

**THE ARCHAEOLOGY OF THE DEAD AT BOUNDARY BAY, BRITISH
COLUMBIA: A HISTORY AND CRITICAL ANALYSIS**

by

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B.A., University of Alberta 1992

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Abstract

This thesis examines the context and development of human skeletal research in archaeology at Boundary Bay, British Columbia, Canada, with special reference to theoretical, methodological and socio-political factors that have affected the research to date. In recent decades there has been a rise in opposition, particularly by First Nations groups, to scholarly investigations concerning archaeological human bone. The 'reburial issue' in general, and recent instances of skeletal reburial by local First Nations at Boundary Bay in specific, has prompted an historical, critical, and self-reflexive examination of osteo-archaeological research on native remains.

The thesis has several main focuses. To begin, it examines the *First Nations' tradition* regarding the relationship between the living and the dead in Coast Salish culture as revealed through ethnographic literature. Then, the *scientific tradition*, which views ancient human skeletal remains as 'data' invaluable for gaining an understanding of past human lifeways, is reviewed. Following this, an historical and critical approach is applied in order to identify trends in past skeletal research at Boundary Bay through a detailed analysis of osteological and archaeological reports. Two recent reburial case studies are also described. Finally, some insight into and guidelines for future work in osteo-archaeology in B.C. are offered.

This study has revealed that Coast Salish traditional belief systems maintain that unsanctioned or inappropriate contact with the dead can potentially cause serious harm to the living, and that the living bear the responsibility of ensuring that the spirits and remains of the dead are cared for properly. On the other hand, an investigation into the scientific study of human skeletal remains has brought to light the value and unique contributions that such remains can and have made to general human knowledge, and to First Nations communities in specific. Finally, results of the critical analysis in this thesis demonstrate that there have been significant shifts over time in the nature and content of human skeletal research at Boundary Bay. These changes include: increasingly comprehensive lines of inquiry; the employment of highly specialized techniques of analysis; the trend towards salvage rather than research-oriented excavation; and, finally, increased participation and control by local First Nations groups, including reburial of remains. The approaching millennium likely promises further intensified control by local bands over skeletal investigations -- including reburial. However, rather than perceiving this control as impeding the progress of the discipline, it should instead be viewed positively since cooperation and communication between scholars and First Nations will surely bring new insight and direction to the study of the human past.

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CHAPTER 1: INTRODUCTION

Good friend, for Jesus' sake forbear
To dig the dust enclosed here;
Blest be the man that spares these stones,
And curst be he that moves my bones.

Shakespeare's epitaph

STATEMENT OF THE PROBLEM

Human skeletal research in archaeology has undergone significant changes over the past half century. This thesis illustrates that these changes primarily reflect internal theoretical and methodological developments; however, external pressures, particularly the demands of First Nations groups, have also significantly influenced the nature of osteoarchaeological practice in British Columbia. Recent efforts by local bands (see chapter four) to have human skeletal remains repatriated and reburied has created the need to critically examine what we do as osteologists and why we do it. Researchers are now being forced to reflect upon the fact that archaeology can have and has had an effect on members of the non-scientific community.

The current work has grown out of the author's personal experience as a trained physical anthropologist having to come to grips with the fact that some First Nations peoples are vehemently opposed to the scientific study of ancient human remains. I was first exposed to such issues in January of 1992 when, as a volunteer in a Provincial Museum, I was put to the task of cataloguing and conserving archaeological skeletal material potentially destined for reburial. The material had been stored in cardboard boxes for some decades, and it had only recently become a concern to museum curators that some local First Nations people may

become interested in the whereabouts and treatment of those remains. An accurate inventory of the remains in the collection was therefore compiled and the remains conserved in a manner deemed appropriate should they suddenly be viewed by the 'living descendants'. I did not realize at the time just how widespread and, in some places, heated the issues of repatriation and reburial were for First Nations peoples, archaeologists, physical anthropologists, and museum curators across the continent.

The repatriation/reburial issue has created the need for archaeologists and physical anthropologists to re-evaluate past work in order to determine how best to proceed in the future. This thesis critically examines aspects of the context and nature of nearly one hundred years of research that has been conducted on archaeologically recovered human remains at Boundary Bay, through a detailed exploration of the osteological and archaeological reports generated from there.

Applying a critical approach brings to light the development of historical changes through time both internally within the discipline and externally within the larger framework of contemporary society. This work contributes to our understanding of the larger picture of skeletal research in British Columbia by providing a starting point for similar kinds of analyses. Eventually, what emerges is an historical foundation which becomes useful for the design of future burial policies and protocols in the province.

This thesis makes both a specific and a general contribution to the discipline of archaeology. Specifically, it provides historical information and context about the study of human skeletal remains at Boundary Bay. More generally, this work provides a methodological framework for conducting this type of critical analysis elsewhere when

attempting to understand and work with increasing demands of First Nations over the disposition of skeletal material. Ultimately, this thesis contributes in a very general sense to the future resolution of the reburial issue by emphasizing the importance of increased cooperation, compromise, and understanding between First Nations and archaeologists.

RESEARCH GOALS AND OBJECTIVES

The primary goal of this work is to contribute to greater communication and understanding between those who want to study human remains and those who want to rebury them. Meeting this goal is accomplished by reviewing a) aspects of First Nations' spirituality regarding the dead through a review of ethnographic literature, and b) aspects of past contributions of human skeletal research through a review of archaeological and physical anthropological literature. By fostering awareness and understanding of differing cultural, religious, and scientific values, it is hoped that better and more respectful relations will endure nationwide between players on both sides of the reburial controversy.

The particular objective of the thesis is to shed light upon the context and development of aspects of past skeletal research at Boundary Bay, British Columbia. This objective is met through a detailed analysis of osteological and archaeological reports generated from the Boundary Bay locality over time both in terms of context and content.

Specifically, the objectives here are:

- 1) to determine the number and kind of reports generated through time (published or unpublished, article, consulting report, thesis, etc.)
- 2) to bring to light information on the nature of the burial excavations from which each report is derived (research vs. salvage)

- 3) to provide insight into the extent of First Nations involvement in skeletal research and/or occurrence of repatriation/reburial of remains
- 4) to determine changes over time in the structure or content of reports
- 5) to highlight changes in the types of lines of inquiry pursued through time
- 6) to bring to light changes in the kinds of techniques of analyses employed over time in skeletal research

This thesis is comprised of five chapters. Above, this introductory chapter has provided a statement of the problem, and outlined research goals and objectives. Below, this chapter introduces critical theory as the guiding framework, provides background information on the reburial topic, and concludes with a description of the study area.

Chapter two details Coast Salish traditional (and contemporary) beliefs concerning the nature of death and the treatment of the dead. This chapter addresses the goal stated above regarding the need to increase communication and understanding on both sides. It is hoped that this chapter may heighten sensitivity in the archaeological community toward First Nations' cultural values, since it is these values that inform most opposition to skeletal research.

Conversely, chapter three focuses on the value of and contributions made by the scientific study of human remains, with special focus on studies from the British Columbia coast. This chapter likewise serves to meet the goal of increased communication and awareness, as this information should be of value to those individuals who oppose skeletal studies largely because they may not be aware of what can be learned from such research. Chapter three also establishes an historical framework of osteological research in the southern

region of British Columbia which is useful as a comparative basis for the more detailed exploration of the Boundary Bay skeletal reports.

Chapter four provides the results (and discussion) of the critical analysis conducted on the Boundary Bay archaeological and osteological reports. Historical trends are identified and highlighted through a comparison to those broader trends recognized for the greater coastal region (outlined in chapter three). Some of the theoretical, social, and political factors that have affected the research through time are thus brought to light. It is in this chapter that the specific objectives of the thesis are met. Recent reburial case studies in the study area are also offered here.

Finally, chapter five concludes the thesis by summarizing the findings and offering insight into and guidelines for future work concerning the excavation and analysis of ancient human skeletal remains in British Columbia.

THEORETICAL ORIENTATION

This work seeks to determine the context and nature of past skeletal research vis-à-vis socio-cultural and political concerns of local First Nations. Following Ames (1992), I argue that anthropologists must contextualize and critique their professional roles and responsibilities in contemporary society. In this work, I offer a self-reflexive, critical review of osteo-archaeology in one particular locality in British Columbia. The underlying theoretical foundation of this endeavour is critical theory.

There are two broad traditions of criticism and analysis in archaeology at present (Wylie 1989). The first of these is continental critical theory and structuralist Marxism, as

identified with Horkheimer, Marcuse, Habermas and others of the Frankfurt Programme which began in the 1920s (see Leone et al. 1987, McGuire 1992). The second tradition is the more recent Strong Programme sociology of science (Barnes 1977; Barnes and Bloor 1982). The former "promote political self-consciousness among researchers about the oppressive, ideological nature of science and argue that it be restructured around an explicit interest in emancipation" (Wylie 1989: 94), while the latter are concerned with exhibiting the social and political nature of science (ie: the motivation for the use or acquisition of particular forms of knowledge) "through detailed analysis of particular instances or episodes of scientific practice" (Wylie 1989: 94).

