tools, and a stemmed bevelled tool (Figure 5.4). Two slate tools were found in test pits (Figure 5.5); the tool on the left is an unstemmed bevelled tool, and that on the right a common rounded-tip tool.

Figure 5.4: Slate tools from Point Riche Feature 7 (Photo: R. Knapp)

Figure 5.5: Slate tools from Point Riche test pits (Photo: R. Knapp)

Chest Head is a Dorset site on the eastern side of the Northern Peninsula, near the town of Conche (Renouf et al. 2006). A large number of endblades and endblade preforms were found at the site, suggesting that its primary function was hunting, and herds of harp seals are known to pass by the area during their spring migration north. The combination of available seals and large numbers of endblades suggests that Chest Head was a seal hunting site (Renouf et al. 2006).

Figure 5.6: Rounded-tip tools from the Chest Head site (Photo: R. Knapp)

Chest Head produced 1,126 artifacts, of which approximately 4% (n=43) were slate (PAC Archaeology Project database). There was access to the Chest Head collection, and photographs were taken of the artifacts. The Chest Head artifacts, unlike those from Point Riche, are not arranged by dwelling or midden features, as the site was heavily disturbed (Renouf et al. 2006), but by type. Figure 5.6 shows, from left to right, one greater rounded-tip tool and three common rounded-tip tools. Figure 5.7 is a burin-like tool; burin-like tools are fairly common at Phillip's Garden, but are usually made of nephrite. Figure 5.8 shows a tool which does not fit easily into any of the Phillip's Garden slate types. It might be classified as either an atypical slate point or a stemmed bevelled tool, but it is likely a different tool type or a preform. Finally, Figure 5.9 shows two partial unstemmed bevelled tools.

Figure 5.7: Slate burin-like tool from the Chest Head Site (Photo: R. Knapp)

Figure 5.8: Unidentified slate tool from the Chest Head site (Photo: R. Knapp)

Figure 5.9: Bevelled tools from the Chest Head site (Photo: R. Knapp)

Linnamae (1975) and Fogt (1998) excavated the Cape Ray site, which is located near Port aux Basques in southern Newfoundland (Figure 5.1). This section will only discuss Linamae's (1975) work, as Fogt (1998) unearthed few slate tools. Cape Ray was likely a seal hunting site; harp seals pass by the site in the spring, and a number of hunting and butchering tools were found at the site. Unlike Point Riche and Chest Head, however, the inhabitants of Cape Ray likely heavily exploited other resources as well; the site is near both Atlantic salmon spawning waterways and caribou migration routes (Linnamae 1975). The Cape Ray site has 4797 artifacts, of which 3% (n=148) were slate tools or fragments. Linnamae (1975) identified seven of the slate tools as triangular endblades, seven as notched endblades, six as gravers, five as bevelled-edged knives, two as stemmed scrapers or adzes, three ground and chipped triangular endblades, one ground and chipped adze or celt, three miscellaneous beveled tools, and 114 slate fragments.

Figure 5.10: Rounded-tip tools from the Cape Ray site (Artifacts: The Rooms Provincial Museum; Photo: R. Knapp)

Linnamae's (1975) collection is housed at The Rooms Provincial Museum, and is available for study, so the slate assemblage was examined and the identifiable slate tools were photographed. Figure 5.10 displays six rounded-tip tools, including three pointed tools (top far left, and bottom left and right), two common rounded-tip tools (top middle),

Figure 5.11: Rounded-tip tools from the Cape Ray site (Artifacts: The Rooms Provincial Museum; Photo: R. Knapp)

Figure 5.12: Bevelled fragments from the Cape Ray site (Artifacts: The Rooms Provincial Museum; Photo: R. Knapp)

Figure 5.13: Slate tools from the Cape Ray site (Artifacts: The Rooms Provincial Museum; Photo: R. Knapp)

and one greater rounded-tip tool (top far right). Figure 5.11 has three additional rounded-tip tools, including two common rounded-tip tools (left and middle) and one greater rounded-tip tool (right). Two fragmentary bevelled tools are shown in Figure 5.12. Figure 5.13 shows two stemmed bevelled tools (top left and middle), an unstemmed bevelled tool (top right), and three burin-like tools (bottom). A number of bevelled fragments were also identified; four of the larger pieces are shown in Figure 5.14. Finally, the Cape Ray collection had one tool that did not fit the Phillip's Garden slate typology, which is shown in Figure 5.15. A number of slate points were identified, but were not photographed, as they fall outside the Phillip's Garden slate typology.

Figure 5.14: Slate fragments from the Cape Ray site
(Artifacts: The Rooms Provincial Museum; Photo: R. Knapp)

Figure 5.15: Slate tool from the Cape Ray site (Artifacts: The Rooms Provincial Museum; Photo: R, Knapp)

5.2 Microwear

To determine if the tabular slate tools from other Newfoundland Dorset sites were used in the same way as those from Phillip's Garden, the microwear of slate tools from Point Riche and Chest Head were examined. This analysis included seven bevelled tools, five from Point Riche and two from Chest Head, and five rounded-tip tools, two from Point Riche and three from Chest Head. The results of this examination proved similar to that of the Phillip's Garden tools; most bevelled tools were used to scrape hides, and most rounded-tip tools were not used to crease or cut hides.

Five of the seven 71% bevelled tools examined (Figures 5.17 to 5.24), three from Point Riche and two from Chest head, had edge scarring and edge rounding, wear indicative of hide scraping. Two tools, 7A555A8 and 7A525A11, did not have edge scarring and edge rounding. 7A555A8 had only edge rounding, while 7A525A11 had only edge scarring and striations. As minor edge scarring and striations are often found on unused bevelled tools, it is possible that 7A525A11 was never used. 7A555A8 however, has edge rounding, which is never found on unused tools, but is the marker of hide creasing or cutting. As 7A555A8 does not have a distinct bevel, it is possible that this tool was misclassified, and is actually a rounded-tip tool.

Both bevelled tools not used as hide scrapers were from Point Riche, which affected the percentage of bevelled slate tools used as hide scrapers on the individual sites. Only three of the sampled Point Riche bevelled tools were used as hide scrapers, while both sampled bevelled tools from Chest Head were. Despite this difference, the majority of bevelled tools from both sites were used as hide scrapers.

Figure 5.16: Types of wear found on beveled slate tools from the Point Riche and Chest Head Sites

Catalogue #	Edge Scarring	Edge Rounding	Striations
7A252A11	Y	N	Y
7A252C2-7	Y	Y	N
7A547A349	Y	Y	Y
7A547B147	Y	Y	N
7A555A8	N	Y	N
EfAx-2:731	Y	Y	N
EfAx-2:2024	Y	Y	Y

Types of wear found on beveled tools from Point Riche and Chest Head

Catalogue #	Edge Scarring	Edge Rounding	Striations
7A252A11	Y	N	Y

Figure 5.17: Working edge, ventral face of 7A252A11, a bevelled tool from Point Riche (Photo: R. Knapp)

Types of wear found on beveled tools from Point Riche and Chest Head

Catalogue #	Edge Scarring	Edge Rounding	Striations
7A252C2-7	Y	Y	N
7A547A349	Y	Y	Y
7A547B147	Y	Y	N

Figure 5.18: Working edge, ventral face of 7A252C2-7, a bevelled tool from Point Riche (Photo: R. Knapp)

Figure 5.19: Working edge, ventral face of 7A547A349, a bevelled tool from Point Riche (Photo: R. Knapp)

Figure 5.20: Working edge, ventral face of 7A547B147, a bevelled tool from Point Riche (Photo: R. Knapp)

Types of wear found on beveled tools from Point Riche and Chest Head

Catalogue #	Edge Scarring	Edge Rounding	Striations
7A555A8	N	N	N
EfAx-2:731	Y	Y	N
EfAx-2:2024	Y	Y	Y

Figure 5.21: Working edge, ventral face of 7A555A8, a bevelled tool from Point Riche (Photo: R. Knapp)

Figure 5.22: Working edge, ventral face of EfAx-2:731, a bevelled tool from Chest Head (Photo: R. Knapp)

Figure 5.23: Working edge, ventral face of EfAx-2:2024, a beveled tool from Chest Head (Photo: R. Knapp)

All five tested rounded-tip tools have edge rounding (Figure 5.25 to 5.30). Three of the tools have edge scarring, and only one has striations. Only two of the five tested rounded-tip tools, 7A525C28 from Point Riche and EfAx-2:796 from Chest Head, have only edge rounding, which is indicative of hide creasing or cutting activities. All other tools have, at least, edge scarring in addition to edge rounding. This indicates that, as at Phillip's Garden, most rounded-tip tools were not used for hide creasing or cutting, though the percentage of rounded-tip tools used for these activities is greater than at Phillip's Garden. However, the percentages of tools used as hide creasers or cutters also differed between the sites, with half of the rounded-tip tools from Point Rich having wear indicative of hide creasing or cutting activities. This may, though, be a result of the small sample size from Point Riche, which consisted of two rounded-tip tools. Chest Head, which had a slightly larger sample size (n=3), had only one tool with creasing or cutting wear.

Though the percentages of bevelled tools and rounded-tip tools used for hide processing activities are different at Point Riche, Chest Head and Phillip's Garden, the overall view of these sites suggests that bevelled tools were generally used as hide scrapers by the Newfoundland Dorset, and rounded-tip tools were generally not used to crease or cut hides. The difference in percentages are also likely influenced by the diverse sample sizes; far more samples were examined from Phillip's Garden than either Chest Head or Point Riche, and there were differences in the numbers of rounded-tip tools and bevelled tools between Point Riche and Chest Head.

Figure 5.24: Types of wear found on rounded-tip slate tools from the Point Riche and Chest Head Sites

Catalogue #	Edge Scarring	Edge Rounding	Striations
7A525C28	N	Y	N
7A544B226	Y	Y	Y
EfAx-2:729	Y	Y	N
EfAx-2:796	N	Y	N
EfAx-2:2020	Y	Y	N

Types of wear found on rounded-tip tools from Point Riche and Chest Head

Catalogue #	Edge Scarring	Edge Rounding	Striations
7A525C28	N	Y	N
7A544B226	Y	Y	Y

Figure 5.25: Working edge of 7A525C28, a rounded-tip tool from Point Riche (Photo: R. Knapp)

Figure 5.26: Working edge of 7A544B226, a rounded-tip tool from Point Riche (Photo: R. Knapp)

Types of wear found on rounded-tip tools from Point Riche and Chest Head

Catalogue #	Edge Scarring	Edge Rounding	Striations
EfAx-2:729	Y	Y	N
EfAx-2:796	N	Y	N
EfAx-2:2020	Y	Y	N

Figure 5.27: Working edge of EfAx-2:729, a rounded-tip tool from Chest Head (Photo: R. Knapp)

Figure 5.28: Working edge of EfAx-2:796, a rounded-tip tool from Chest Head (Photo: R. Knapp)

Figure 5.29: Working edge of EfAx-2:2020, a rounded-tip tool from Chest Head (Photo: R. Knapp)

5.3 Discussion

The above sections demonstrate that the tabular slate tools from other Newfoundland Dorset seal hunting sites fit into the same types as those from Phillip's Garden. The microwear analysis of tools from Chest Head and Point Riche also indicate that bevelled tools from other Newfoundland Dorset sites were used to scrape hides, as were those from Phillip's Garden. Some rounded-tip tools from Point Riche and Chest Head were used as hide creasers or cutters, as were some from Phillip's Garden. Unfortunately, the use(s) of most rounded-tip tools have not been established, and thus the usewear from Phillip's Garden and other Dorset sites cannot yet be compared. That said, in general, it appears that Dorset tabular slate tools have similar forms throughout Newfoundland, and that bevelled tools were usually used for the same tasks at all sampled sites.

However, it is suggested that tabular slate tools were related to seal processing activities, as bevelled tools throughout Newfoundland were used as hide scrapers, and tabular slate tools appear regularly on seal hunting sites. Like endblades and microblades, bevelled slate tools and rounded-tip tools appear regularly at seal hunting sites.

Additionally, although Newfoundland Dorset slate tools are generally similar in form, there is evidence of regional variations, as is seen among other Dorset tool types (LeBlanc 2000; Robbins 1985). For example, the unstemmed bevelled tool from Chest Head (Figure 5.16) has curved scraping edges, while the same tool type at Phillip's Garden has strait edges. Still, the variations between tools are relatively minor, considering the variability of tools within the Phillip's Garden collection, and the tools are recognizable as being of the same types as those from Phillip's Garden.

From the above photographs, I would suggest that the classification system presented in this thesis can be expanded to include the slate tools from other Newfoundland Dorset sites, though there are some tools that do not fit into the typology. There are also some regional variations in form, but there are regional variations in other Dorset tool types throughout Newfoundland and the Arctic (Linnamae 1975; LeBlanc 2000; Robbins 1985). These variations may temporal, but there is no academic literature addressing temporal variability of Newfoundland Dorset tools, and the examination of tools from Phillip's Garden did not indicate any significant change over time. Also, despite the variations, the tool types are still clearly recognizable. Whether the presented classification system is applicable outside Newfoundland is still unknown, but on the island, it thus far appears to be fairly accurate. Further analysis of Dorset slate tools throughout Newfoundland may prove that the presented classification system has limited scope.

5.4 Conclusion

The tabular slate tools from other Newfoundland Dorset seal hunting sites fit into the tabular slate typology created for Phillip's Garden. This indicates that the typology is applicable throughout Newfoundland, though it may require expansion as additional tabular slate tools are recovered. Currently, however, it appears that the tabular slate tool typology created in Chapter 3 can be used to classify Dorset tabular slate tools throughout Newfoundland.

The microwear of rounded-tip and bevelled tools from two additional sites, Chest Head and Point Riche, were also examined. The majority of bevelled tools from both sites were used as hide scrapers, as were the majority of bevelled tools from Phillip's Garden. Thus, it appears that bevelled tools were widely used as hide scrapers by the Newfoundland Dorset. The results regarding rounded tip tools were more ambiguous. A minority of rounded-tip tools from Chest Head and Point Riche were used to crease or cut hides, as were a minority of rounded-tip tools from Phillip's Garden. While this suggests that one of the functions of rounded-tip tools was hide creasing or cutting throughout the island, the primary function(s) of rounded-tip tools from Phillip's Garden is still unknown, and therefore cannot be compared to that of rounded-tip tools from other sites. Therefore, further analysis of rounded-tip tool use needs to be delayed until further experimental microwear research is completed, and the use(s) of rounded-tip tools determined. Still, it appears that Dorset tabular slate tools have relatively consistent forms and functions throughout Newfoundland.

Chapter 6: Spatial Distribution of Tabular Slate Tools at Phillip's Garden

> *"Humans are creatures of patterns– our cultural material is patterned, our behaviour is patterned, our culture is patterned, and the interrelationship among cultural material, behaviour, and culture is patterned. Most importantly for this book, our use of space is patterned"* (Kent 1987).

Cultural ideals or practices are often reflected in the spatial distribution of artifacts. Artifacts are part of a site's "built environment," a category that also includes features, dwellings, and other site remains. The built environment of a site reflects the culture that created it, including that culture's conception of households, gender and gender roles, cosmology, division of labour, and status (Brooks and Yellen 1987; Gnivecki 1987; Oswald 1987; Whitridge 2004). Therefore, if activity areas are preserved at Phillip's Garden, they reflect Dorset cultural ideals, including gendered space and cosmology, as they relate to skin processing.

This chapter examines the spatial distribution of tabular slate tools and fragments at Phillip's Garden because they show where skin processing activities took place. Through statistical spatial analysis and the analysis of depositional context, it was determined that activity areas were preserved both inside and outside dwellings. Inside the dwellings, activity areas were most prevalent in the central area, and outside the dwellings, activity areas were most often found to the east and west.

When skin processing activity areas were identified, gendered and cosmological space could be examined. As described in Chapter 2, skin processing and sewing were gendered tasks in many hunter-gatherer societies, and female tasks in circumpolar groups (Issenman 1997; Oakes and Riewe 1998; Thompson 1994). While we cannot be certain that skin processing was undertaken by Dorset women, the pattern of skin processing as women's work in circumpolar cultures suggests that skin processing was a female task. Circumpolar cultures also linked skin processing activities and cosmology. Cosmological beliefs and taboos can determine such things as who can process hides, what time of the year processing can occur, and at which sites processing activities can take place. It is possible that Dorset cosmology also influenced the placement of skin processing activities.

Activities are identifiable in the archaeological record through a number of factors, including discarded tools. Activity areas can also be preserved in the archaeological record and detected by examining tool clusters. Although tools can be discarded in areas only associated with waste disposal, such as middens, tools can also be found in the same area in which they were used. Ethnographic analysis and ethnoarchaeology have demonstrated that tools can be discarded, buried or lost in their use-area. Thus, artifact clusters may be indicative of activity areas, as well as midden areas (Brooks and Yellen 1987).

Because of the presence of slate scrapers, we know skins were processed at Phillip's Garden. The distribution of artifacts only reflects activity patterns if some artifacts remain in the location where they were originally discarded, that is, in primary [depositional] context. If artifacts are in secondary depositional context, if they are no longer in their original discard location, they only define discard areas. Artifacts are less likely to be in primary context if a site is reoccupied or if it is occupied for a long period of time (Brooks and Yellen 1987). As Phillip's Garden was reoccupied over a span of

700 years (Renouf 1999, 2006), it is likely that many of its artifacts are in secondary context.

Not only was the site of Phillip's Garden reoccupied, but houses were reused as well. For example, Renouf (2006) argues that House 2 was occupied for approximately 200 years, based on several radiocarbon dates. Even after they were abandoned, dwellings were used in new ways. For example, the central depression of House 18 may have been reused as the interior area of a summer tent-structure, as there is a ring of small post- or stake holes inside the centre of the larger dwelling (Cogswell 2006). Other dwellings were used as middens; some, detected through the use of ground penetrating radar, are completely filled with middens (Cogswell 2006; Renouf 2007). Therefore, a number of the artifacts recovered in Phillip's Garden's houses may be in secondary context through the disturbance or reuse of dwellings. Depositional context is vitally important when examining space at Phillip's Garden.

6.1 A Brief History of Spatial Distribution in Archaeology

Spatial distribution analysis was not widely used by archaeologists until the 1970s, when a number of researchers published reports regarding the use of statistical methods in spatial analysis (Hodder 1976; Pinder et al 1979; Whallon 1973, 1974). These papers generally concentrated on relatively simple statistical methods, most notably nearest neighbour analysis (Hodder 1976; Pinder et al 1979; Whallon 1973, 1974).

During the 1980s, archaeologists began looking beyond nearest neighbour for more accurate and advanced methods, such as k-means analysis, which they hoped would better identify activity areas, artifact clusters, or site clusters (Kintigh and Ammerman 1982; Siegel and Roe 1986; Voorips and O'Shea 1987; Whallon 1984). Other authors used simpler spatial distribution methods in conjunction with ethnoarchaeology to gain perspective on activity areas and their reflection of the culture that produced them (Brooks and Yellen 1987; Gnivecki 1987; Kent 1987; Oswald 1987).

The proliferation of spatial analysis research ended in the early 1990s. Few articles regarding spatial analysis were published, and those articles generally examined previously introduced spatial analysis techniques (Kintigh 1990, Blankholm 1991).

The late 1990s showed a renewal of interest in the study of spatial distribution, which has carried into the 2000s. Current spatial analysis articles utilize a number of methods, from relatively simple to complex quantitative techniques, and usually consider ethnographic information or ethnoarchaeology to better understand the site's cultural context (e.g. Baales 2001; Bowser and Patton 2004; Cassell 2005; Craig et al 2006; Farid 2001; Fisher and Farrelly 1997; Lavachery and Cornellisen 2000; Logan and Hill 2000; Meskell 1998; Ollive et al 2007; Pugh 2003; Shahack-Gross et al 2004; Whitridge 2004).

The methodology used in this chapter is k-means analysis. This chapter also incorporates ethnographic and ethnoarchaeological examinations of gender and cosmology as ways to understand and interpret the placement of skin processing activity areas, a practice that has also been used since the 1980s.

6.2 Spatial Distribution and Culture

The spatial distribution of artifacts and features has been used to explore questions of space as they relate to gender, status, socio-economic class, and cosmology in archaeology. Houses can be particularly revealing, as they reflect and represent the lives of the people who lived there, including their work, emotions, community and cosmology (Whitridge 2004). A number of case studies illustrate how spatial distribution of artifacts or other features can reflect these cultural ideals. An examination of studies dealing with social ideals as they are reflected in dwellings, or artifacts associated with dwellings, provides background information for the analysis of gendered and cosmological space at Phillip's Garden.

Oswald (1987) examined the relationship between the patterns of architecture on Zulu homesteads in the Natal province in eastern South Africa, and the socio-economic status of the owners. She found that the layout of the homestead depends on the socio-economic status of the individuals living within it, and where a person places their dwelling is directly connected to their rank within the family. For example, all structures in a homestead are positioned in relation to the Great Hut, the most important building, according to their status, with those of highest status near the Great Hut. A woman's status is also indicated by the number of functionally specific structures she owns; a woman may have a kitchen, beer kitchen, and granary structure. If she does not have a kitchen or granary (beer kitchens are optional) she is still economically dependant on her mother-in-law, as she must utilize the elder woman's kitchen and granary. Thus, the number of functionally-specific structures a Zulu woman possesses reflects her economic independence and status (Oswald 1987).

Meskell (1998) examined male and female space in the Egyptian New Kingdom settlement of Deir el Medina. She found that the first room seen upon entry into Deir el

Medina dwellings is female-oriented and focussed on female sexuality, while the second room in Deir el Medina dwellings is male-oriented. Dwellings at Deir el Medina also typically included two other rooms behind the male and female oriented rooms, which Meskell (1998) termed the domestic and processing rooms, and were typically utilitarian, with no decoration. Through textual evidence, it is known that servants and slaves used the domestic and processing rooms. While general social and functional activities may have occurred in all rooms in the dwelling, it is clear that overt sexual display in architecture was associated with higher class individuals (Meskell 1998).

Whitridge (2002, 2004) examined the spatial distribution of gendered artifacts from the Thule whaling site of Qariaraqyuk. He found that female artifacts were primarily associated with dwellings, while male artifacts were more widespread. Further analysis demonstrated that, within the dwelling, women's artifacts were primarily found in the kitchen and in the entrance passage. Men's artifacts were found on the sleeping platform and entrance passage of the dwelling, and throughout the Qargi, the community ceremonial structure. Whitridge (2002, 2004) related this artifact distribution to gendered status, stating that the "relative isolation" of female work indicated that Thule women held lower than Thule men (Whitridge 2002, 2004).

Bowser and Patton (2004) examined the public aspects of households. Houses are generally viewed as private areas, but Bowser and Patton (2004) hypothesized that houses are also public places. They examined the social life and household structure in Conambo, Equador. Dwellings are oval, single-family structures with well-defined male and female areas. One end of the dwelling contains a female-associated kitchen, with a hearth and beer jars, while the other is male-associated, with visitor benches. The kitchen is where women entertain female guests, and male guests are entertained on the visitor benches by the male family member(s). When guests visit, male guests stay on the male half of the dwelling, while the women of the household can cross the boundary to serve beer and food. This division would likely be visible archaeologically, as male tools are concentrated in the male portion of the house, and female-associated objects in and around the kitchen (Bowser and Patton 2004).

These works provide context for the examination of space as it relates to and is expressed by gender. They prove that social constructs are reflected in dwelling space and artifact distribution. If distinctive patterns are found in the distribution of tabular slate tools at Phillip's Garden, they will reflect the patterns of skin processing activities at the site, which may reflect gendered and cosmological space. Studies regarding cosmological influence on the spatial distribution of artifacts are not discussed, as none were found; few archaeological aricles deal with cosmology or religion in any aspect.

6.3 Depositional Context

Depositional context is the primary difficulty facing the spatial analysis of artifacts and identification of activity areas at Phillip's Garden, as activity areas can only be identified if artifacts remain in primary context. The longer a site is inhabited, the less likely it is that artifacts are in primary context, and Phillip's Garden was intensively inhabited for approximately 700 years. Judging by the radiocarbon dates from Houses 2, House 10 and Feature 55,[1] dwellings were sometimes inhabited for several generations.

1

The radiocarbon dates from the dwellings suggest that House 2 was inhabited for (approximately) 45 to 240 years, House 10 for 21 to 199 years, and Feature 55 up to 240 years (Renouf 2006). To complicate matters further, except in a few instances (Harp 1976; Renouf 2006), there is no or minimal stratigraphy separating occupation periods (Renouf 1986, 1992).

Other factors suggest that a number of artifacts in Phillip's Garden are in secondary depositional context. Some dwellings include midden fill within their central depressions, suggesting that they were used as middens after their abandonment (Renouf 2006). Furthermore, the freeze-thaw cycle can alter the position of artifacts below or on the surface; if artifacts are on or near the surface, they can change position in as little as three years (Hilton 2003). Artifacts in Phillip's Garden dwellings can be found directly below the sod level, close to the surface (Renouf 1986, 1992). These circumstances suggest that most artifacts recovered from dwellings at Phillip's Garden may be in secondary context. Articles dealing with depositional context, three of which are described below, were examined in an effort to determine how other archaeologists have determined depositional context in spatial analysis studies.

Siegel and Roe (1986) were concerned with the problem of separating primary and secondary depositional context refuse. They set their study in two abandoned house

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Radiocarbon dates for House 2 are: 1593±49 BP (P-683), 1640±70 BP (Beta-160975), 1659±48 BP (P-693), and 1736±48 BP (P-692). Radiocarbon dates for House 10 are: 1602±49 BP (P-694) and 1712±40 BP (P-695). Radiocarbon dates for Feature 55 are: 1360±80 BP (Beta-160977), 1370±90 BP (Beta-66436), 1410±100 BP (Beta 66435), and 1480±40 BP (Beta-160976) (Renouf 2006).

compounds within a Shipibo village in the rainforests of Peru. One house compound was recorded ethnographically by DeBoer and Lathrap (1979), but was currently abandoned and had begun to acquire refuse. The second compound was recently abandoned, and thus had not begun its second life as a midden. They studied the spatial distribution of both areas through k-means analysis to better understand the positioning of artifact clusters and activity areas (Siegel and Roe 1986). Siegel and Roe (1986) determined that the intensity of a site's use and reuse was one factor that affected the deposition and positioning of primary and secondary refuse.

Lavachery and Cornelissen (2000) attempted to discern differences between blurred levels at that Shum Laka rock shelter in Cameroon, a Grassfields site with dates ranging from 4500 BP to 500 BP. The occupation level was a layer of ash, at some places 65 cm in depth, in which hundreds of thousands of artifacts were found. The occupation level was disturbed by postdepositional factors, including flooding and later human activity. However, there was a stratigraphically consistent sequence of radiocarbon dates through the ash layer, suggesting that the layer was not completely disturbed. To determine the effect humans and the environment had on the ash layer and the artifacts it contained, the authors examined the spatial distribution of lithics and pottery sherds (Lavachery and Cornelissen 2000).

A visual analysis of the distribution showed an arc of artifacts and debris at the bottom of the ash layer, four burials and some other artifact clusters. The artifact clusters could have been formed by cultural means or later disturbance. Lithic clusters were then analysed, as they are generally the remains of activity areas, refuse areas or natural accumulation zones. The lithics were sorted into two size groups: those larger than 2 cm, and those smaller. The proportion of small lithics was greatest in the top layer of ash, and the least at the bottom, which implied that the vertical layering was undisturbed by natural processes, as smaller artifacts tend to shift to the lower layers if the vertical depositional context is disturbed. However, the horizontal depositinal context was compromised, as most small lithics were grouped near the entrance, while most larger lithics were at the back of the rockshelter. This is characteristic of materials influenced by fluvial action. The arc of large lithics at the back may also have been the result of human action, as ethnoarchaeological studies have demonstrated the tendency of humans to deposit larger debitage in secondary refuse contexts (Lavachery and Cornelissen 2000).

Lavachery and Cornelissen (2000) also attempted to refit the pottery sherds from the grey ash layer. They found that refitted pottery sherds came in three 15 cm levels. This evident disturbance could have been caused by either natural or cultural factors. However, no horizontal disturbance was identified. Thus, while the site still maintained some vertical primary depositional context, it was disturbed horizontally and vertically, by both natural and cultural factors (Lavachery and Cornelissen 2000).

Archaeologists using statistical spatial analysis techniques are not the only group to discuss depositional context; those engaging in ethnoarchaeological research also consider depositional context, and have made useful discoveries. Foragers and/or hunter-gatherers usually live in small bands, but are known to aggregate for periods on a regular basis. Depending on the group in question, the length of the aggregation period will vary, as will the frequency of the aggregation itself (Conkey et al 1980; Brooks and Yellen 1987; Mandryk 1993). Despite the increase in population density on aggregation sites, population sizes are still small, usually consisting of, at most, 100 individuals. Therefore, the daily amount of debris generated is relatively small (Brooks and Yellen 1987). Because of the small amount of debris produced by mobile hunter-gatherers, even at aggregation sites, activity areas are less affected by the length of individual occupations than by the placement of activity areas in reoccupation periods. If activities are generally carried out in the same locations during a site or dwelling's entire period of occupation, activity areas are still identifiable. However, if the location of activities changes over time, activity areas become less distinguishable (Brooks and Yellen 1987).