Although these schools of thought are related, this thesis is primarily guided by the latter. Within the Strong School sociology of science are two types of analysis:

- a) examination of external political contexts which shape scientific practice; and,
- b) examination of the internal socio-political dynamics of the discipline. Both types of analyses are carried out in this work.

The aim of this work, then, is not to criticize, but rather to examine the epistemological and socio-political factors that have guided the work and interpretations of osteo-archaeologists through time. Theoretical development within the discipline, as well as external political and social concerns of First Nations groups, are examined in terms of how they have affected skeletal research at Boundary Bay.

Critical perspectives in archaeology have grown out of a general dissatisfaction with the positivism espoused by the New Archaeologists in the 1960s and 1970s. Critical approaches in archaeology grew to symbolize a 'loss of innocence' of the New Archaeology,

as discussed by Clarke (1973). As early as the early 1970s, he described the dawn of a new era, one in which archaeologists become critically self-conscious and undertake "explicit scrutiny of the philosophical assumptions which underpin and constrain every aspect of archaeological reasoning, knowledge and concepts" (Clarke 1973: 11-12).

Critical perspectives in archaeology were further articulated by Leone (1982), and his colleagues (Leone et al. 1987) in the 1980s, as "a set of varied attempts to adapt ideas from Marx to the understanding of events and circumstances of 20th-century life" (Leone et al. 1987: 283). The authors draw attention to epistemological factors as a major issue in critical archaeology. They see ideology as the central concept "for addressing the relationship between knowledge of the past and the social and political context of its production" (Leone et al. 1987: 284). They also stress that social, political, economic, and psychological factors affect the way we do archaeology. They offer that

... an encouragement to explore a reflexive epistemology is the growing controversy in archaeology over ownership and control of remains and interpretations of the past. The reburial of human remains and repatriation of some artifacts to native groups may be a political issue as well as a scientific one... (Leone et al. 1987: 284).

Critical approaches in archaeology recognize the need to re-examine past work, to expose biases, and to expand the confines of past interpretations to allow for "alternative" perspectives in research. For example, Trigger (1980, 1984, 1985) conducted a critical analysis of the history of anthropology and Native North America, and revealed that from the onset of archaeological interpretations of prehistory and contact with indigenous peoples, the past has been viewed through a western, imperialist lens. Likewise, feminist archaeologies

have developed recently to challenge the status quo and offer new insights into interpreting the past (see Gero 1985; Gero and Conkey 1991).

In archaeology, the rise of these and other socio-political analyses (Handsman and Leone 1989; Klimko 1994; Leone et al. 1987; Meltzer 1981; also see Pinsky and Wylie 1989) in the literature, including those involving the internal political structure of the discipline (Gero et al. 1983), have helped to elucidate the important role that politics and other factors have in shaping archaeological thought and practice. They create a window unto ourselves and allow us to examine our work in terms of the greater context of society. Wylie (1989: 95) points out that the intent of these studies is not to create "paralysis" but to foster instead "new energy and direction" in the discipline. This critical analysis seeks to 'put the past in perspective' so that it may better guide us in the future.

THE REBURIAL ISSUE

A brief overview of the reburial issue is warranted here as this topic serves as a primary impetus for the current research. This particular controversy has become a contentious topic in contemporary archaeology. It is a complex matter of ethics, opinions, religion, and political agendas on both sides- First Nations groups and anthropologists (for review see Cheek and Keel 1984; Goldstein & Kintigh 1990; Hubert 1989; Layton 1989; Powell et al. 1993; Ubelaker and Grant 1989). The purpose of this section is to familiarize the reader with the issues of reburial so that a better understanding of the purpose and function of this historical review will be gained.

In recent decades, indigenous peoples in North America, and others in Australia and Israel have been becoming increasingly concerned over the fate of their ancestral remains. In North America, this sentiment was declared as early as 1971 during a dispute over the excavation of archaeological skeletons in Iowa (Anderson et al. 1978). Since then, Pan-Indian organizations, such as the Association of Indians Against Desecration and the American Indian Movement have called for the repatriation and reburial of all native skeletal remains from museums and universities (Hammil & Cruz 1989). Their arguments are based upon spiritual and religious beliefs that desecration of burial grounds and removal of bones by archaeologists violates their religious and basic human rights.

The recent rise in political momentum by indigenous peoples worldwide have led to the successful reburial of skeletal materials previously held by archaeologists and museum curators (for e.g. Bray & Killion 1994; Echo-Hawk & Echo-Hawk 1991; Pridmore 1992; Rice 1978; Webb 1987).

The removal of bones by archaeologists from grave sites is seen by some aboriginal people as not only disrespectful to the spirits of their ancestors, but is regarded as an act which may potentially result in serious spiritual and/or physical repercussions to the living. Some individuals blame the current misfortunes that have befallen many native communities on the disturbance of their ancestors' bones by archaeologists (Hubert 1989: 139; Turner 1989: 200). First Nations concerns for the protection of burial sites are deeply-rooted, varied, complex, and highly personal.

Meanwhile, Canadian and American associations of archaeologists and physical anthropologists have been generally opposed to the position of full-scale, universal reburial

of skeletal collections (Neiburger 1988 cited in Ubelaker and Grant 1989). The Society for American Archaeology (SAA), the Canadian Archaeological Association (CAA), the Canadian Association for Physical Anthropology (CAPA); the American Association of Physical Anthropologists (AAPA) and the American Association of Museums (AAM) have all specifically addressed these issues in their official policies. Generally, most organizations agree with repatriation and reburial of historic and 'identified' skeletal remains. Also, most accept repatriation when the cultural affiliation of the remains can be proven. However, anthropologists still advocate the importance of long term curation and analysis of skeletal material.

Skeletal biologists maintain that ancient human remains provide a valuable and unique source of information about past human lifeways in North America (see chapter three). Some of the topics explored by human osteologists include: growth and development, morphological variation, adaptation, social dimensions of mortuary behaviour, demography, biological (genetic) relationships; health and disease; and diet (Buikstra 1983). To archaeologists, the skeletal data, when available, are an invaluable addition to the larger archaeological site data from which they have been recovered.

Some human osteologists believe that skeletal material is so important that under no circumstances should it be reburied. Those who oppose reburial often believe that researchers have an ethical responsibility to preserve skeletal collections for re-examination by future generations of scientists (Buikstra 1983; Buikstra and Gordon 1981). Preservation of collections is crucial, they believe, because as techniques and methods of analysis improve over time, (and they have improved dramatically in recent years) so too does the breadth and

type of information gleaned from skeletal studies. Herein lies the problem: "Just as scientific research techniques are offering new avenues for investigating nutrition, genetic relatedness, and health, access to skeletal collections is diminishing" (Buikstra and Ubelaker 1994: 2).

It is emphasized here that not all aboriginal peoples are unconditionally opposed to skeletal research. Many bands are interested in the information attainable through such studies, and readily sanction skeletal research activities. Indeed, many First Nations individuals are themselves interested in and do participate in the excavation, interpretation and preservation of archaeological and even osteological remains. This point is critical to note in that it demonstrates that there is a continuum of opinions/ positions on the reburial topic that crosscuts socio-cultural (ethnic) divisions.

Opinions are divided on both sides. Within bands, differences often exist between band councillors, for example, and elders of the community, who often retain more traditional beliefs. Like their indigenous counterparts, anthropologists and archaeologists vary in their opinions regarding reburial. Scholarly opinions range from strong opposition to reburial under any circumstance, to compromise including repatriation of remains following the completion of skeletal analyses. Some archaeologists have even come to accept reburial as "scientifically, professionally, and personally ethical" (Zimmerman 1989).

The author, while recognizing the value of skeletal research, maintains a position which sanctions repatriation and reburial (preferably following scientific analysis) in respect of First Nations concerns and in keeping with modern ethical standards. Furthermore, the onus is on the archaeologist to involve local First Nations, and to attempt to make the research relevant to the lives and communities of those individuals as much as possible.

Reconciliation of all the diverse opinions in the reburial issue is not likely to occur in the near future. Besides, even if every archaeologist agreed to cease collection of skeletal samples for research purposes, the exposure of indigenous human remains would not cease.

As one Native American puts it,

Currently many Indians appear to view archaeologists as the main threat to the burial grounds of their ancestors. The real problem facing us today is not so much the archaeologist, but rather farming activities, natural erosion, coal mining, development and construction projects of all kinds, and looting by members of the lay public. All of these factors work together to level mounds, expose the burial sites and insure the destruction of significant parts of our native Indian heritage (Anderson et al. 1980: 2-3).