With an occupation period spanning 700 years, is there any chance that artifacts at Phillip's Garden remain in primary depositional context, and form identifiable activity areas? In summary, ethnographic evidence (Conkey et al 1980; Brooks and Yellen 1987; Mandryk 1993) suggests that a number of factors influence the presence of identifiable activity areas and artifacts in primary context on reoccupied sites; two that are particularly relevant to the situation at Phillip's Garden are discussed here. The first is the length of each occupation. The longer the individual periods of occupation, the more likely it is that artifacts are in secondary context; longer occupation events are characterized by secondary refuse removal, whereas this activity is less likely to occur on sites with short individual occupations. The second factor is whether activities were performed in the same locations throughout the occupations (Brooks and Yellen 1987). If some dwellings were occupied for only short periods of time, and activities were undertaken repeatedly in similar locations, a number of activity areas may be preserved, despite Phillip's Garden's 700 year occupation span.

6.4 Methodology

K-means analysis was the spatial analysis technique chosen to analyse the spatial distribution of slate artifacts from Phillip's Garden. K-means is a widely used cluster analysis technique, and has proved itself effective in a number of studies (Blankholm 1991; Farid 2001; Kintigh 1990; Siegel and Roe 1986). Other spatial distribution methodologies, such as nearest neighbour and unconstrained clustering, could also have identified artifact clusters and activity areas, but k-means analysis was deemed more effective in identifying individual activity areas than unconstrained clustering, for reasons discussed below, and has fewer methodological issues than nearest neighbour analysis (Blankholm 1991; Kintigh and Ammerman 1982; Pinder et al 1979; Whallon 1974).

K-means analysis currently seems to be the most widely used cluster analysis method (Blankholm 1991; Farid 2001; Kintigh 1990; Siegel and Roe 1986). It is a non-heirarchical clustering method that requires coordinate data (units) and a number of clusters (the Maxiclust) set by the researcher (Blankholm 1991; Kintigh 1990). There are a few methods through which one can mathematically determine an approximate number of clusters, but one can also visually identify clusters (Everitt 2001:11-20). When the units and number of clusters are placed in the algorithm, k-means analysis divides the number of units into the maximum of Maxiclust clusters. The algorithm begins by creating just one cluster, and then breaks off units on the edge of the original cluster until the Maxiclust is reached. Each unit is assigned to a cluster through the sum squared error

(SEE) from each unit to the centre of the cluster. The clusters with centres closest together are then grouped together and split. The SEE is then run again, and the units are re-assigned to the cluster with the closest centre; clusters will be grouped and split, and SEE will continue run until the centroids of the clusters no longer shift. At this point, k-means analysis displays the final cluster centres and the number of units in each cluster (Blankholm 1991; Kintigh 1990). Because of its popularity in the past and present, and its influence on archaeological spatial distribution research, several articles dealing with k-means analysis are described below.

Kintigh and Ammerman (1982) were unsatisfied by nearest neighbour analysis and other cluster analysis techniques used by archaeologists at the time, particularly as they believed the techniques failed to take depositional context into account. They felt that more advanced statistical methods would better serve archaeologists. Kintigh and Ammerman (1982) attempted to develop their own method for detecting clusters, only to discover with further research that their independently created method was essentially a version of an already existing algorithm, k-means analysis. They therefore introduced the archaeological community to k-means analysis (Kintigh and Ammerman 1982).

Kintigh and Ammerman (1982) tested k-means analysis on Yellen's (1977) !Kung San sites in Namibia and Botswana, where it was used to determine the locations of activity areas. As these sites were recorded ethnographically, the cluster areas were clear, and k-means analysis detected all activity areas. The data from the sites was then placed in a computer simulation, which "aged" the sites, making the clusters less evident. K-means analysis still detected clusters in activity areas. They determined that, at that time, k-means analysis was the most powerful and wide-ranging spatial analysis technique available to archaeologists (Kintigh and Ammerman 1982).

Siegel and Roe (1986) were interested in the process of site formation. They examined two Shipibo dwellings in the Amazon, one recently abandoned and the other archaeological. They examined and compared the spatial organization and artifact distribution of both sites using k-means analysis. When they set a higher number of clusters, Siegel and Roe (1986) were able to detect differences between the clusters in primary and secondary depositional context. When a smaller number of clusters was selected, the primary and secondary context material was grouped together (Siegel and Roe 1986).

Blankholm (1991) compared the usefulness of various intrasite spatial analysis methods, including k-means analysis. He tested k-means analysis on the Mask site, a Nunamiut Inuit site in northern Alaska observed and recorded ethnographically by Binford (1978). Blankholm (1991) used k-means analysis to detect clusters in individual artifact groups and among all the artifacts. K-means analysis performed well in individual artifact activity areas, and was reasonably competent in finding activity areas formed by the total group of artifacts, but could not differentiate between overlapping activity areas. Despite this, Blankholm (1991) concluded that k-means analysis was one of the four most effective intrasite spatial analysis techniques tested (Blankholm 1991).

Farid (2001) used k-means analysis to examine artifact clusters and activity areas in a Thule dwelling at site JhEv-3 on Assuukaaq Island in northern Quebec. She chose the number of clusters through visual inspection. It initially appeared that the dwelling and surrounding area had seven clusters, so she ran k-means analysis with maximum clusters of five, six, and seven. When the clusters were identified, she tested the results through statistical methods, which suggested that the site had six clusters. With further visual inspection, Farid (2001) determined that the site actually had eight clusters, as two of the six clusters contained artifact both inside and outside the dwelling (Farid 2001).

6.5 Results

The distribution of slate tools in Harp's Houses 2, 4, 5, 6, 10, and 12; Renouf's Features 1, 14 and 55, and House 18; and House 17 was examined through k-means analysis. House 17 and 18 were first partially excavated by Harp in the 1960s (field notes 1964). They were later re-excavated by Renouf in 2005 (Cogswell 2006) and 2006 (Renouf 2007). As coordinate data are necessary for k-means analysis to function, coordinates were obtained for the artifacts. Renouf provided exact coordinates for all artifacts found in situ, but Harp recorded only the quadrant of the unit in which they were found. Harp used 5' x 5', or 60" x 60", excavation units, and divided each unit into 30" x 30" quarters, which he called quadrants. As Harp only recorded the quadrant of the unit in which artifacts were found, the artifacts were given randomized coordinates within the appropriate quadrants. These coordinates were run through the k-means algorithm.

As k-means analysis requires the user to set the number of clusters, the artifact distribution maps were examined to visually define clusters. The number of observed clusters was then set in the k-means algorithm, as were the next two higher numbers or the next higher and lower number; as "eyeballing" clusters is not an exact method of identifying clusters, it seemed best to have a choice of cluster patterns. The centre points for these clusters were then located and drawn on the spatial distribution map, and that pattern which appeared to best define the clusters was selected. In some cases, more than one or no cluster groups initially appeared appropriate. In the first case, the two (or more) cluster groups were fully displayed on distribution maps, and that which better visually defined the clusters was selected. When none of the cluster patterns appeared appropriate, new numbers of clusters were selected and placed in the k-means algorithm, and the above process repeated.

The clusters were analysed and described in the context of the dwellings, and the clusters were described through their association with dwelling features. Therefore, after a final number of clusters was selected and mapped, the outline of the dwelling was drawn on the distribution map. The clusters are represented by red circles, and each cluster number is shown in violet; artifacts included in the clusters are contained within the circles. The dwelling outlines are in dark green, important features are in light green, and midden outlines are in pink.

Because k-means analysis is based solely on the location of artifacts, the clusters do not always correspond with the dwelling outlines; artifacts in some clusters are found on both sides of the dwelling wall, as defined by the excavator. In those cases when a cluster is divided, the number of artifacts inside and outside was considered. If a third or fewer artifacts were on one side of the dwelling wall, and two thirds or more on the other, the smaller group of artifacts was eliminated from further consideration. The cluster was then assigned a new final number of artifacts (Figure 6.1), and was counted only as an interior or exterior cluster.

Cluster Locations

The dwellings and surrounding exterior areas were divided into nine zones based on location: the central interior, front/northern interior, rear/southern interior, eastern interior, western interior, northern exterior, southern exterior, eastern exterior and western exterior. The central interior, or central area, includes the axial feature of the dwelling and the surrounding depression. The northern interior is usually the front of the dwelling and the southern interior the rear, as determined by the alignment of the axial feature. However, the axial features of Features 1 and 55 are aligned east/west rather than north/south, suggesting that the northern interior was not the front of the dwelling, and the southern interior was not the rear, though there are still entrances in the northern and southern interiors of these dwellings. The eastern and western interior areas are usually determined by the locations of the dwelling's side platforms or the close association between clusters and the eastern and western walls of the dwelling. However, in the case of Feature 1, the eastern and western interior are defined by the front and rear platforms. The exterior northern, southern, eastern and western exterior areas are those locations to the north, south, east and west of the dwellings, respectively. When these areas were established, the clusters were examined, and it was determined in which area(s) each cluster was located (Figure 6.2). The clusters were organized in this manner to ease in determining if there were any similarities, differences, or patterns in cluster location throughout the occupation of Phillip's Garden.

Figure 6.1: Number of artifacts associated with each cluster in all houses and features

House or Feature	n Cluster 1	n Cluster 2	n Cluster 3	n Cluster 4	n Cluster 5	n Cluster 6	n Cluster 7	n Cluster 8	n Cluster 9
Feature 1	2	7	17	0	0	0	0	0	0
House 2	15	27	25	55	27	0	0	0	0
House 4	20	6	34	10	21	15	0	0	0
House 5	4	2	5	2	0	0	0	0	0
House 6	19	25	30	6	30	0	0	0	0
House 10	16	15	14	14	17	22	0	0	0
House 12	9	22	11	26	27	6	14	0	0
Feature 14	7	8	5	0	0	0	0	0	0
Harp's House 17	43	15	8	20	36	21	14	0	0
Renouf's House 17	10	18	6	17	11	26	6	0	0
House 18	12	17	18	5	8	11	15	12	5
Feature 55	3	2	2	5	0	0	0	0	0

n = number [of artifacts]

Figure 6.2: Number of clusters in all locations zones associated with dwellings

House or Feature	n Interior Central Clusters	n Interior Northern Clusters	n Interior Southern Clusters	n Interior Eastern Clusters	n Interior Western Clusters	n Exterior Northern Clusters	n Exterior Southern Clusters	n Exterior Eastern Clusters	n Exterior Western Clusters
Feature 1	1	0	0	0	0	0	1	1	0
House 2	4	0	2	0	0	0	0	0	0
House 4	2	1	1	1	0	0	0	0	1
House 5	1	0	0	1	1	1	0	0	1
House 6	3	1	2	1	2	0	1	0	0
House 10	1	1	0	1	2	1	3	0	0
House 12	0	2	0	1	1	2	0	2	1
Feature 14	1	0	0	0	0	1	0	1	0
House 17	3	2	2	1	3	0	1	1	4
House 18	1	2	2	2	1	1	1	1	1
Feature 55	1	1	0	0	0	1	0	0	1
Total Clusters	18	10	9	8	10	7	7	6	9

n = number [of clusters]

The central interior areas of all sampled houses have 18 clusters, the highest number of slate tools clusters found in any location zone. Ten of the 12 dwellings have one or more clusters in the dwelling centre: Feature 1 (Figure 6.3) has one cluster, House 2 (Figure 6.5) has four clusters[2], House 4 (Figure 6.6) has two clusters, House 5 (Figure 6.7) has one cluster, House 6 (Figure 6.8) has three clusters, House 10 (Figure 6.9) has one cluster, Feature 14 (Figure 6.4) has one cluster, (Harp's) House 17 (Figure 6.11, 6.12) has three clusters, House 18 (Figure 6.13) has one cluster, and Feature 55 (Figure 6.14) has one cluster. Only House 12 (Figure 6.10) did not have central clusters.

The front or northern interior areas of all sampled houses have 10 clusters. Eight dwellings have clusters in the northern interior: House 4 has one cluster, House 6 has one cluster, House 10 has one cluster, House 12 has two clusters, House 17 has two clusters, House 18 has two clusters, and Feature 55 has one cluster. Feature 1, House 2, House 5, and Feature 14 have no clusters in their northern interior areas.

The rear (southern interior) areas of all sampled houses have nine clusters. Five dwellings have southern interior clusters: House 2 has two clusters, House 4 has one cluster, House 6 has two clusters, (Harp's) House 17 has two clusters, and House 18 has two clusters. Feature 1, House 5, House 10, House 12, Feature 14, and Feature 55 have no clusters in their southern interior areas.

2

A note on House 2: The dwelling outline seen on the map is that drawn by Harp (1976), but Renouf's (2006) later excavation revealed that Harp's entire excavation fell within the perimeter of House 2. Harp's (1976) outline actually demarcates the central depression. Thus, all of the House 2 clusters are found within the dwelling.

The eastern interior areas of all sampled houses have eight clusters. Seven dwellings have clusters in the eastern interior: House 4 has one cluster, House 5 has one cluster, House 6 has one cluster, House 10 has one cluster, House 12 has one cluster, (Harp's) House 17 has one cluster, and House 18 has two clusters. Feature 1, House 2, Feature 14, and Feature 55 have no clusters in the eastern interior area.

The western interior areas of all sampled houses have ten clusters. Six dwelling have clusters in the western interior: House 5 has one cluster, House 6 has two clusters, House 10 has two clusters, House 12 has one cluster, (Harp's) House 17 has three clusters, and House 18 has one cluster. Feature 1, House 2, House 4, Feature 14, and Feature 55 have no clusters in the western interior area.

The northern exterior areas of all sampled houses have eight clusters. Seven dwellings have clusters in the northern exterior: Feature 1 has one cluster, House 5 has one cluster, House 10 has one cluster, House 12 has two clusters, Feature 14 has one cluster, House 18 has one cluster, and Feature 55 has one cluster. House 2, House 4, House 6, and House 17 have no clusters in the northern exterior area.