Therefore, in the event of 'accidental' exposure of archaeological human bone, the question of protocol is critical. How are these exposed skeletal remains to be dealt with? It is unlawful, in many countries, to leave remains of any antiquity exposed and unprotected. Currently, standard protocol generally includes excavation under agreement by local First Nations bands. Provincial, U.S. state and federal legislation regulate these excavations and support communication with indigenous groups. Policies and legislation, however, must be continually reviewed and developed in order to comply with local circumstances and modern ethical standards.

By now, most archaeologists recognize that opposing those who advocate reburial is counter-productive (Webb 1987). The efforts of First Nations groups to control the disposition of their ancestral skeletal remains is not likely to subside in the near future. On the contrary, struggle for control is likely to advance as First Nations continue to gain political power and public support. What is crucial then, if the study of ancient skeletal collections in

North America is to continue in the future, is not only critical reviews of past work, but implementation of measures to increase the communication, cooperation and trust between those who want to study human remains, and those who want to rebury them.

The "humanistic approach" as recommended by Winter (1984) involves respecting the rights and dignity of others. He proposes that cooperative attitudes by both parties would bring forth "opportunities to better perceive other people and their cultures, as well as ourselves and our cultures" (1984: 47). It is precisely this approach, addressing the need for communication and compromise in archaeology, that is the driving force behind the current research.

It is hoped that this work will contribute to greater sensitivity on the part of archaeologists toward the spiritual/political concerns of local First Nations. At the same time, it will shed light upon the relevance of skeletal research to contemporary aboriginal society and to general human knowledge. To this end, players on both sides of the controversy stand to gain from the exploration and understanding of each other's concerns. I believe that this work will stimulate discussion and provide a step in the general direction of greater communication by both sides in the reburial issue.

This work does not claim to offer any single clear cut solution to the reburial issue. Indeed, it is unlikely that such a 'solution' will ever exist. Conflicting matters involving reburial must continue to be resolved on a case-by-case basis. The tenor of such resolutions, however, depends upon the attitudes of those involved. Hopefully, mutual respect for different cultural values, and open communication between anthropologists and aboriginal peoples will prevail.

STUDY AREA

The geographic area chosen as the focus of this critical analysis is the Boundary Bay, British Columbia, locality. This locality is situated on the Northwest coast directly north of the Canada-U.S. border in southern British Columbia. The study area encompasses the mainland coastline located on the southeast portion of the Strait of Georgia, primarily around Boundary Bay (Fig. 1). Geographic features of the study region include the Point Roberts peninsula, Boundary Bay, including Mud Bay, and Semiahmoo Bay. Several major archaeological sites have been identified on this section of coastline including Whalen Farm, Tsawwassen, Beach Grove, and Crescent Beach.

A relatively small geographic area was chosen for this study because a comprehensive analysis can only be successfully achieved on this scale. A detailed examination of a small locality (e.g. Boundary Bay), rather than a broad area such as the Coastal region, as a whole, can always be built upon by future researchers. A wider geographic scope would undoubtedly result in a less detailed study, and runs the risk of leading to more broadly sweeping generalizations ultimately of little particular use to others. It was especially desired that detailed historical information be accrued in this thesis in order to be useful to local bands for educational and/or reference purposes. In this light, it is felt that a detailed picture of a smaller reality was more appropriate.

The climate and natural setting of the Boundary Bay locality is that of a typical coastal marine environment characterized by heavy precipitation and a coastal rainforest. Fish resources are abundant in the numerous streams and rivers which flow into the study area, including the Serpentine, Nicomekl, and Fraser River situated directly to the north.

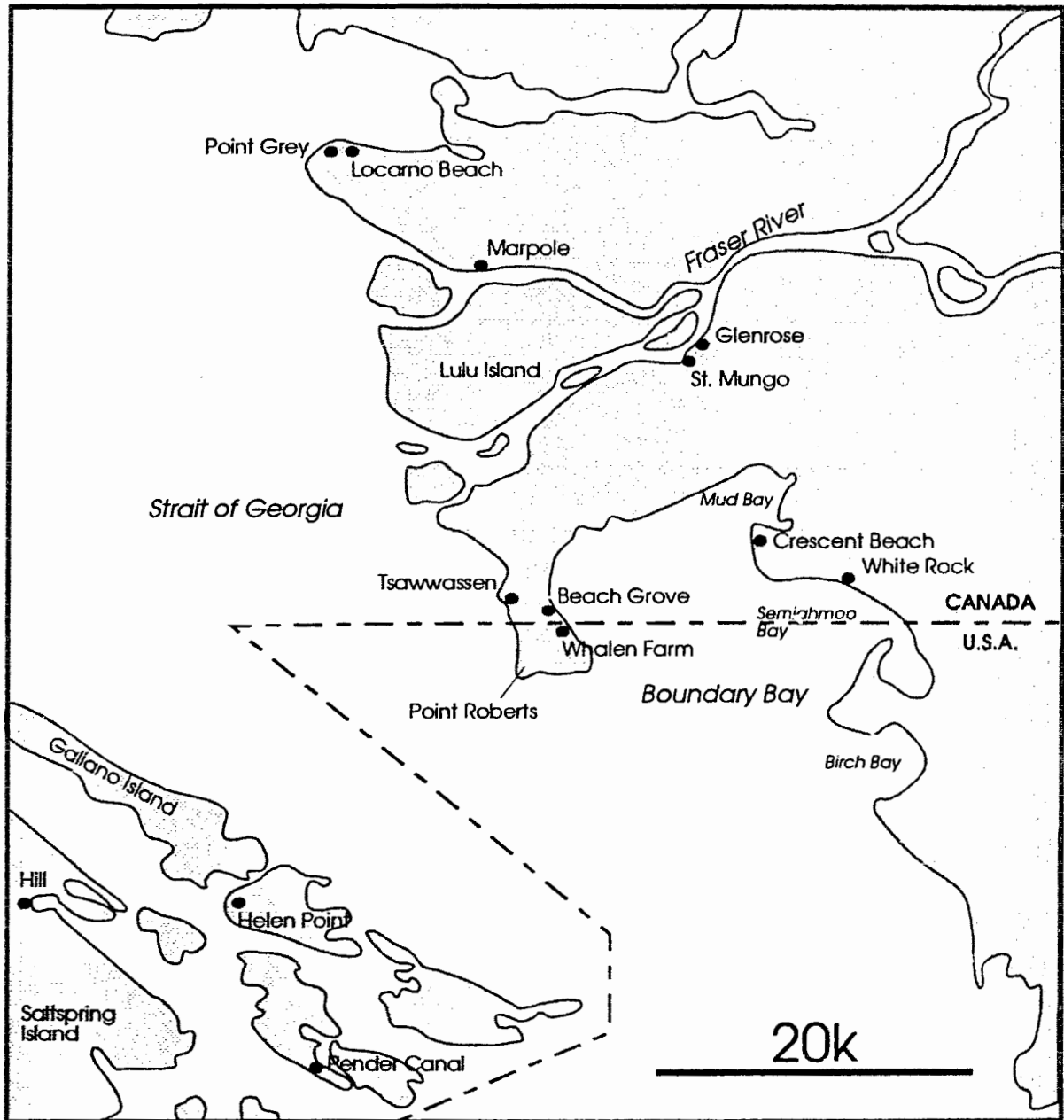


Figure 1: Map of major archaeological sites yielding human remains in study area and surrounding vicinity

In the early post-contact period, the study area was home to at least three distinct native groups all members of the larger Central Coast Salish linguistic branch: the Tsawwassen, Snokomish, and Semiahmoo. The Central Coast Salish are comprised of five language groups: the Squamish, Halkomelem, Nooksack, Northern Straits, and Clallam. Their total traditional territory encompasses the southern end of the Strait of Georgia, the eastern Strait of Juan de Fuca, the Lower Fraser Valley and adjacent mainland areas (Suttles 1990: 453).

Both Downriver Halkomelem and Northern Straits Salish territory are represented in the study region. The Tsawwassen (meaning "looking toward the sea"), though a non-Sto:lo (non-river) group, traditionally spoke a Downriver Halkomelem dialect (Duff 1952: 11). They occupied the delta region south of the main mouth of the Fraser River, extending down the western shore of the Point Roberts peninsula (Fig. 2). Their winter village was located near the base of English Bluff at the current B.C. ferry causeway. The remainder of the study area was inhabited ethnographically by the Semiahmoo, who are generally described as Northern Straits-Salish speakers (Suttles 1990). Duff (1952: 11), however, reported claims that the Semiahmoo, were "speaking Halkomelem now", though originally they spoke a different language, (probably Straits Salish). This group was centred on the mainland around Semiahmoo Bay (Suttles 1990: 456), though their territory extended southward to Birch Bay in northern Washington (Suttles 1974: 27). In the summer months, they were commonly seen at the southern tip of Point Roberts reef-netting migrating sockeye salmon.