The southern exterior areas of all sampled houses have seven clusters. Five dwellings have clusters in the southern exterior: Feature 1 has one cluster, House 6 has one cluster, House 10 has three clusters, (Renouf's) House 17 has one cluster, and House 18 has one cluster. House 2, House 4, House 5, House 12, Feature 14, and Feature 55 have no clusters in the southern exterior.

The eastern exterior areas of all sampled houses have five clusters, the smallest number of clusters associated with any dwelling area. Four dwellings have clusters in the eastern exterior: House 12 has two clusters, Feature 14 has one cluster, (Renouf's) House 17 has one cluster, and House 18 has one cluster. House 2, House 4, House 5, House 6, House 10, and Feature 55 have no clusters in the eastern exterior area. Feature 1 does not have an eastern exterior area.

The western exterior areas of all sampled houses have nine clusters. Six dwellings have clusters in the western exterior: House 4 has one cluster, House 5 has one cluster, House 12 has one cluster, Renouf's House 17 has four clusters, House 18 has one cluster, and Feature 55 has one cluster. Feature 1, House 2, House 6, House 10, and Harp's House 17 have no clusters in the western exterior area. Feature 14 does not have a western exterior area.

Figure 6.3: Feature 1, slate tools (n=29)
k-means analysis
(Map: R. Knapp)

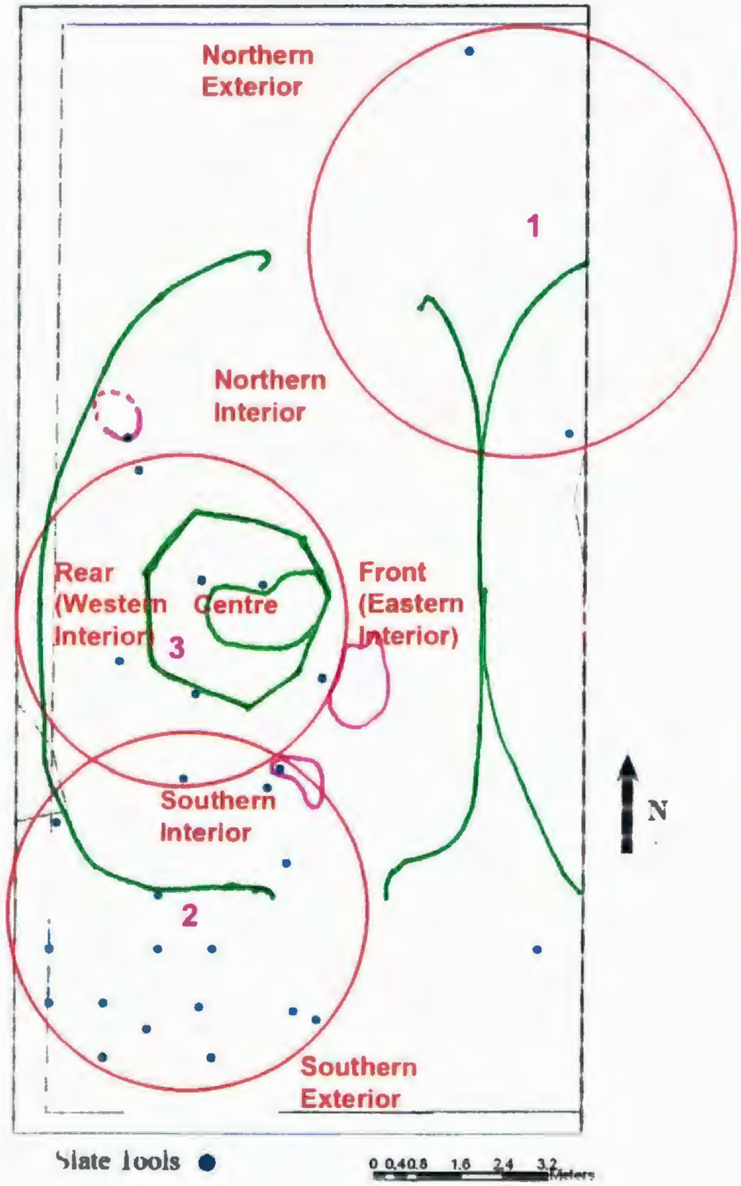


Figure 6.4: Feature 14, slate tools (n=29)
k-means analysis
(Map: R. Knapp)

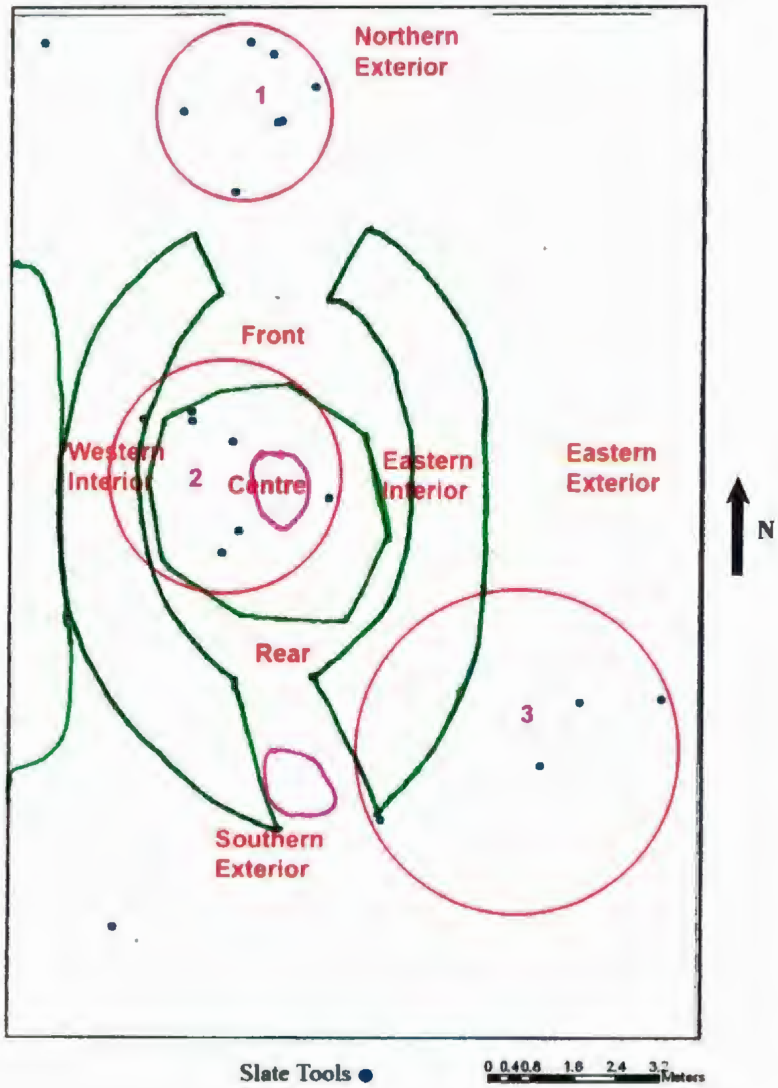


Figure 6.5: House 2, slate tools (n=149)
k-means analysis
(Map: R. Knapp)

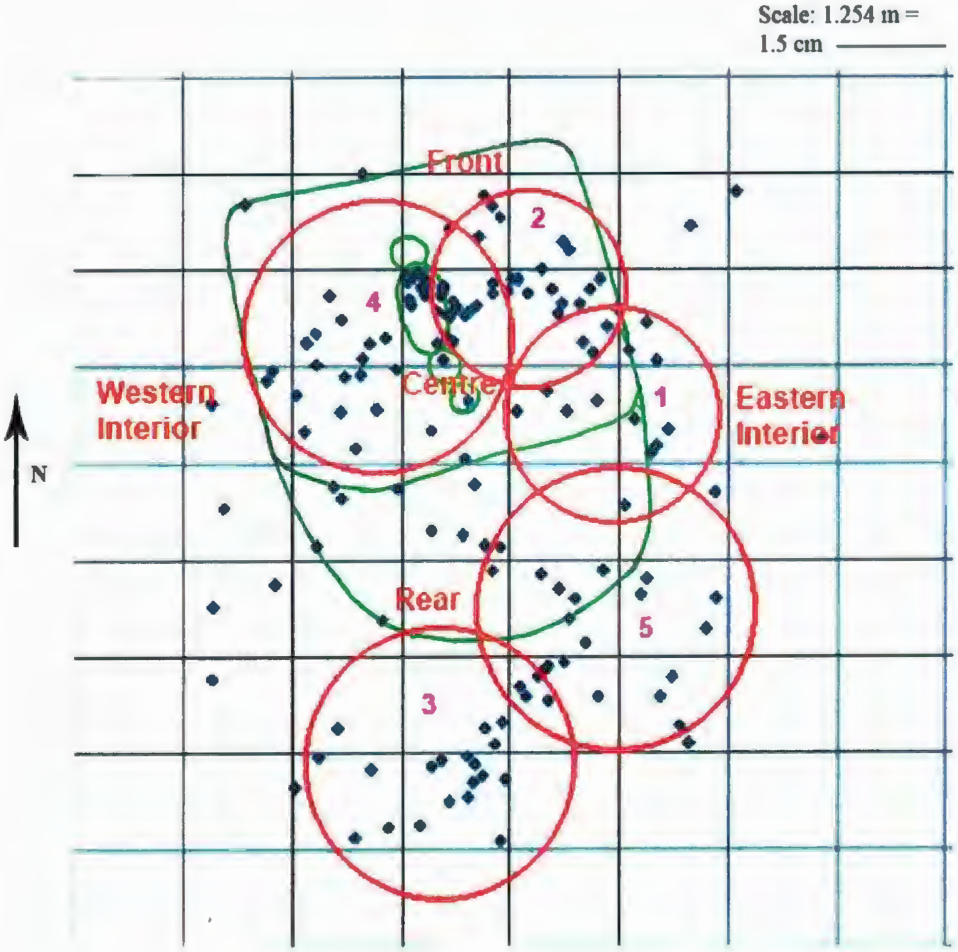


Figure 6.6: House 4, slate tools (n=115)
k-means analysis (Map: R. Knapp)

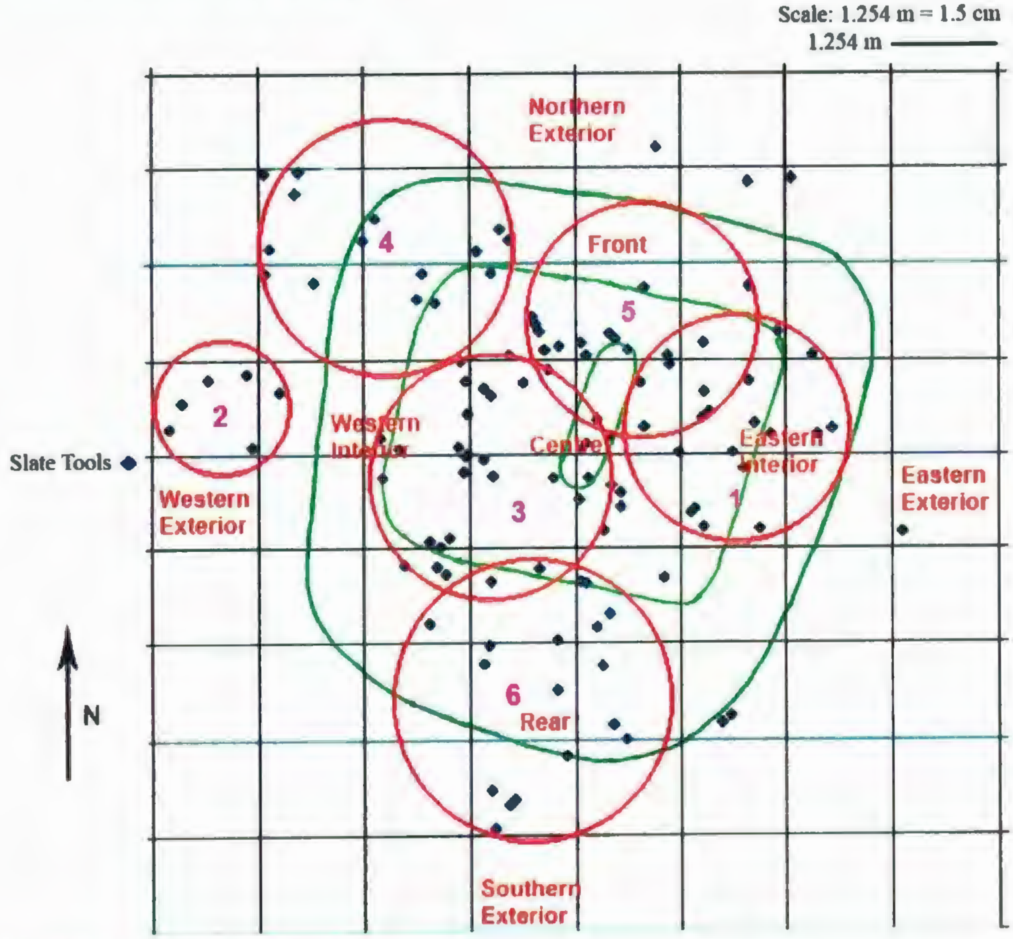


Figure 6.7: House 5, slate tools (n=13)
k-means analysis (Map: R. Knapp)

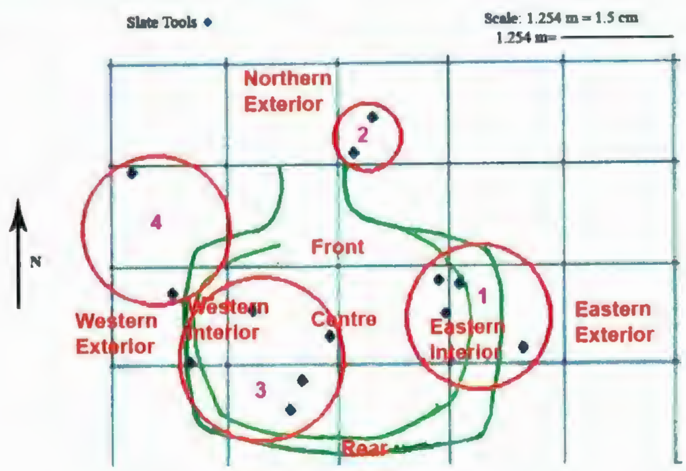
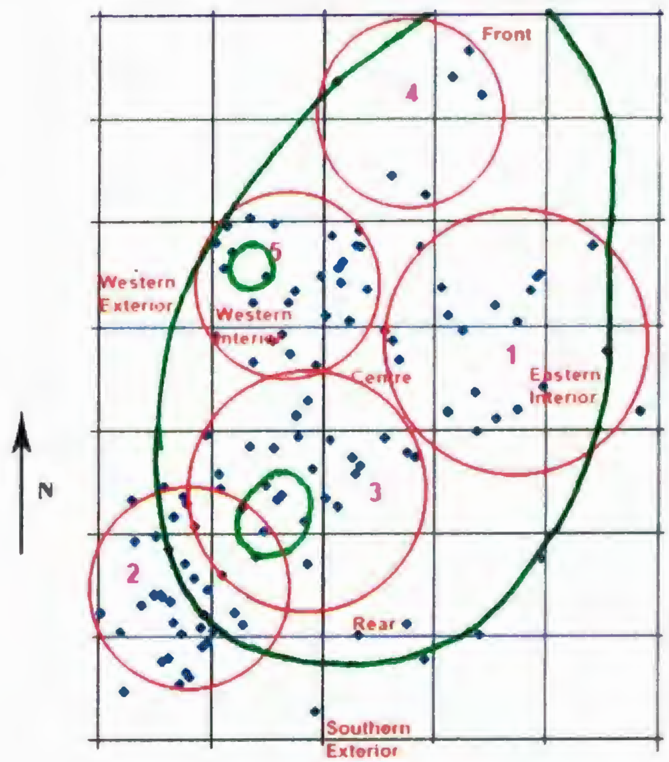