Prior to the mid nineteenth century, another Halkomelem group, the Snokomish, inhabited the area from the eastern shores of Point Roberts to the Serpentine, Nicomekl and

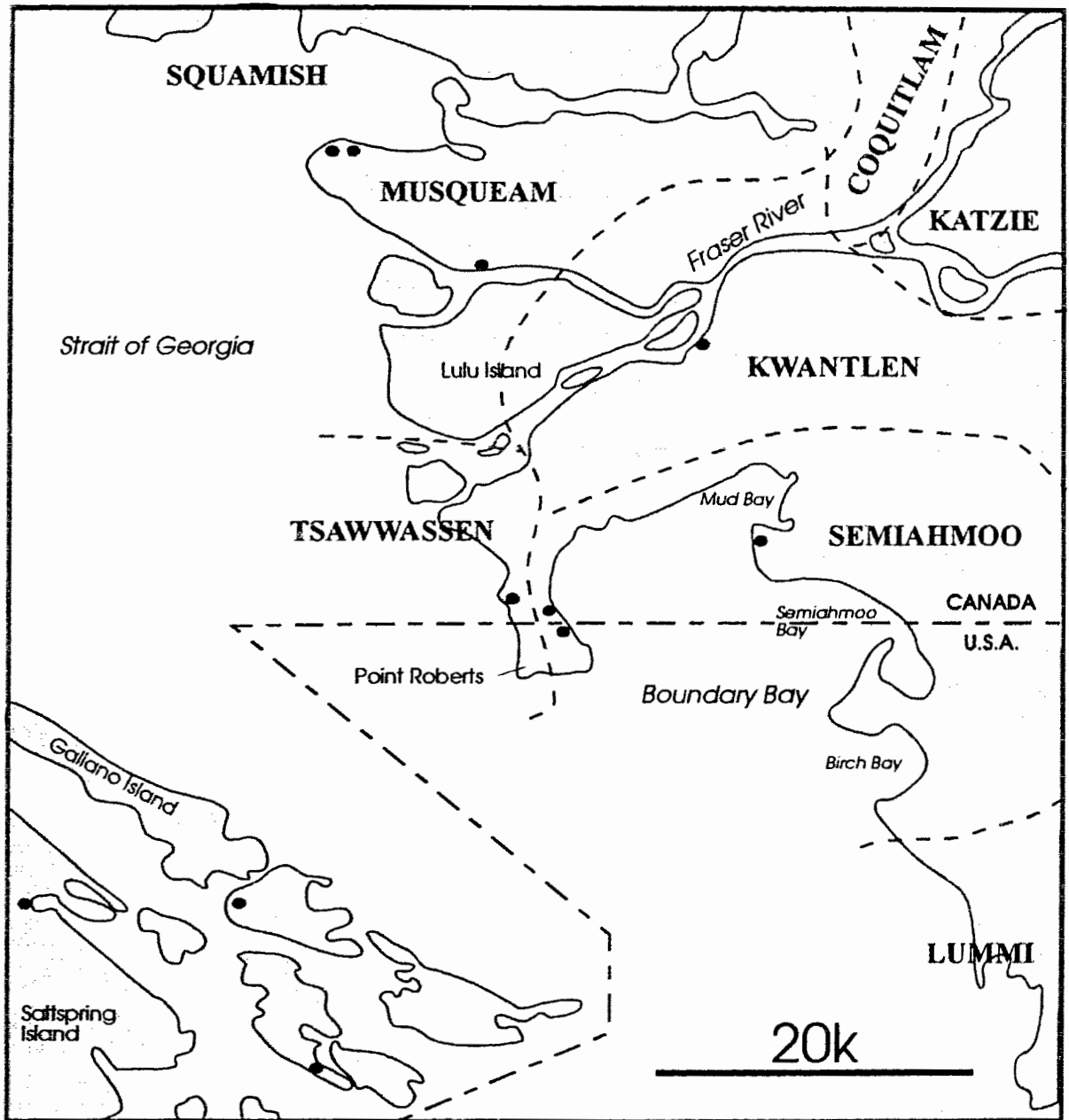


Figure 2: Map showing approximate territories of local bands

Campbell rivers (Suttles 1974: 29). This group was also referred to as the "Nicomel" (Ham 1982: 66; Suttles 1990). Their village was centred at Blackie Spit on the east side of the Bay. Their population, however, was effectively wiped out by smallpox prior to the 1850s. The few survivors joined the Semiahmoo, themselves reduced in numbers by epidemics and/or enemy raids. Eventually, the Semiahmoo inherited all of Snokomish territory having had affinal ties there; though many moved south to join the Lummi (Suttles 1974: 29).

In addition, the Kwantlen have been described as occupying part of the north shore of Boundary Bay. Duff (1952: 27) recorded that according to a Katzie informant, Kwantlen (now known as Langley) territory extended southward "through to Mud Bay and included the Serpentine River". It is likely that this Fraser River group moved into the area as the Snokomish population there disappeared.

At certain times of the year, Boundary Bay was visited by numerous mainland and Island groups. Duff wrote that Point Roberts was a "place which drew fishermen from great distances" (Duff 1952: 26). The Cowichan and Nanaimo, appeared on the mainland in July to join the Tsawwassen and Musqueam in exploiting the abundant salmon travelling up the mouth of the Fraser River (Duff 1952: 25). The Saanich, Songhees, Samish and Lummi joined the Semiahmoo in the summer to exploit the abundant marine resources at Boundary Bay. Cannery Point, at the southeast tip of Point Roberts, was a favourite summer fishing spot for many families (Suttles 1951, 1974).

Several factors make the Boundary Bay locality ideal for such a study as conducted here. First, archaeological and osteological research has significant time-depth. In this locality,

human remains have been archaeologically recovered and analyzed from this area for nearly one hundred years. Temporal scope is essential for an historical review to have meaning.

Secondly, there has been a disproportionately high number of human remains recovered by archaeologists from this relatively small coastal area during that time. Literally hundreds of indigenous human remains have been recovered by archaeologists and studied by physical anthropologists. Even today human remains are frequently encountered during development projects or naturally eroding from banks and ancient shell-middens which dot the coastline.

Thirdly, this region has been the focus of a wide variety of archaeological/osteological investigations, including research and salvage/consulting projects. Collectively, the reports and other documents produced by these investigations provide a relatively large sample upon which to focus the critical analysis.

Finally, the Boundary Bay locality was selected because a number of local universities and museums currently conserve hundreds of pre-contact skeletal remains recovered from sites therein. The repatriation of some remains excavated from sites in the study area have recently been a subject of concern to local First Nations groups, and this is likely to increase rather than decrease in the near future.

Generally in the south Delta area, and in the lower mainland region in general, positive working relationships have been maintained between local bands and archaeologists/physical anthropologists. Local First Nations bands currently play an active role in regulating the excavation, analysis and disposition of human remains. It is felt that a region characterized by non-volatile relations between both parties is better suited to a thesis of this nature. There

exists a general willingness to work together and a respect for each other's cultural values, however, potential for conflict still remains prevalent.

CHAPTER 2: RESPECT FOR THE DEAD -- UNDERSTANDING

COAST SALISH SPIRITUALITY

Archaeologists must stop digging our ancestors up. Give back what you have taken; you have not had permission from us. To the whole world I say: stop digging things up, for it shows no respect for the dead. Bones turn to dust, and that is what should happen (Native American elder in Hubert 1989: 147).

In this chapter, Coast Salish belief and practice regarding the dead are reviewed.

The purpose of this chapter is to acquaint the reader with details of their traditional world-view and to demonstrate how aspects of this perspective have been carried over into a modern day context. To provide ethnographic context, a brief discussion of patterns of subsistence, technology, settlement and social organization of Central Coast Salish peoples, as of the mid-nineteenth to mid-twentieth century, is presented. Barnett (1938, 1955), Duff (1952), Drucker (1955a); Hill-Tout (1902, 1904), and Suttles (1951, 1974) are the main ethnographic sources from which the following information is derived. Wherever possible, description is of those groups from within the study area; although the majority of sources draw upon other Coast Salish groups from within the wider Gulf of Georgia/Lower Fraser Delta region.

ETHNOGRAPHIC CONTEXT

The Central Coast Salish traditionally inhabited a region characterized by an abundance of food and other resources. Ham (1982) provides an excellent review of the ecology of the Boundary Bay area (1982: 19-50) and stresses the seasonal variations in

resource availability. The main food staple in the area was salmon. Running from the Strait of Juan de Fuca, through the Gulf Islands, north around Boundary Bay to the mouth of the Fraser river, the salmon literally passed by the "front door" of the people living around Boundary Bay (Hammon 1986). The sea also provided a wide variety of edible mollusks and bivalves, including clams, mussels, oysters and cockles. Various species of waterfowl and sea mammals, land mammals, and vegetation, such as wild berries and roots, were utilized in their season.