Figure 6.8: House 6, slate tools (n=121)
k-means analysis
(Map: R. Knapp)



Slate Tools ◆

Scale: 1.254 m =1.5 cm
1.254 m= ————

Figure 6.9: House 10, slate tools (n=102)
k-means analysis
(Map: R. Knapp)

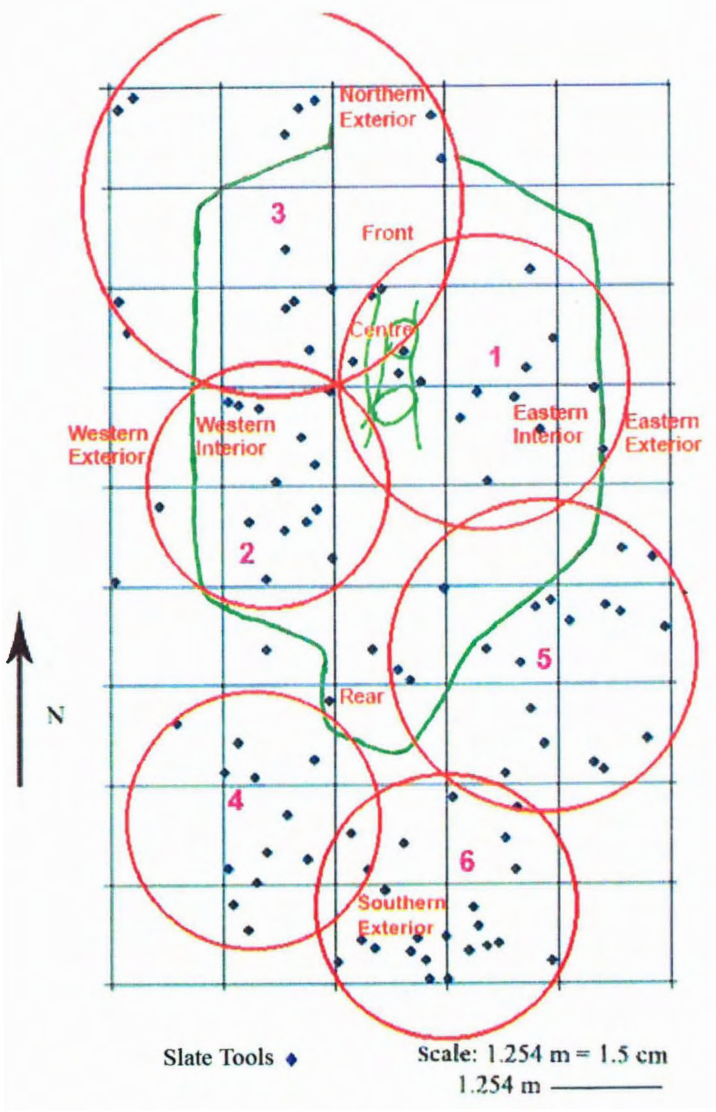


Figure 6.10: House 12, slate tools (n=128), k-means analysis (Map: R. Knapp)

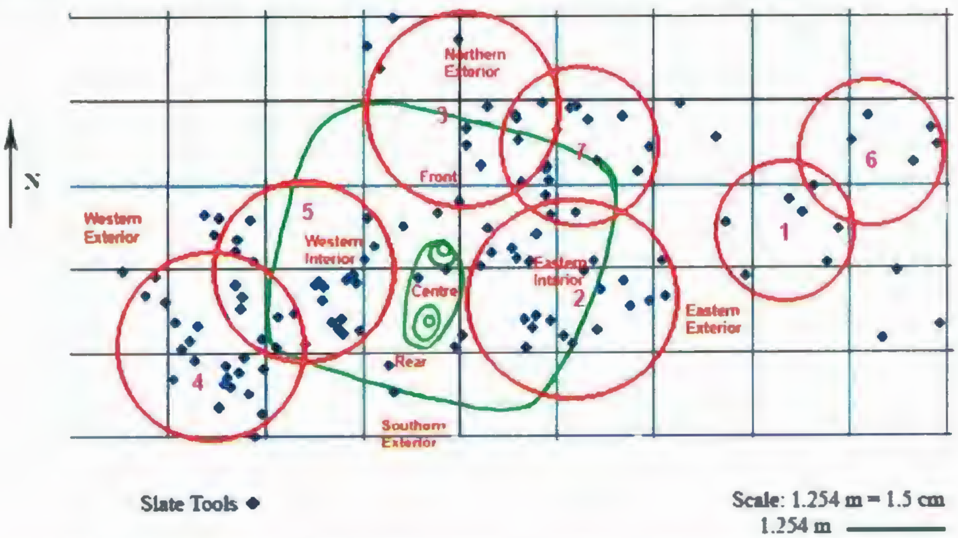


Figure 6.11: Harp's House 17, slate tools (n=157), k-means analysis (Map: R. Knapp)

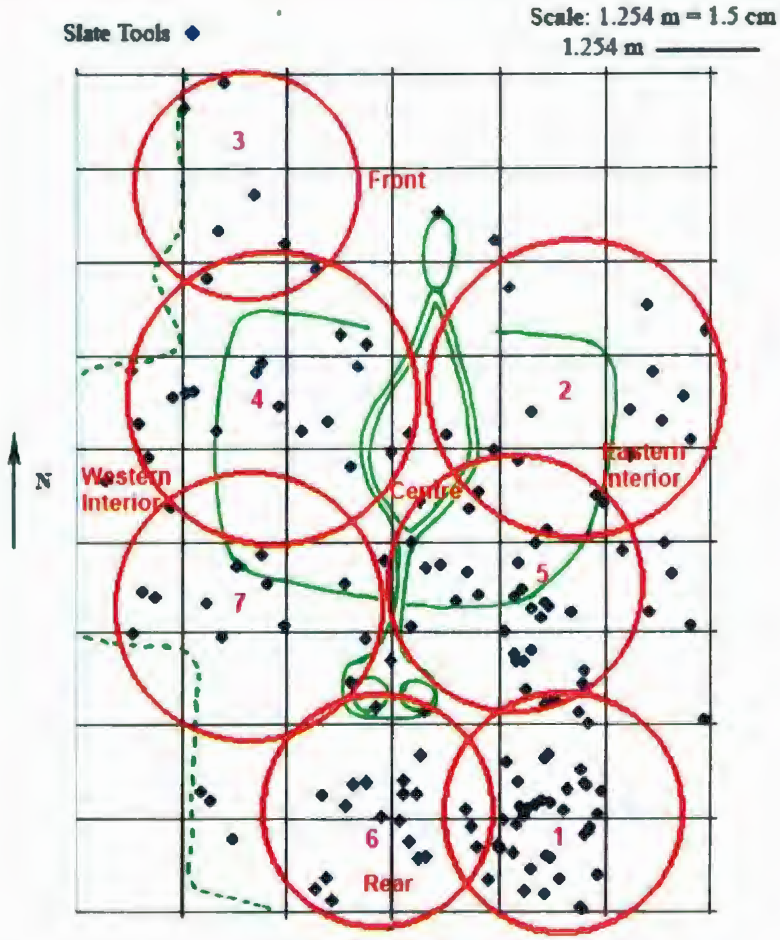


Figure 6.12: Renouf's House 17, slate tools (n=102)
k-means analysis
(Map: R. Knapp)

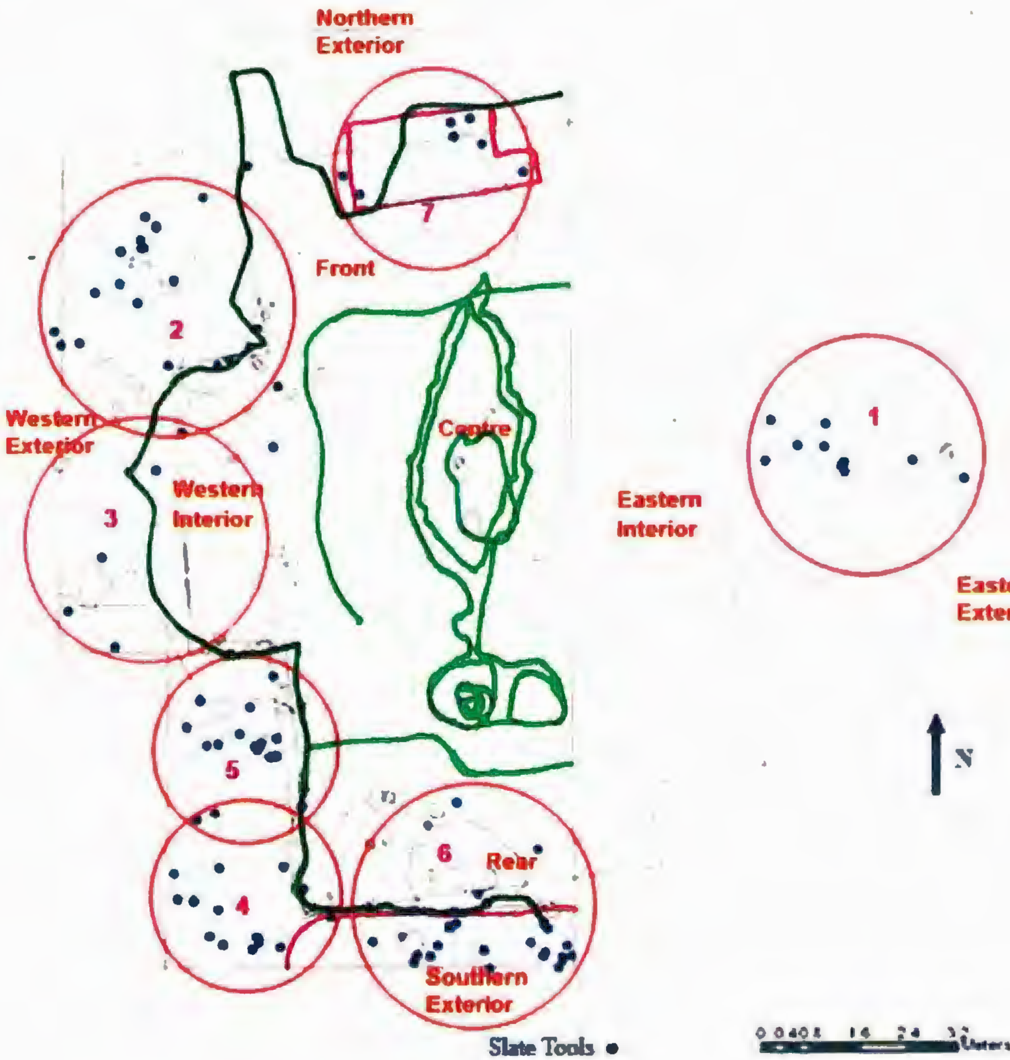


Figure 6.13: House 18, slate tools (n=105)
k-means analysis (Map: R. Knapp)

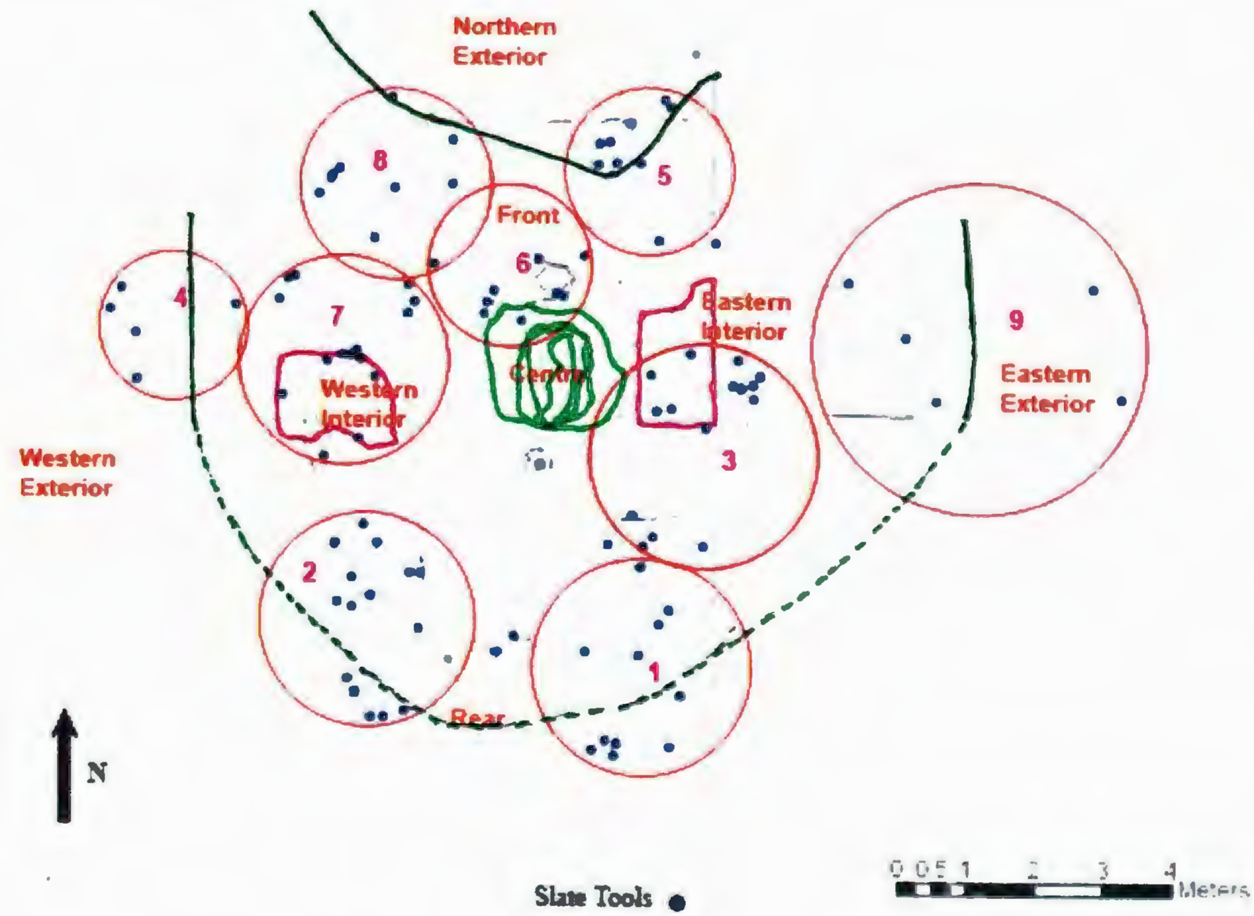
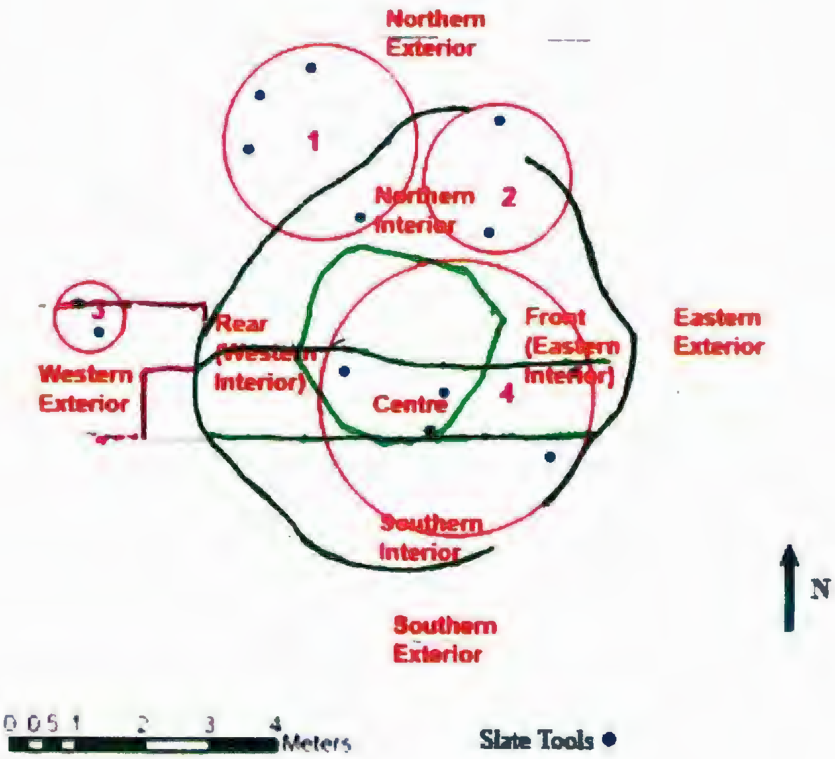


Figure 6.14: Feature 55, slate tools (n=13)
k-means analysis
(Map: R. Knapp)



6.6 Discussion

Depositional Context

To examine the location of skin processing activities at Phillip's Garden, we must first determine whether the clusters defined by k-means analysis contain artifacts in primary or secondary depositional context. Some clusters were easily identified as secondary context. For example, cluster 7 of Renouf's House 17 is in an area identified as a midden (Lavers field notes 2006). Thus, this cluster, and others associated with middens, represent discard locations, and the artifacts are in secondary depositional context. Midden locations are largely identified in those dwellings excavated by Renouf; Harp (1951, 1976) did not always record the midden locations for the dwellings he excavated. Therefore, there are likely clusters in the Harp houses that are in midden areas, but these cannot be immediately identified as secondary context clusters.

Those clusters that have more than 1/3 of their artifacts both inside and outside the dwelling were also identified as secondary context clusters; 1/3 was an arbitrary percent chosen because represents a fairly significant perventage of artifacts. As noted in the section 6.5, k-means analysis often identified clusters that contain artifacts on both sides of the dwelling outline. In a number of these cases, less than 1/3 of the cluster's artifacts were on one side of the dwelling outline, and more than 2/3 were on the other. In these cases, the problematic artifacts were often relatively distant from the other artifacts in the cluster, and constituted an insignificant percentage of the overall cluster. Therefore, they were dismissed from further consideration. Those clusters that included more than 1/3 of their artifacts on both sides of the dwelling outlines, however, could not be so easily dismissed, as the artifacts on both sides of the dwelling outline make up a significant portion of the cluster. In some cases, such as cluster 3 of Renouf's House 17, the clusters even form a relatively homogeneous scatter, with no obvious break between the interior and exterior artifacts. As these clusters are not divided by the dwelling outline, it was concluded that they were deposited after the dwelling wall was removed. As abandoned dwellings are often used as discard areas (Siegel and Roe 1986), and some dwellings in Phillip's Garden were used as middens after their abandonment (Renouf 2006:120-121), it was determined that these clusters were in secondary context.

Those clusters not in middens or divided between the interior and exterior were more difficult to identify as primary or secondary context. However, other factors influence context, one of which is location; is a cluster located in an area likely used as an activity area? Though skin processing activities can occur either inside or outside dwellings (Balikci 1970; Issenman 1997), the areas inside or directly in front of an entrance passage would not be a practical location for an activity area, as it would impede access to the dwelling or the community. It is more likely that workers inside a dwelling would use entrances as discard areas. It should be noted, however, that the practicality of locations does not always influence its placement; some primary context clusters identified and discussed below are in less than ideal locations. Therefore, it is likely that some of the clusters located in entrances are in primary context. Unfortunately, it is not possible to separate the primary context clusters in this location from the secondary context clusters, so for this analysis, all are considered to be in secondary context.

To summarize, clusters were identified as secondary context if there was evidence that they were associated with middens, had been deposited after the dwelling was occupied, or were in discard areas. The first cluster group to be identified as secondary context were those whose artifacts were associated with middens. Clusters that had more than 1/3 of their artifacts on both sides of a dwelling wall were also labelled secondary context, as these clusters appear to have been deposited after the dwelling walls were removed. Finally, those clusters located in or in front of an entrance passage were labelled as secondary context because these areas are not logical work spaces, but they are potential discard areas. With the clusters that fall into one or more of these groups identified (Figure 6.15), it is now possible to examine the remaining primary context clusters.

Primary Depositional Context Cluster Location and Interpretation

When depositional context was determined, the location of clusters in primary depositional context were examined. The location of clusters associated with all the dwellings in the sample were first examined (Figure 6.16), to determine if there were overall trends in cluster location throughout Phillip's Garden's occupation. The central interior area of the total sampled dwellings has the largest number of clusters, with a total of 18 clusters and a mean of 1.64 clusters per dwelling. The southern (rear) and western interior areas have the second highest number of clusters, with eight total clusters and an average of 0.73 clusters per house. The western exterior areas have seven clusters, with a mean of 0.64 clusters per house, and the eastern interiors have six total clusters, with a mean of 0.55 clusters per dwelling. The northern interior (front) areas and southern exteriors have five total clusters, and means of 0.45 clusters per house. The eastern exterior areas have four total clusters, and a mean of 0.36 clusters per dwelling. The northern exterior areas of all sampled dwellings have the lowest cluster density, with a total of three clusters, and an average of 0.27 clusters in each dwelling.

This brief analysis suggests that most slate tool clusters at Phillip's Garden were located inside dwellings, as 70% (45/64) of primary context clusters were found within the dwellings. The central interior areas have a particularly high number of clusters; 28% (18/64) of all primary context clusters from the entire dwelling sample are found in the central interior areas. However, eight of the eleven sampled dwellings date from the middle phase, and this emphasis on middle phase dwellings may skew the results of the analysis of all sampled dwellings.

As mentioned in previous chapters, the Dorset occupation of Phillip's Garden covers at least 700 years, and consists of three temporal phases. It was possible that there were changes in the placement of slate tools over time. One or more of the examined dwellings fall into each phase: Feature 1 and 14 are early phase dwellings; Houses 2, 4, 5, 6, 10, 12, 17 and 18 are middle phase dwellings; and Feature 55 is a late phase dwelling. If the placement of skin processing activities changed over time, it would be reflected in the changing location of clusters. An examination of the data (Figures 6.17, 6.18, 6.19) supported this hypothesis, as the different phases have different patterns of cluster location.

Figure 6.15: Clusters in secondary depositional context

House or Feature	Clusters in Secondary Context
Feature 1	
House 2	
House 4	
House 5	
House 6	
House 10	C3 (divided)
House 12	C3 (divided), C7 (divided)
Feature 14	C1 (entrance)
Harp's House 17	
Renouf's House 17	C3 (divided), C6 (midden), C7 (midden)
House 18	C1 (divided), C3 (midden), C5 (midden), C7 (midden), C9 (divided)
Feature 55	C2 (entrance), C3, (midden)

Figure 6.16: Number of primary context clusters associated with all sampled dwellings

House or Feature	n Interior Central Clusters	n Interior Rear (Northern) Clusters	n Interior Front (Southern) Clusters	n Interior Eastern Clusters	n Interior Western Clusters	n Exterior Northern Clusters	n Exterior Southern Clusters	n Exterior Eastern Clusters	n Exterior Western Clusters
Feature 1	1	0	0	0	0	1	1	0	0
House 2	4	0	2	0	0	0	0	0	0
House 4	2	1	1	1	0	0	0	0	1
House 5	1	0	0	1	1	1	0	0	1
House 6	3	1	2	1	2	0	1	0	0
House 10	1	0	0	1	1	0	3	0	0
House 12	0	0	0	1	1	0	0	2	1
Feature 14	1	0	0	0	0	0	0	1	0
House 17	3	1	2	1	3	0	0	1	3
House 18	1	2	1	0	0	0	0	0	1
Feature 55	1	0	0	0	0	1	0	0	0
Total Clusters	18	5	8	6	8	3	5	4	7
Average Clusters	1.64	0.45	0.73	0.55	0.73	0.27	0.45	0.36	0.64

n = number [of clusters]

Figure 6.17: Number of primary context clusters associated with early phase dwellings

House or Feature	n Interior Central Clusters	n Interior Rear (Northern) Clusters	n Interior Front (Southern) Clusters	n Interior Eastern Clusters	n Interior Western Clusters	n Exterior Northern Clusters	n Exterior Southern Clusters	n Exterior Eastern Clusters	n Exterior Western Clusters
Feature 1	1	0	0	0	0	1	1	0	0
Feature 14	1	0	0	0	0	0	0	1	0
Total Clusters	2	0	0	0	0	1	1	1	0
Average Clusters	1	0	0	0	0	0.5	0.5	0.5	0

n = number [of clusters]

Figure 6.18: Number of primary context clusters associated with middle phase dwellings

House or Feature	n Interior Central Clusters	n Interior Rear (Northern) Clusters	n Interior Front (Southern) Clusters	n Interior Eastern Clusters	n Interior Western Clusters	n Exterior Northern Clusters	n Exterior Southern Clusters	n Exterior Eastern Clusters	n Exterior Western Clusters
House 2	4	0	2	0	0	0	0	0	0
House 4	2	1	1	1	0	0	0	0	1
House 5	1	0	0	1	1	1	0	0	1
House 6	3	1	2	1	2	0	1	0	0
House 10	1	0	0	1	1	0	3	0	0
House 12	0	0	0	1	1	0	0	2	1
House 17	3	1	2	1	3	0	0	1	3
House 18	1	2	1	0	0	0	0	0	1
Total Clusters	15	5	8	6	8	1	4	3	7
Average Clusters	1.88	0.63	1	0.75	1	0.13	0.5	0.38	0.88

n = number [of clusters]

Figure 6.19: Number of primary context clusters associated with late phase dwellings

House or Feature	n Interior Central Clusters	n Interior Northern Clusters	n Interior Southern Clusters	n Interior Eastern Clusters	n Interior Western Clusters	n Exterior Northern Clusters	n Exterior Southern Clusters	n Exterior Eastern Clusters	n Exterior Western Clusters
Feature 55	1	0	0	0	0	1	0	0	0
Total Clusters	1	0	0	0	0	1	0	0	0
Average Clusters	1	0	0	0	0	1	0	0	0

n = number [of clusters]

The two early phase dwellings (Figure 6.17) have primary context clusters in the central interior, northern exterior, southern exterior, and eastern exterior[3]. The early phase dwellings have a total of two clusters in the central area, and an average of one cluster per dwelling. There is also one cluster in the northern exterior area, one in the southern exterior area, and one in the eastern exterior area; the northern, southern and eastern exterior areas have an average of 0.5 clusters per dwelling. The majority of primary context clusters associated with early phase dwellings, 60% (3/5), are found outside the dwellings. Only 40% (2/5) of the early phase clusters in primary depositional context are found inside the dwellings, thought the central interior has the highest average number of clusters.

The eight middle phase dwellings (Figure 6.18) have primary context clusters in all location zones. The highest number of clusters, 15, are found in the central interior, which has an average of 1.88 clusters per dwelling. The next highest numbers of clusters, eight, are found in the southern and western interior, which each have an average of one cluster per dwelling. The western exterior area has seven clusters, and an average of 0.88 clusters per dwelling. This is the highest number of clusters in an exterior area. The eastern interior has six clusters, and an average of 0.75 clusters per dwelling, and the northern (front) interior has five total clusters, and an average of 0.63 clusters per dwelling. The southern exterior has four clusters, and an average of 0.5 clusters per dwelling. The eastern exterior has three clusters, and an average of 0.38 clusters per

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[3] Only Feature 14 has a cluster in the eastern exterior area, as the eastern wall of Feature 1 intersects with the western wall of Feature 14.

dwelling, and the northern exterior has one cluster, and an average of 0.13 clusters per dwelling. Not only are a significant majority, 74% (42/57), of clusters associated with middle phase dwellings located in interior areas, but only one exterior area, the western exterior, has more clusters than any interior area.

The single late phase dwelling (Figure 6.19) has one cluster in the central area and one cluster in the northern exterior. The central interior and northern exterior have an average of one cluster per dwelling. Thus, 50% (1/2) of clusters were found inside, and 50% (1/2) outside the (very small) late phase dwelling sample.