A variety of technologies were developed by these coastal inhabitants in order to exploit the abundant marine and other food resources available. While the Halkomelem-speaking groups fished salmon in the Fraser River, the Northern Straits groups were well known for their reef-netting technology, where nets were suspended between two parallel canoes (Suttles 1951, 1990).

Settlement patterns reflected the people's seasonal movements. Winter villages were permanently set up along the waters' edges or near river mouths. During the summer months when all groups were highly mobile, habitation consisted of temporary dwellings. These were constructed of rush mats or cedar bark set upon frameworks of poles. Sometimes, more elaborate summer structures consisting of cedar planks from the winter villages were set up at popular reef-net camps.

Suttles (1974: 27) notes that the winter villages of the Semiahmoo before the 1850s were located near Drayton Harbour and possibly Birch Bay in Washington. During the summers, they could be seen fishing the reefs at Cannery Point on Point Roberts with other groups such as the Saanich and Lummi. The Tsawwassen winter village, on the

western shore of the Point Roberts peninsula, was comprised of seven large houses described by Barnett (1955). During most of the year they fished off the shore in front of their village; but moved to temporary fishing camps on Lulu Island in the summer months to fish for salmon in the Fraser River.

Coast Salish social organization is generally viewed as being divided into three social classes with descent reckoned bilaterally (Suttles 1990: 463). Ethnographers, as well as archaeologists, noted that certain cultural practices were carried out in order to denote or maintain social status differences in Central Coast Salish society. Two examples with possible skeletal evidence are pointed out here -- labret wear and cranial modification.

Although labrets were not worn ethnographically by the Coast Salish, they were worn by other groups further north. There it is known that labrets reflected status in women (Cybulski 1994: 79). The archaeological record indicates that labrets were worn by people on the north and south coast, including in the Strait of Georgia region, possibly as early as 5,000 years ago (Carlson 1986; Cybulski 1991, 1992a). In pre-contact times, apparently, both men and women wore labrets.

Possibly replacing labrets as status markers, cranial deformation was common among the Gulf of Georgia Salish, and other tribes north of the Columbia River. Infants were bound to their cradles with cedar bark pads that eventually flattened the frontal and occipital portions of their skulls (Suttles 1974: 268). A modified skull was often recorded in the literature as a sign of an upper-class (Oettinger 1930: 16; Mitchell 1971) or else

merely as a sign of a free (nonslave) individual (Suttles 1990: 463). Barnett, however, states that

There was no clear conceptualized association of the deformed head with aristocratic attributes. Everybody had it, with the possible exception of the born slave, and there were very few born slaves. Most slaves were captured and therefore were already deformed (1955: 75).

The most common form of head deformation for the Coast Salish groups generally was the antero-posterior or bifronto-occipital form, which Cybulski calls the "Cowitchin type" (Cybulski 1975: 43), although variability has been observed archaeologically in the Gulf Region (Beattie 1980).

THE DEAD IN TRADITIONAL BELIEF AND PRACTICE

Aspects of religion, spirituality, and beliefs about the dead in particular form the basis of many First Nations' opposition to the scientific study of ancestral skeletal remains. Not being a member of a First Nations' community, I do not pretend to have a full understanding of the traditional belief system, much less be able to convey a detailed account of all its nuances to the reader. Nevertheless, an appreciation for traditional beliefs can still be gained through the examination of non-native ethnographic literature.

Firstly, ideas about the dead in Coast Salish mythology and in concepts of the supernatural are reviewed. Secondly, a brief description of traditional rituals and ceremonies, including those involving bones, ghosts, or ideas about the dead is provided. Thirdly, and of obvious relevance to burial archaeology, is a review of the ethnographic information on mortuary customs. This chapter concludes with a brief look at modern

religion, funerary practices, and modern day burial policies in two contemporary Coast Salish communities.

In Euro-Canadian society, there is a general sense of avoidance and denial of death (Rando 1984: 5). The elderly and dying are often kept away from their homes in care facilities or hospitals, and when they die their bodies are prepared by a stranger or undertaker. In some Western religions, for example Judaism, the casket of the deceased remains closed even at the funeral, inhibiting physical and even visual contact between the living and the dead. Living members of Euro-Canadian society often reside thousands of miles away from the grave sites of their grandparents or other relatives, indicating that there is not a particularly strong tie binding the physical remains of the dead with the living descendants.

Expressions of mourning and grief in Euro-Canadian society are acceptable at funerals but not usually encouraged. When death has occurred, there is a common theme of "letting go" and "moving on with one's life" (see Joseph 1994: 110). Any contact with the long dead, be they ghostly visits or voices heard are almost invariably met with disbelief or dismissed as "crazy" by the living. Overall, the dead generally do not play an active role in the lives of the living in Euro-Canadian society.

By way of comparison, to what extent did the dead feature in the lives of the living in traditional native culture? According to ethnographic sources (Barnett 1955; Joseph 1994; Kew 1970, 1990; Suttles 1951; Wike 1967), in Coast Salish and other traditional Northwest Coast cultures, the continuity of the relationship between the living and the dead was (and is still) well established. In Coast Salish belief and practice, "an ongoing

relationship with the dead is culturally sanctioned, and viewed as reality and not illusion" (Joseph 1994: 25).

It is known ethnographically that in traditional Salish culture, the dead evoke an important presence in the lives of the living, even long after their disposal. Physical contact with the long dead is not uncommon.

Death is seen as a continuum along which personal relationships can be extended and communication between worlds is possible. The spirits of the dead are honored, fed, and spoken to. They come to visit and, in general, continue to exist as real beings dispossessed of their bodies (Joseph 1994: 27).

Wike (1967: 98), in her article entitled, "The Role of the Dead in Northwest Coast Culture" recognizes the existence of widespread, important, and systematized beliefs concerning the relationship between the dead and the living. She argues that the nature of the continuity between the living and the dead is structured by the belief that the rewards and status rankings maintained in life are upheld or intensified in life after death.

Wike writes that an active relationship to deceased ancestral kin was the core of the potlatch and associated ceremonies among several tribes, including those of the Gulf of Georgia (1967: 101). The establishment of good relations with deceased kin translates into ensuring a secure position in the afterworld for the living. She also suggests that, for example, chiefs needed the support of their powerful ancestors, in order to carry out their responsibilities for managing the group. Amoss (1978) likewise reports that "the ghosts of the dead bore the responsibility of monitoring relations between men" and that "it was the

dead, not the guardian spirits, who were the supernatural prop for the social order on the Northwest Coast" (Amoss 1978: 18).

Archaeological evidence suggests that the importance of the link between the living and the dead extends back considerably in antiquity in Coast Salish territory as well as throughout the Northwest Coast. For example, excavations at the Pender Canal sites in the Gulf Islands (Carlson and Hobler 1993: 49) demonstrate that ritual feeding of the dead, as seen through the presence of ceremonial spoons and clam bowls in association with the mouths of 'seated' skeletons, was an important aspect of pre-contact lifeways dating back perhaps as far as 4500 years ago.

Mythology

Both the spiritual and the physical remains of the dead play a recurrent role in Salish myths. Mythological tales relay experiences of a wide variety of characters including the Transformer, Raven, Mink, even Giants and Cannibals (Suttles 1990). Myths recount events and interactions between these characters, and humans, and/or other aspects of the environment. Local myths address the origins of the people, explain the order of the natural world, and account for the appearance of important food resources, like fish and deer (see Jenness 1955; Appleby 1961; Hill-Tout 1902, 1904; White 1981).

In myths, humans often interact with the dead. One Chehalis myth (Hill-Tout 1904: 120) tells of a man who, after four years, gains the power to restore his dead wife to life by walking over her bones four times. In other myths, the interaction consists of ghostly visits from deceased members of the village, usually close kin. One Tsawwassen

myth (Appleby 1961: 33), called the Legend of the Hungry Ghost, explains how a young man who sought spiritual power in the woods, comes home to see the dim figure of a ghost standing in the doorway of a big lodge where his people are dancing and feasting. Apparently, the ghost so desperately sought the pleasures of food and the company of his fellow villagers that he returned to the village to visit them.

Not only was it believed that ghosts call upon humans, but also that humans are able to visit a place known as the Land of the Dead. When a person dies, their soul or spirit leaves their body and journeys to this place where it joins the souls of other dead ancestors. The Land of the Dead is not unlike the world of the living, and people there engage in the same kinds of activities as they did before they died. Spirit people live in similar-looking houses and villages as do the living. According to tradition, this 'ghost land' is reached either by canoe or by journeying down a very long trail. Or, it can be accessed by a hole in the earth created when a ghost stamps its foot (Stern 1934: 122).

One example of a Salish myth about a journey made by the living to the Land of the Dead was recorded by Hill-Tout (1904: 122). This myth is about a man who acquires the necessary spiritual powers to journey down a very long trail to the ghostly village of his young wife who had died recently. It was the man's desperate wish to bring his wife back to the land of the living.