If the small sample sizes for early and late phase dwellings are not skewing the results of this analysis, the early, middle and late phases had different cluster location patterns. It was determined that the change in cluster location indicated a change in the location of skin processing activities, due to ethnographic data. Binford (1978) notes that Inuit, upon leaving a hunting camp, cache all the tools and other equipment they intend to use upon return. Issenmen (1997) and Oakes and Riewe (1995, 1998) also state that women living in the Arctic in both North America and Eurasia typically carry their skin processing tools with them. Therefore, it appears unlikely that Dorset women would have left their skin processing tools behind when leaving a site, and if they had, they would have cached then, particularly as caches have been found at Phillip's Garden (Renouf 1986, 1987, 1992, 1993b). As no slate tools were found in the caches at Phillip's Garden (Renouf 1986, 1987, 1992, 1993b), most or all the slate tools recovered are likely lost are discarded, and represent activity and discard areas. As it is hoped that the discard areas have been identified and removed from this analysis, all the remaining clusters should represent activity areas.

During the early phase, activity areas are found in the dwellings' centres and outside the dwellings to the north, south and the east. The clusters associated with early phase dwellings are more often found outside the dwellings than inside, though the averages indicate that the central interior area is that zone most likely to have a cluster. The middle phase dwellings have at least one cluster in every identified area, but have much more activity areas inside the dwellings than outside, suggesting a change in skin processing activity organization from the early phase. That said, the area with the highest average number of clusters during the middle phase was the central interior, as in the early phase. During the late phase, skin processing activities were equally divided between the interior and exterior dwelling location zones; one activity area is found in the dwelling centre, and another is located in the northern exterior area. The single late phase dwelling has clusters in the central interior and northern exterior areas, and these areas have the same average number of clusters. This clustering pattern is, in turn, a change from that of the middle phase.

There are potential practical and cultural reasons for the common skin processing activity area locations associated with early and middle phase dwellings. One activity area associated with the late phase dwelling is unusual for reasons discussed below. These were likely influenced by the climate, nature and necessities of skin processing tasks, gendered space, Dorset cosmology, and/or the (re)organization of the Dorset household. Gendered space and Dorset cosmology will be discussed in more detail following a general analysis.

The activity areas associated with early phase dwellings were found in the central areas of the dwellings and outside the houses to the east, north, and south; three of the five identified activity areas are found outside the dwellings. Though there may have been a cultural reason for performing most skin processing activities outside the dwellings, there are sound functional reasons for choosing these locations. Most Inuit cultures scraped and dried hides outdoors, when the weather permitted, as hides dry more quickly when placed in the sun (Balikci 1970; Oakes and Riewe 1995; Pendersen 2005). As found during the microwear experiment, undried seal hides also stink. The smell is strong, lasting, and will persist on any object that came in contact with the still-greasy hide. Therefore, the smell of seal hides alone may have been a compelling reason to process them outside, rather than in an enclosed area. The location of two of the three outdoor activity areas in relation to the dwelling is also practical and logical. During the winter and early spring, the wind at Phillip's Garden comes from the northwest (Renouf 1994), and the prevalence of seal bone throughout all phases suggest that Phillip's Garden was always occupied during the winter and early spring (Hodgetts et al 2003). Thus, activity areas to the south and east of the dwellings were protected from the wind. Two of the three exterior clusters, therefore, were located in protected areas that facilitated the drying of hides.

It is also probable that the environment influenced the decision to place some skin processing activity areas indoors. During periods of heavy precipitation, hides would have dried more quickly inside. As Newfoundland often has significant precipitation during the late winter and early spring (Environment Canada 2008), it is likely that there were periods in which drying hides and other skin processing activities were more easily performed inside. There is also ethnographic evidence that some Inuit groups, most notably the Netsilik, processed hides in their dwellings during the winter (Balikci 1970).

The reasons behind the locations of the clusters associated with middle phase dwellings are less clear. The exterior clusters were likely placed outside for the reasons detailed above, especially as most were found to the south, east and west of the dwellings, in fully or partially sheltered locations. However, the heavy emphasis on interior activity areas is not easily explained by practicality. Middle phase dwellings are larger than early or late phase dwellings (Renouf 2003), which suggests that a greater number of people inhabited them, and while this would explain a greater number of clusters within middle phase dwellings, it does not explain a greater *percentage* of clusters. In short, a greater number of individuals working will produce a greater number of activity areas, but the percentage of activity areas in any given area should not drastically change unless there is a corresponding change in activity area patterning. While heavy precipitation would explain some of the interior activity areas, it does not explain the changes in activity area patterns between the early and late phases, assuming such a pattern exists. In the early phase dwelling sample, only 40% of activity areas were inside, but in the middle phase dwelling sample, 74% of activity areas were located inside the dwellings. Instead, I suggest that the shift in skin processing activity area location during the middle phase was part of a larger reconceptualization of space by the middle phase Dorset at Phillip's Garden.

This suggestion is based on another change in the use of space during the middle phase at Phillip's Garden: the phenomenon of the large middle phase dwelling. All the fully-excavated winter dwellings at Phillip's Garden are large in comparison to those from other Middle Dorset sites. Feature 1 is approximately 51.5 m^2 and Feature 14 is approximately 75 m^2, while the largest Middle Dorset dwellings from other sites in Newfoundland and Labrador are less than 35 m^2. Even Feature 55, the smallest dwelling at Phillip's Garden, is approximately 28.5 m^2, which would make it a large dwelling at other Middle Dorset sites (Renouf 2003). However, the early and late phase dwellings at Phillip's Garden are far smaller than the three middle phase dwellings excavated or re-excavated by Renouf (2006, 2007; Cogswell 2006). Those dwellings only excavated by Harp are not considered here, as Renouf's (2006, 2007) re-excavations of House 2 and House 17 revealed that Harp's dwelling outlines were far smaller than the actual dwellings. These excavations revealed that House 2 was approximately 94 m^2, House 17 was approximately 100 m^2, and that House 18 was approximately 103 m^2 (Cogswell 2006; Renouf 2006, 2007).

Thus, there was a significant increase in dwelling size during the middle phase at Phillip's Garden. It has been suggested that this indicates that the population of Phillip's Garden increased during the middle phase (Cogswell 2006), but no matter what the reason behind the change to larger dwellings, it reflects a restructuring of the family or household during this period (Cogswell 2006). This larger change may have influenced the placement of skin processing activities, particularly if, as Cogsewell (2006) suggests, the structure of and artifacts found in middle phase dwellings indicate an emphasis on cooperative work during this period. An emphasis on cooperative work may have encouraged Dorset women to process hides as family or household groups inside the dwellings, rather than primarily outside the houses.

The only late phase dwelling, Feature 55, had two clusters: one in the centre of the dwelling, and one in the northwestern exterior. The central cluster was likely placed inside due to environmental factors, though it is difficult to tell when one has only a single sample. The location of the northwestern cluster, however, makes little functional sense, as it is located directly in the path of prevailing winds (Renouf 1994). A social reason for this placement is not apparent either. This activity area may not even be representative of late phase placement of activity areas, as there are no other excavated late phase dwellings to which one can compare Feature 55. Thus, speculation regarding the reasons behind the placement of skin processing activity areas during the late phase at Phillip's Garden will be curtailed until further late phase dwellings are excavated.

There is one factor shared by all the skin processing activity areas at Phillip's Garden: they are associated with dwellings. As few exterior areas have been excavated, this apparent association is likely the result of excavator bias and small sample size. However, as all primary context clusters were found within a few metres of the dwellings, even when somewhat larger areas were excavated (ie: Feature 14 and Renouf's House 17), so until proven otherwise, this thesis will work under the assumption that clusters were generally associated with dwellings rather than exterior areas. If clusters truly were associated with dwellings, their placement was almost certainly determined by cultural ideals, as there is no reason that the exterior activity areas had to be associated with the dwellings. Phillip's Garden is a meadow over a hectare in size (Renouf 1999a), so the Dorset had a large space available in which to process hides, though a number of houses would likely have been occupied at any one time, and these dwellings would have been scattered throughout the site.

As the Dorset at Phillip's Garden had a variety of exterior areas at which they could process their hides, but appear to have chosen locations near dwellings, the Dorset may have associated skin processing activities with dwellings. There are two ethnographically supported potential explanations for this choice: gender and cosmology. Both gender and cosmology influence the perception and use of space, and both are ethnographically recorded as having strong links to skin processing activities and tools among circumpolar groups. Briefly, the Dorset may have seen a very strong link between women, marine mammals and dwellings, to an extent that female and marine mammal oriented tasks were largely carried out inside or next to dwellings. However, more than a brief analysis of these concepts is required.

Dorset Cosmology, Gendered Space and Skin Processing Activities

Circumpolar peoples usually associate skin processing activities and tools with women. These tasks are the domain of women, and a woman's skill in processing often influences her social status and marriageability (Hall et al 1994; Oakes and Riewe 1998). Additionally, skin processing is acknowledged as a valuable and important skill; without hide clothing, the Arctic would have been uninhabitable until the invention of synthetics, as natural fibres such as wool and cotton do not provide the warmth, humidity control, or water resistence that hides do (Buijs 1997; Issenman 1997). Therefore, hide processing activities are both socially and practically important to circumpolar people, and this important activity is the domain of women. As the Dorset were likely related to the Inuit and/or Siberian peoples, they probably shared some cultural practices with these modern groups. Therefore, since the association between women and hide processing is seen throughout the Arctic, Dorset women most likely performed skin processing activities.

The association between skin processing activity areas and dwellings suggests that dwellings, and the area around them, were female space. The division of space among the Inuit and many Siberian cultures associates women with domestic space, and men with public space- exterior areas and ceremonial dwellings (Oakes and Riewe 1998; Whitridge 2002, 2004). If this was also true of the Dorset, it may suggest that the they considered the area surrounding the dwellings private, domestic space. Alternatively, if the Dorset placed a greater emphasis on collective work, particularly among women (Cogswell 2006; LeMoine 2003), the division between public space (exterior areas and community structures) and private space (dwellings) may not have been present. Additionally, potential large-scale divisions between men and women's space at Phillip's Garden cannot be properly discussed until the spatial distribution of potential men's artifacts are also examined.

There is a more definite link between gender and space in the Dorset dwellings: the axial features. Axial features are the central points of Dorset dwellings, which usually consist of hearths, soapstone pots, and pits at Phillip's Garden; they and the surrounding area are referred to as the central area in this study. They appear to have been the primary cooking and food processing activity areas in the Dorset dwellings (LeMoine 2003). Slate tool clusters appear consistently in this location during all phases, and this area has the highest average number of locations during both the early and middle phase, it appears that the axial feature was a foci of skin processing activities, as well as cooking and food processing activities. As cooking and food processing are also female-oriented tasks for circumpolar groups (Issenman 1997; Oakes and Riewe 1998), it appears that the axial features and central dwelling areas were female space.

If the Dorset did emphasize cooperative work, particularly among women (Cogswell 2006; LeMoine 2003), the axial features, the centres of the dwellings, would be the ideal location for women's cooperative work, including hide processing work. It was suggested above that the increase in the number and percentage of interior clusters during the middle phase indicated an increase in or an emphasis on cooperative work at Phillip's Garden. The average number of clusters in the central interior is also higher during the middle phase than that of the early or middle phases. If the dwelling's central area was the location of cooperative woman's work, this also suggests that there was an increase in communal woman's work during the middle phase.

Worldview, as well as gender, affects the placement of activity areas, including those related to skin processing. Present circumpolar peoples link the treatment of hides, the spirit of the animal killed, and the success of the hunt (Chaussonnet 1988; Hall et al 1994; Issenman 1997; Oakes and Riewe 1998), and it is possible that the Dorset did as well. A number of factors determine the success of the hunt, and these factors are different from culture to culture, but the location of skin processing activities is a factor among some Inuit groups (Hall et al 1994; Issenman 1997). It is possible that the Dorset also considered the location of skin processing activities important in determining the success of the hunt. If this is the case, it is possible that processing hides in or around dwellings was a sign of respect to the animal. This may even indicate that hide processing activity areas were tied to dwellings because dwellings were female spaces. Some Siberian and Alaskan groups believed that women had special access to animal spirits, and so processing hides may have been a way to emphasize the connection between women and the spirits of animals (Hall et al 1994; Issenman 1997; Oakes and Riewe 1998).

The association between houses, skin processing activities, and cosmology may have another aspect as well. At least three dwellings, House 17, House 18, and Feature 55, have curved postholes that appear to have held the primary support posts for the dwelling walls (Cogswell 2006; Renouf 1993, 2007). It was confirmed in House 17 and Feature 55 that these postholes supported whale ribs (Renouf 1993, 2007); it is likely that other dwellings at Phillip's Garden were constructed in the same manner. If the Dorset used whalebone to construct their dwellings, the dwellings themselves may have been associated with marine mammals. Thus, processing seal hides near or in a marine mammal associated area may have been a sign of respect to the spirit of the hunted seals.

It appears that gender, worldview, space and skin processing may all tie together. Skin processing was likely performed by Dorset women in and near the dwellings at Phillip's Garden, and the dwellings may have been associated with marine mammals.

These potential associations may be independent of one another, but they may have been linked. Some Siberian groups, such as the Yupik and the Nanai, saw a direct connection between women and the spirits of animals (Oakes and Riewe 1998). Additionally, many Inuit women's tools, particularly those related to skin processing or sewing, were made of sea mammal ivory and bone, suggesting that the Inuit saw a connection between women and marine mammals (McGhee 1977; Pearce 1987). Thus, the Dorset may have tied gendered space and marine mammal space together, with the dwelling, and performed sealskin processing activities in or near points of female and marine mammal power.

6.7 Conclusion

K-means analysis was used to detect clusters in the slate tools from Phillip's Garden. These clusters were initially in uncertain depositional context, but further research identified those clusters associated with middens, divided over dwelling walls, and associated with entrance passages as secondary context. The remaining clusters were assumed to be primary context, but it is possible that some secondary context clusters remain unidentified. When depositional context was determined, it was noted that there was a shift in the placement of skin processing activity areas between the phases; most clusters associated with early phase dwellings are found outside the dwellings, while most clusters associated with middle phase dwellings are found inside dwellings, and equal numbers of clusters associated with late phase dwellings are found inside and outside the dwelling.

The placement of skin processing activity areas at Phillip's Garden was likely motivated by both practicality and social influence. It was suggested that the exterior clusters associated with early and middle phase dwellings largely owe their placement to practicality. Hides generally dry more quickly outside the dwellings than inside, and the activity areas were largely in sheltered locations. Some interior clusters were likely placed inside for practical reasons as well, as hides dry more quickly indoors during periods of heavy precipitation. However, the possible association between skin processing activity areas and dwellings, the prevalence of activity areas in the centre of the dwellings during all phases, and the increase in interior activity areas during the middle phase were both linked to social factors.

If there is an association between skin processing activities and dwellings, it is suggested that this is due to the potential association of dwellings as female and marine mammal oriented space. The central activity areas are near the axial features of the dwellings. The axial features are the centre points of the dwellings, and appear to be heavily associated with female tasks. Thus, hide processing activity areas placed there were in female-oriented areas, which may also have acted as a hub of cooperative work. Additionally, many Siberian and Inuit groups identify dwellings as female-oriented space (Oakes and Riewe 1998; Whitridge 2002, 2004). The dwellings were also constructed using whalebone, suggesting that dwellings may also be associated with marine mammals. If the Dorset believed, as some Siberian and Inuit people did, that women and the spirits of hunted animals or marine mammals are linked (Oakes and Riewe 1998; McGhee 1977; Pearce 1987), the association between women, marine mammals, and dwellings may all be tied together. Finally, it was suggested that the increase in interior skin processing activity areas during the middle phase was the result of a reconceptualization of space at Phillip's Garden during this time, which is also seen in the adoption of larger dwellings. The increase in dwelling size and interior activity areas may both indicate an emphasis on cooperative work, particularly among women, during this period (Cogswell 2006).

Chapter 7: Summary and Conclusions

> *This work presents a myriad of queries that remain to be further developed, investigated, and tested...In this context, the preliminary state is both exciting and apropos, since relatively few questions have been asked concerning hide production in the context of gendered relationships...* (Frink 2005:101-102).

In previous chapters, the slate tools from Phillip's Garden were examined through classification, microwear analysis, and spatial distribution. Tabular slate tools from four other Newfoundland Dorset seal hunting sites were also placed into the Phillip's Garden tabular slate typology, and the tools from two of these sites were also examined through microwear analysis. In this chapter, the findings of each analysis are summarized.

7.1 Classification

The classification system presented in Chapter 3 is a typology based on the morphology of tabular slate tools and fragments. Three large tool types are identified: bevelled tools, rounded-tip tools and multi-characteristic tools, though multi-characteristic tools were subsumed into the bevelled tool type after microwear analysis was performed. Bevelled tools have quadrilateral, triangular or semi-lunar bodies with at least one unifacially bevelled edge. They were divided into two sub-types, unstemmed bevelled tools and stemmed bevelled tools. Stemmed bevelled tools have rectangular or semi-lunar bodies, a stemmed proximal edge and a unifacially bevelled distal edge. The lateral edges usually have unifacial or bifacial bevels. Unstemmed bevelled tools have quadrilateral or triangular bodies, one to four bevelled edges, and no hafting modifications.

Rounded-tip tools are ground slate tools with straight or curved sides and rounded, blunted or pointed ends that are at least twice as long as they are wide. Rounded-tip tools were divided into four categories: common rounded-tip tools, greater rounded-tip tools, perforated rounded-tip tools and pointed tools. Common rounded-tip tools are the most common type of rounded-tip tool. They have no perforations, one or two rounded use-ends, and are less than 19.5 mm in width. Greater rounded-tip tools have two rounded use-ends, and are greater than 19.5 mm in width. Perforated rounded-tip tools have a perforated proximal end and a rounded distal end. Pointed tools have a pointed distal end, and no perforations.

Multi-characteristic tools were longer than they were wide, and had a pointed or rounded proximal end and a unifacially bevelled distal end. After microwear analysis was performed, multi-characteristic tools were re-classified as bevelled tools. Their unifacially bevelled ends have microwear consistent with hide scraping, while their rounded ends are generally unused.

Slate fragments are divided into five types: bevelled fragments, handles, narrow fragments, tabular fragments, and irregular fragments. Bevelled fragments are tabular, ground pieces with at least one bevelled edge. Handles are tabular, ground fragments with two sides and a rounded end that are more than 23 mm wide. Narrow fragments are tabular ground slate pieces with two lateral edges and no ends that are less than 23 mm wide. Tabular fragments are ground, tabular fragments with no edges or unbevelled edges. Irregular fragments are pieces of slate that are not tabular, and are rarely ground.

7.2 Microwear Analysis

Experimental microwear analysis revealed that most bevelled tools were used as hide scrapers, and that most rounded-tip tools were not used as hide creasers or cutters. This was determined through the reproduction and testing of tools. Two reproductions were made of twelve slate artifacts, and a single reproduction made of a thirteenth artifact. The reproductions included examples of all tool types and sub-types, with the exception of greater rounded-tip tools. One set of reproductions, the replicas, were tested on two seal hides, while the other set was left unaltered as a control group. The replicas were photographed under a microscope after each use session to record their microwear. Photographs were also taken of the control tools and the artifacts on which the reproductions were based.

The microwear from the artifacts was then compared to that of the replicas and controls, to determine if the wear matched that of either example. This small sample suggested that both bevelled tool sub-types were used to scrape hides, as were multi-characteristic tools. The sample of rounded-tip tools indicated that most were not used to crease or cut hides, but a small number of common rounded-tip tools and pointed tools were. A larger sample of tabular slate tools were then examined and photographed under a microscope.

The wear pattern of hide scraping and hide creasing or cutting microwear was then compared to the wear of a sample of artifacts from all tool types and sub-types. Of the total bevelled tool sample, 89% (n=31) had usewear consistent with hide scraping. Of the total multi-tool sample (n=6), five had usewear consistent with hide scraping, but only one tool had usewear consistent with hide creasing. As most multi-characteristic tools were used as hide scrapers, they were reclassified as bevelled tools, specifically unstemmed bevelled tools.

Only 26% (n=12) of the total sample of rounded-tip tools (n=46) displayed evidence of hide creasing or cutting. Pointed tools were most often used as hide cutters, as half of the sampled and replicated tools had usewear consistent with this task. Less than a quarter of the sampled and replicated common or greater rounded-tip tools were used to crease or cut hides, and no perforated rounded-tip tools had usewear consistent with these tasks.

7.3 Tabular Slate from other Newfoundland Dorset Sites

To determine whether the tabular slate typology could be expanded to include tools from other Newfoundland Dorset sites, and if tabular slate tools from other sites were used in the same way as those from Phillip's Garden, the slate tool assemblages from several other sites were examined. The tools from four other Newfoundland Dorset seal hunting sites, Cape Ray (Linnamae 1975), Point Riche (Eastaugh 2002), Chest Head (Renouf et al 2006), and Stock Cove (Robbins 1985), were examined and placed into the Phillip's Garden tabular slate typology, if it was applicable. The microwear of a small sample of bevelled tools and rounded-tip tools from Point Riche and Chest Head were also examined.

The tabular slate tools from other Newfoundland Dorset seal hunting sites fit into the same types as those from Phillip's Garden. Only two of the examined tabular slate tools, one from Chest Head and one from Cape Ray, did not fit into the Phillip's Garden typology.

The microwear analysis of tools from Chest Head and Point Riche indicate that bevelled tools from other Newfoundland Dorset sites were used to scrape hides. Only seven bevelled tools were tested, two from Chest Head and five from Point Riche. Five of the seven sampled tools had edge scarring and edge rounding on their working edges, indicating that they were used as hide scrapers. The two bevelled tools that did not have hide scraping wear were both from Point Riche. As a majority of the total sampled tools from Chest Head and Point Riche, and a majority of the tools from the individual sites, had hide scraping wear, it appears that bevelled tools were usually used as hide scrapers throughout Newfoundland.

The working edges of five rounded-tip tools, two from Point Riche and three from Chest Head, were also examined. Two of the five sampled rounded-tip tools had edge rounding as their sole form of wear, which is indicative of hide creasing or cutting. One of the rounded-tip tools used for hide creasing or cutting was from Chest Head, and the other was from Point Riche. Thus, a minority of the total sampled rounded-tip tools were used to crease or cut hides, as was the case with the individual Chest Head sample. Half of the Point Riche rounded-tip tool sample was used to crease or cut hides. These results are similar to those from Phillip's Garden; a minority of rounded-tip tools as a whole were used to crease or cut hides, but half of pointed tools were used as hide cutters. Unfortunately, as a use has not been established for the majority of tools from Phillip's

Garden, and usewear markers established, the similarity in use among the majority of rounded-tip tools is still unknown.

It was concluded that the tabular slate typology developed for Phillip's Garden could be expanded to include tabular slate tools from other Newfoundland Dorset sites. Bevelled tools appear to also have been used in the same manner throughout Newfoundland, as the bevelled tools from Chest Head and Point Riche were used to scrape hides, as were those from Phillip's Garden. As the primary use(s) of rounded-tip tools is not known at Phillip's Garden, its usewear markers cannot be compared to those of other sites. However, some rounded-tip tools from Point Riche and Chest Head were used as hide creasers or cutters, as were some from Phillip's Garden. Thus, it seems that there is a connection between Dorset seal hunting sites, slate hide scrapers, and other slate tools.

7.4 Spatial Distribution at Phillip's Garden

The spatial distribution of slate tools was analysed through k-means analysis. Slate tools were found throughout and around the dwellings at Phillip's Garden; clusters were also found throughout and outside the dwellings. However, due to the intensive reoccupation of Phillip's Garden, there was a high chance that some or all artifacts were in secondary depositional context (Brooks and Yellen 1987). Thus, before conclusions were made, the depositional context of the clusters was determined.

Clusters associated with middens, in or in front of the dwelling entrances, and those that had more than 1/3 of their artifacts on both the inside and outside of the dwellings were determined to be in secondary depositional context. Entrances are not logical work areas, suggesting that they were also refuse areas. Finally, clusters with 1/3 of their artifacts on both side of a dwelling wall were likely formed after the removal of the dwelling, suggesting that they indicate refuse areas. All other clusters were assumed to be in primary depositional context.

It was determined that the placement of Dorset skin processing activities at Phillip's Garden changed through the site's temporal phases. During the early phase, activity areas were found in the central depressions and axial features of the dwellings centres in the eastern, northern, and southern exterior areas. Most clusters (60%) were found outside the dwellings. During the middle phase, clusters were found in all locations. The highest number of clusters were in the dwelling centres, and most clusters (74%) were inside the dwellings. The only late phase dwelling had one activity area in the central area and one in the northern exterior. Half of the clusters were found outside the dwelling, and half were inside. Due to the small dwelling sample for the late phase (n=1), nothing can be said about general trends. As the percentage of activity areas inside and outside the dwellings changes by at least 20% between the early and middle phases, it appears that there were changes in the placement of activity areas among the phases.

The activity areas associated with early phase dwellings appear to be placed in locations that emphasized practicality. Most of the activity areas were outside, to the south and east of the dwellings. Hides dry more quickly outside, and the southern and eastern areas are protected from the prevailing northwesterly winds (Renouf 1994). The interior clusters may have been placed inside during periods of heavy precipitation. Their placement near the axial features, however, could be linked to the identification of the axial features as female space. The activity areas associated with middle phase dwellings are largely placed inside. It was argued that the location of these clusters was heavily influenced by a reorganization of space at Phillip's Garden during the middle phase. The single late phase dwelling and associated activity areas were too small a sample to discuss the placement of activity areas during the late phase at Phillip's Garden.

The location of skin processing activity areas was possibly influenced by Dorset conceptions of gendered and cosmological space. Many circumpolar groups identified dwellings as female space (Oakes and Riewe 1998; Whitridge 2002, 2004). All skin processing activity areas found at Phillip's Garden thus far are associated with dwellings, though this may be the result of limited exterior excavation. If, however, hide processing activity areas are associated with dwellings, it is likely partially because dwellings were female-associated areas. Furthermore, the axial features and central depressions of the dwellings appear to be female-associated areas, as they are the primary food-processing activity areas. Interior skin processing activities also appear to be associated with the axial features, as the only primary context early and late phase interior clusters are found around the axial features, and the central area has the highest number of clusters in the middle phase dwellings. Therefore, it appears that the female-oriented area inside the dwellings is a focus of skin processing activities.

Cosmology also likely influence the placement of skin processing activity areas. If there is an association between skin processing activities and dwellings, it is likely partially due to the conception of dwellings as marine mammal oriented space. The dwellings were constructed using whalebone, suggesting that dwellings were associated with marine mammals (Cogswell 2006; Renouf 1992, 2007). If the Dorset believed, as some Siberian and Inuit people did, that women and the spirits of hunted animals or marine mammals are linked (Oakes and Riewe 1998; McGhee 1977; Pearce 1987), the association between women, marine mammals, and dwellings may be tied together.

7.5 Conclusions

Tabular slate tools from Phillip's Garden were placed in a typology; in Chapter 5, it was demonstrated that this typology could be used to classify tabular slate tools throughout Newfoundland. Additionally, it was noted that tabular slate tools regularly appear on seal hunting sites. As Chapter 4 and Chapter 5 proved that most bevelled tools were used to scrape hides, it is likely that tabular slate tools are found on seal hunting sites because they were associated with seal processing activities. Though the use(s) of most rounded-tip tools is unknown, it is likely that they are also used in seal hunting and/or processing, as they are also found on seal hunting sites.

The spatial distribution analysis conducted in Chapter 6 suggests that tabular slate tools were associated with dwellings, and, in particular, the axial features of dwellings. As dwellings are usually female-oriented space among circumpolar cultures (Oakes and Riewe 1998; Whitridge 2002, 2004), and skin processing is usually a female task (Issenman 1997; Oakes and Riewe 1995, 1998), it is likely that tabular slate tools and skin processing tasks were conducted by women in female-oriented space. As tabular slate tools are found on Dorset seal hunting sites throughout Newfoundland, it suggests that female spaces and activities were common on seal hunting sites. It also may indicate that the Dorset did not view these sites as just seal hunting sites, but as sites associated with all stages of seal hunting and processing.

It was also argued that dwellings were associated with marine mammals at Phillip's Garden, as it appears that dwellings were constructed using whalebone (Cogswell 2006; Renouf 1993, 2007). If this is true, tabular slate tools may have been used on Dorset seal hunting sites for more reasons than their functionality; if they were tied to marine mammals, using slate tools on seal hunting/processing sites may also have been respectful to the animals hunted and killed. It is also possible that women were linked to marine mammals, and thus tabular slate tools, women and marine mammals were all tied together in the Dorset worldview.

To conclude, it appears that Newfoundland Dorset tabular slate tools are associated with female and marine-mammal oriented tasks. At least one tabular slate tool type was used to process seal hides, a female task. Additionally, tabular slate tools are found on seal hunting sites, and in or near dwellings which are arguably marine-mammal oriented spaces.

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