A Lummi myth recounts the story of a young man who pilfers a skull from a grave that eventually turns into a beautiful young girl, with whom he falls in love. When the time comes for the girl to return to the Land of the Dead, the young man begs her to take him with her. She does, but warns him that "in the Land of the Dead, strange things happened

which if noticed would bring disaster upon him" (Stern 1934: 121-122). Overall, the world inhabited by ghosts is viewed as a world fraught with supernatural powers and the potential for extreme danger to the living.

The Supernatural

As in all indigenous cultures of North America, concepts of the supernatural played an integral role in the everyday lives of Northwest coast inhabitants. The role of the dead as supernatural players are examined and discussed within the larger context of Salishan spirituality and worldview. Traditionally, some Northwest Coast groups held vague notions of a supreme being or beings, though the Coast Salish, according to Drucker (1955a: 154), maintained no such concept. Fundamental to the spirituality of Salish people is a belief in a variety of supernatural beings which co-habit the world in which humans live. Supernatural beings usually take the form of animal spirits, though they are also embodied in mountains, the sea and the sky.

Beliefs centred on salmon spirits, along with a number of other important species, was central to Salish religion. Traditional thought maintains that the salmon are actually supernatural Salmon People, who reside in houses below the sea. When it comes time for the yearly 'run', these People disguise themselves in robes of salmon skin. They ascend the rivers, voluntarily, and allow themselves to be harpooned and netted by humans. Those that are not caught, of course, spawn upriver and die, only to 'return to life' again a year later.

The existence of 'guardian' spirits or 'helpers' was foremost in traditional beliefs about the supernatural. Every individual receives a supernatural helper at birth or acquires one during adolescence. Vision quests are the primary means through which contact with the supernatural is made. Guardian spirits usually take the forms of animals, though sometimes they appear as weird and terrifying monsters (Drucker 1955a). Guardian spirits convey strength and supernatural power to an individual. They are summoned to help guide and bring success in everyday activities, such as carving, canoe building, spinning, weaving, fishing, and hunting. For instance, a woodworker may seek power from the spirit of a woodpecker; a weaver from a snake (Suttles 1990: 467). Spirits, however, are always very powerful forces. They are capable of welling up inside a person where they can cause illness or even death unless the proper rituals are carried out.

Other spirits exist in traditional belief systems that are distinct from the ordinary person's guardian spirits. They are called shamanic spirits, and are the 'helpers' of the shaman. These are distinct only in that they are powerful enough to help cure the sick and dying. Shamans or medicinemen summon their spirit helpers to grant the ability to control the powers which are believed to be causing an individual's illness. There are two universal theories of illness on the northwest Coast: disease by intrusion of a foreign object (imbedded either by a spirit or by another shaman) and disease by soul loss (Drucker 1955a: 159; see Elmendorf 1967 for review of soul loss in Western North America). A person's soul might leave its body if suddenly frightened or spooked by a supernatural being, or when visiting a strange, new place, or it can be stolen by the evil spell of a

shaman (Duff 1952: 112). Both kinds of illness can be cured by a shaman, aided by his 'spirit helpers'.

Finally, ghosts or spirits of the dead figure prominently in Coast Salish beliefs about the supernatural. Ghosts differ from other spirits in that they are "just people". Descriptions of ghosts vary from group to group, but generally they are regarded as the 'souls' or 'corpses' of the dead. They generally reside in the Land of the Dead, though some believe instead that they "just keep a'travelling" (Duff 1952: 116). Regardless, the ghosts of the dead play an active role in the lives of the living. Amoss offers that:

In the Indian view the ties connecting the living and the dead cannot be severed; they can only be loosened by careful attention to the legitimate expectations of the dead and constant vigilance against their unreasonable demands (1978: 75).

Their legitimate needs were for food, personal possessions, and proper respect from the living; and it is the responsibility of surviving kin to feed them, or convey their possessions to them by burning them after the funeral. Amoss (1978) writes that two things tormented the dead: loneliness and hunger. According to her Nooksack informants, it is not advisable to eat out of doors after dark because ghosts linger and try to steal food. Ghosts are known to gather outside smokehouses during parties where there is much food. They usually do not enter but linger outside of doorways and windows looking in.

In traditional belief, ghosts long for the company of loved ones, but they are considered dangerous because they often try to steal the souls of the living. If a ghost steals someone's soul, that person will eventually die. Individuals mourning the death of a spouse are especially susceptible to 'soul-snatching' because they are believed to be

weakened by their grief. Children, too, are considered defenceless against ghosts and are never allowed at funerals or burnings where ghosts are thought to be nearby (Amoss 1978: 75-6). Ghosts worry about the living and may steal a soul if they think that a person is unhappy or suffering. In some cases of soul loss, however, shamans are able to convince the ghost to return the soul to the person.

A specialized shaman, or medium, is one who has special communicative powers with the dead. Amoss (1978: 77) writes that "nothing was more powerful or dangerous than the pollution generated by contact with a corpse". Consequently great power can be gained from ritually charged contact. Traditionally, people may seek ghost power, either by trying to "catch" a ghost itself, or by having physical contact with human skeletal remains. One of Amoss' Nooksack informants tells of a person who went to the graveyard and laid down inside the grave box with the bones of a dead person in order to acquire supernatural power (Amoss 1978: 77).

Some of Amoss' Nooksack informants believe that what is acquired at contact is not power as such but access instead to "all the knowledge available to the dead" (Amoss 1978: 77). The dead are believed to know all about the lives of the living and even know of impending death. Barnett (1938: 136) writes of a specialized shaman who had received his power from the dead and who functioned as a clairvoyant. This type of individual also functioned as a curer of those believed to be afflicted by ghosts.

Some informants believe that a person can receive a song from ghost power, and one Lummi informant claimed she even acquired the power to kill others (Suttles 1974: 352). Another type of individual, a sort of fortune-teller, possessed inborn, not acquired,

powers which enabled her to see ghosts, see distant objects and happenings, and foresee future events (Duff 1952: 114, Suttles 1974: 353).

Ritual and Ceremony

Traditionally, a variety of rituals and ceremonies played important roles in the everyday lives of Coast Salish peoples. Some of these directly involve ideas about the dead, though of course many do not. Several of these rites and ceremonies are briefly reviewed, including cleansing rites, First Catch rituals, hunting and curing rituals, feeding of the dead, winter dances and potlatch ceremonies. Emphasized in the following discussion is the power that bone and bone objects contain.

First of all, cleansing ceremonies were performed publicly as well as privately. The former involve the use of spells and ritualist paraphernalia, such as a rattle or *sxwayxwey* mask; the latter involve fasting, bathing, singing, and isolation. These rites and ceremonies serve to 'cleanse' individuals either at puberty, a wedding, a death, or at a ceremony honouring a deceased relative (Suttles 1990: 468).

Many traditional Salish rituals directly involve food. The first salmon catch, for example, is a complex ceremony to welcome and honour the arrival of the salmon. The first season's catch was always "carefully carried in by children, cooked in a special way, eaten by all, and [the] bones were ritually returned to the water" (Suttles 1990: 486). Despite some inter-group variation concerning the first salmon rites, usually the complete skeleton -- backbone with head and tail attached -- was to be returned to the water

(Drucker 1955a: 155). If any bones failed to be returned, the spirits might not appear the following year, or else they might appear missing an arm or a leg.

Similar to the rituals directed toward the salmon spirits, hunters ritually placated spirits of the animals they desired to kill through the use of their bones in ritual.

Interestingly, ritualists from neighbouring groups such as the southern Kwakiutl and Nootka, are known to use human bones and corpses in their rites, as they were believed to possess great power over game (Drucker 1955a: 157). To my knowledge, the use of human remains in ritual has not been recorded for the Coast Salish, but Drucker (1955b: 73, also see Wike 1967) notes that there was widespread belief on the Coast that the dead held power over land, and especially marine game. Brabant (in Wike 1967: 100) writes that "the skull of the dead was used to become a successful hunter, warrior, or shaman".

Curing was an important ritual activity and was strictly carried out by shamans. Shamans are usually identifiable by their long, tangled hair, elaborately carved bone necklaces, rattles, or bone tubes used to "blow sickness away and to catch souls" (Drucker 1955a: 160). Again we see the use of bone in spiritually powerful circumstances. Ethnographically, any bone (or stone) pendant was normally interpreted as a shamanic charm. For example, a miniature human skull effigy carved from a deer metapodial bone recovered archaeologically from the Locarno Beach Site (dated to 2500 years ago) may be shamanic paraphernalia (Carlson 1983: 200). Alternatively, it may have been used in hunting rituals as mentioned above.

Curing treatments by a shaman included singing to summon a spirit helper, or diagnosing the cause by looking into a patient or a pan of water (Suttles 1990: 467). If an

illness was believed to be caused by an intrusive object, the shaman attempted to remove it. Disease-producing objects included pieces of bone, human hair, duck claws, pebbles or other objects. These were ritually sucked, rubbed, prodded or otherwise removed from an afflicted person by the shaman. Once more, bone is powerful enough to cause sickness in the living.

It is noteworthy at this juncture to emphasize the ritual importance accorded the skeletal remains of salmon and other species in traditional Coast Salish culture. The use of human and/or animal bones in both hunting and curing rituals, wherein great supernatural powers are invoked, is intriguing. There appears to be a communicative, very powerful, link between humans and the supernatural via the skeletal remains of once living beings. In terms of the reburial issue, this is an important point to acknowledge as it illustrates why First Nations groups may be concerned over the disturbance or ill-handling of their ancestor's bones by archaeologists.

Another ritual demonstrates the responsibility that the living have toward the dead in traditional Salish culture. It is the ritual of feeding the dead (Suttles 1974: 477). As we have seen, ghosts become hungry and have to be fed by the living. Traditionally, feeding always occurs after a funeral, usually after four or eight days, or else it occurs at memorials honouring the deceased in subsequent months or years. Feedings can also take place at any time when a person reports the presence of a bothersome ghost. Essentially, a ritualist would bring food to the cemetery and burn it to satisfy the hunger of the dead. The names of the dead he wishes to feed are called and then the food is thrown into the

fire so that its substance becomes available to the ghosts (Amoss 1978: 76). This feast, as described by Duff (1952: 117) was always well attended, both by the living and the dead.

Other important types of ceremonies in which the dead were honoured in traditional Salish society is that of the potlatch (and in more recent times, the winter spirit-dance ceremony). The potlatch is the "occasion at which traditional name, rank or hereditary privilege is claimed through dances, speeches, and the distribution of property to those invited" (Cole and Chaikin 1990: 5). Funerals were always potlatch occasions. Among the Haida, Tlingit, and Tsimshian, in the north, the mortuary potlatch given in honour of a chief was undoubtedly the most important affair of this sort (Drucker 1955a: 176). Coast Salish funerary potlatches, as well as other ceremonies honouring the dead, are discussed below in more detail.

Mortuary Customs

Traditional mortuary practices of the Salish peoples are examined here to shed further light upon the intricate relationship between the living and the dead in Salish life. Barnett (1938, 1955), Hill-Tout (1902); Jenness (1955) Joseph (1994), and Suttles (1951, 1974) provide ethnographic information recorded from the turn of the last century right up to the present (1994). Their ethnographies were based on information gathered from informants including Saanich, Cowichan, Musqueam, Squamish, Semiahmoo, Lummi, Chilliwack, and others.

In traditional times, once a death occurred, a great wailing and moaning by the relatives could be heard throughout the village. Paid undertakers are immediately solicited

to prepare the body for disposal. An individual who has acquired the necessary spiritual power to protect him or herself from contamination from the dead, prepare the corpse by undressing and washing it. Some groups applied red ochre to the face (Barnett 1955: 216). The body is then wrapped in blankets and bound in a tightly flexed position.

After the body is prepared, it is usually carried out of the house as soon as possible. The corpse is lifted, feet first, through an opening in the wall. This is done so that the living will not have to follow the path of the dead when passing through the doorway of the house, or, so that the ghost of the deceased will not be able to find the doorway and thus re-enter the house.

The funeral ceremony took place outside of the house. At this time, people of the village laid blankets and other goods on the coffin. Some of these are considered gifts, others strictly loans, and still others are in fact repayments of loans previously made by the deceased (Barnett 1955: 217). The body is then placed in the newly made gravebox or coffin, which is a typical cedar chest ordinarily used for blankets. The coffin is then brought to a cemetery some distance away.

Every winter village had a cemetery, often it was on a nearby island. Some family and friends accompany the pallbearers there, though there are no further formalities at the cemetery. The community cemetery receives the remains of persons of every age, sex, and status, including slaves and enemies; though the latter are wrapped in mats, not blankets, and are merely placed on the ground (Jenness 1955: 85). If an individual died a long way from home, every effort is made to bring them back to the village cemetery. If this is not possible at the time of death, in some cases, the bones are dug up later and brought home

(Duff 1952: 95). This statement illustrates one aspect of the importance accorded the village cemetery as the final resting place for deceased relatives, and further illuminates why traditionalists oppose permanent curation of skeletal remains in museums and universities.

In ethnographic times, mode of burial was highly variable depending on the specific region, ethnographic account, or sometimes even informant. It seems that usually, however, the gravebox was either set above ground on posts or placed in a tree. Some sources indicate that, at least in more recent times, coffins are buried in the ground as well (Drucker 1955a: 176). Since the 19th century, small mortuary houses or sheds are often built around the gravebox, marked by elaborately carved posts. These were usually for chiefs or other high-status individuals. People of special categories, like shamans or twins, are also given particular kinds of burials.

If a coffin was not used, the deceased were simply wrapped in mats or blankets and set in trees or canoes. The Squamish and Musqueam deposited the dead in trees but partly extended them out onto platforms supported by posts. Canoe burials seemed to have been typical of groups further south in Puget Sound and Western Washington. For instance, in 1923, Newcombe (1923: 54) noted that Menzies saw canoes with bones in them at Birch Bay in Washington (cited in Suttles 1974: 475). Barnett (1955: 217), however, states that canoe burials could be seen here and there throughout the Central Coast Salish area. Canoe burials consisted of laying the corpse out in a canoe, which was itself raised off the ground by means of a scaffold. Makah neighbours, on the Olympic

peninsula, used smaller canoes turned bottom side up to act as a cover to the larger canoe carrying the corpse (Wickersham 1896: 204). Infants were often disposed of in baskets.

Drucker wrote that "when a person died his kin were torn between grief at the loss and fear of the ghost" (1955a: 175). Consequently, the treatment of the dead was heavily laden with ritual. Mourners held wakes, sung family dirges, and cut their hair as symbols of grief. Names of the dead were not spoken until they were conferred to another at a later date during a ceremonial event.

At the time of death, personal possessions such as clothing and bedding were always placed in a fire (with the exception of spirit-dance costumes) in order to convey them to the deceased (Kew 1990: 479). If an item was not conveyed to its original owner, it had to be purified. Occasionally though, if requested, it could be included in the coffin or purchased by other members of the village. A deceased man's house had to be ritually purified by burning boughs, and by an incantation (Barnett 1955; Suttles 1990).

Bereaved relatives, or sometimes the entire community, were ritually cleansed by bathing in rivers or creeks. Sometimes a spouse faced isolation in the woods before resuming his or her regular life activities. Food taboos, especially for a spouse, were observed because of fear of contamination from contact with a ghost. The undertaker, as well, was subject to hunting and fishing taboos, as well as ritual purification by bathing, praying and rubbing the body with herbs (Barnett 1955: 219).

Directly following a funeral, a feast or potlatch was hosted by the family. At this time, the family fed the guests and paid those who contributed services or goods to the funeral. Only if the family was wealthy enough, would they have a true potlatch; that is,

where they could feed the guests, pay the 'workers', and have goods left over for general distribution (Duff 1952: 87). Usually, the potlatch had to be given at a later time, when the family had accumulated enough to repay debts incurred at the time of the funeral. At that time, the family honoured the deceased or laid claim to his name or title. The potlatch was often given to signal the assumption of the deceased's social status by his successor (Barnett 1955: 220).

Aside from the potlatch, a family might take the opportunity to honour the deceased at a winter dance ceremony. An effigy of the deceased was displayed, usually from the top of a pile of goods which was to be given away. The effigy often included genuine relics of the deceased like hair or fingernails, or more recently, photographs. In earlier times, even the corpse itself was reported to have been brought out and displayed during a reburial ceremony (Suttles 1974:480). Clothing, the spirit-dance costume, or the drum of a deceased was also often displayed or ritually burned at this time (Kew 1990: 479).

Other ceremonies honouring the well-being of the deceased or merely carried out to renew contact between the living and the dead, featured the rewrapping of the bones with new blankets. This ritual usually took place a year or more after death. Again, the rite was carried out by someone who was protected from supernatural harm because of the potential dangers inherent in contact with the dead. Carefully the decayed blankets were cleaned away from around the bones and replaced with new. The cleaned bones were then returned to the grave-house. Suttles (1974: 479) reports that at least in the recent times, when inhumation was practiced, the original coffin was exhumed, the bones lifted out,

then put in a new coffin which was then placed back in the ground. Ritual offering of food to the dead could be carried out at this time as well. The lengths to which the living appear to go towards ensuring the comfort and well-being of the deceased is staggeringly apparent in this ritual.

The above discussion has demonstrated how ubiquitous the dead are in traditional Coast Salish life. The dead play a role in a number of myths, in concepts of the supernatural, in ritual, and in ceremony. Two major factors about the relationship between the living and the dead become apparent through this discussion of traditional Salish belief and practice: 1) contact with bones or the spirits of the dead potentially invokes powerful supernatural forces, sometimes good, though often dangerous enough to cause sickness or death in the living, and 2) the living bear the constant responsibility of caring for and/or feeding the dead. This responsibility is reflected in the careful treatment, respect, and ritual accorded their physical remains both at the time of burial and in succeeding years. By recognizing both strong beliefs in the powers of the dead, and the strong sense of responsibility that the living bear in terms of caring for the dead, non-native scholars and others can better appreciate contemporary First Nations concerns over the disturbance, analysis, and curation of their dead by scientists.

It is important to note, however, that despite extensive ethnographic evidence suggesting a strong relationship between the living and the dead in Salish society, one must be critical of the early ethnographies which pre-date critical approaches in anthropology. One must ask: in what context were these ethnographies written? Did they take into account potential differences in the relationship with the dead based on sex, age,

status, etc? In other words, did the ethnographies record whether the skeletal remains of chiefs or shamans were of greater importance to the living, than, say, of ordinary persons or slaves? Had this information (if it in fact it were so) been recorded in the literature, it would have ramifications for the reburial issue. It would demonstrate that perhaps the concerns of First Nations today regarding universal reburial, may in fact be largely politically motivated, rather than strictly spiritual. While politics likely play a role in the current reburial controversy, the brief examination below of aspects of contemporary Salish society (including evidence from recent ethnographies (e.g. Joseph [1994]) reveal that concerns for the dead run deep in contemporary Native worldviews.

CONTEMPORARY SALISH SOCIETY

At present there are nearly seven thousand Coast Salish people living in various small communities on Southeastern Vancouver Island and on the adjacent mainland from the Lower Fraser Valley south to Skagit River in the State of Washington (Suttles 1987a: 199). Many of them are indistinguishable from their white neighbours in terms of dress, housing, diet, automobiles, television sets; and in terms of employment (fishing, logging, longshoremen). Virtually all except the very old speak English, and are literate. Many of the young today are educated in public schools along with white children. Most Salish people today are baptized and buried as Roman Catholics (Suttles 1987a: 200).

European Contact and Religion

European appearance in the Strait of Juan De Fuca began in 1787 with Charles Barkley. Later, the Spanish explored the southern end of the Strait of Georgia, including Point Roberts. According to Wagner (1933:186) the Spanish were impressed by the large numbers of Indians gathered on islands in the Strait and the "incredible quantity of rich salmon" which were being caught. In 1792, British explorer, George Vancouver, arrived at the same location as he explored the Strait of Georgia. The Fraser river, however, was not recorded until 1808, by Northwest Company Fur Trader, Simon Fraser. Land-based fur-trading was established in the early 1800s, and in 1827, the Hudson's Bay Company established a trading post at Fort Langley on the Fraser river (Suttles 1990: 470).

An important event of the early contact period in the study area was the Treaty of Washington in 1846, which split Central Coast Salish territory into American and British sections.

In Washington, a treaty signed in 1855 established reservations within the territories of some of the tribes but not of others... In British Columbia there were no treaties. The land was simply declared property of the crown, and, in time, every village site in use and nearly every fishing camp became a "reserve" and nearly every village became a "band" (Suttles 1987b:222).

Canadian policy imposed restrictions on residence patterns within each village, and government authorities tried to impose a sedentary agricultural-type lifestyle on otherwise seasonally mobile fishermen/ gatherers. Furthermore,

Both religious and governmental authorities in both [the U.S. and Canada] tried to put an end to the potlatch and the winter dance. Residential schools, operated by the churches, separated children from families, and

gave them full-time instruction in Western living habits, Christian beliefs, and the rudiments of Western learning (Suttles 1987b: 222).

Judeo-Christian religion has greatly influenced the traditional beliefs of the Central Coast Salish since the time of first contact. The first Christian missionary in the region arrived at Fort Langley in 1841 (Duff 1952; Suttles 1990). Since then, Christian religious activity flourished in the area, particularly during the second half of the nineteenth century. Protestantism spread throughout the Northwest coast in the late 1800s. By the 1900s, nearly universal conversion to Christianity, mostly Catholicism, had occurred among the Central Coast Salish (Kew 1990: 476).

However, conversion to Christianity does not necessarily mean complete abandonment of traditional ways. For instance, the Indian Shaker Movement (for review see Amoss 1990; Barnett 1957; Collins 1950; Gunther 1949) of the North Pacific is an excellent manifestation of continuity despite change in traditional native belief systems. The Shaker Church is a uniquely native cult which

continues to offer a way for Indians to incorporate the principal religious symbols of a dominant alien culture into their traditional understanding of the relationship between human beings and the supernatural (Amoss 1990: 639).

Founded in 1881 in Western Washington by a Coast Salish named John Slocam, the movement spread as far south as northern California, and north to southern British Columbia. By 1950, it had apparently reached its zenith and subsequently began to decline (Collins 1950: 399), though by no means has it disappeared. Amoss (1990: 635) maps the

diffusion of the Shaker Church since 1882, along the Coastline, complete with probable routes of dispersal, and indicates active congregations up to 1988.

The distribution of the Shaker Church on the B.C. mainland is unclear. Some sources (Gunther 1949: 47) claim it was absent there altogether, as it appeared to be restricted to East Vancouver Island. Other sources (Amoss 1990; Barnett 1957; Kew 1970) demonstrate that Shakers were present north of the Fraser river in Musqueam territory by 1900. According to Amoss (1990) active congregations continued to exist at Musqueam, Squamish and Chilliwack as recently as 1988. Possible mainland links with the Saanich and Cowichan were likely responsible for its spread to the mainland at the Fraser river, though contacts with the Lummi have also been suggested (Gunther 1949). The movement of the Shaker Church demonstrates how traditional belief systems have been retained despite the myriad of changes that have affected the Coast Salish since the last century.

Modern Funeral Practices

Many of the traditional aspects of belief and practice in funerary customs have been retained and are briefly reviewed here. Suttles (1974: 481) describes recent Lummi burial practices, while Joseph's (1994) work entitled "Coast Salish Perceptions of Death and Dying: An Ethnographic Study" provides insight into the occurrence of death in contemporary Squamish life. Both sources indicate that there is a strong retention of traditional values and beliefs amongst contemporary Coast Salish peoples in dealing with death and the deceased.

While death today usually occurs in acute-care facilities, the dying are usually kept at home for as long as possible. Prior to death, an individual is surrounded by friends and family and is often visited by ancestral spirits. There is a 'sense of waiting' in the room with the deceased, and "chairs [are] set out for the visitors who have come but who cannot be seen by the living" (Joseph 1994: 29)

The corpse is usually prepared by non-native undertakers, though the family usually retains an active role in the proceedings. Interment has long since replaced the traditional (ethnographic) mode of above-ground 'burial'. Funeral services today are generally held in a Church whereby a local Catholic priest offers his prayers. Joseph (1994: 31) notes, however, that:

church services are personal and tend to blend elements from both Catholicism and Salish traditions....including using a mixture of sweetgrass, cedar, and sage in place of the incense normally used in a Catholic service.

Shakers are sometimes called in, at the request of the family, to pray for the souls of the dead and the living. The Shaker Church, however, was largely bent on curing the sick; and one Shaker funeral is described by Barnett (1957: 268) as being virtually no different than a curing ceremony. The typical Shaker *curing* ceremony consists of believers "shaking" and singing over the sick individual, usually to the jingling sound of hand bells. Shaker practitioners cure illness in the same way that the traditional shaman did: by returning the lost soul or spirit or removing an intrusive object (Collins 1950: 405). A Shaker funeral described by Barnett (1957: 268), consisted of participants dancing,

singing, and tramping around the corpse which is laid out in the centre of a Church or living room, surrounded by lighted candles.

Contemporary funerals are often occasions for large gatherings of people (Kew 1970). A post- funeral feast is always hosted by the family, whereby donations of food and money are made by relatives to aid with the funeral expenses. These gifts are to be repaid, however, some with interest, at a later date (Suttles 1974: 482). Possessions of the deceased are given away, though clothing, photographs and other more personal possessions are stored. These items are displayed and/or ritually burnt at a small gathering some time later, when the remaining funeral debts could be settled. Funeral potlatches, while they gradually incorporated Christian elements, preserved native beliefs about the dead and reliance on ritualists to attend the dead (Kew 1970, 1990). Ritual feeding of the dead continues to be carried out today (Joseph 1994; Kew 1990).

Indeed, aspects of traditional and modern life, including strong beliefs concerning the dead, blend together to form the richness and uniqueness of contemporary Coast Salish life. Kew writes that the ideological basis for the current spiritual revival has centred on spirit-dancing and the care of the dead, in combination with values concerning social status and exchange as expressed through the potlatch system (1990: 476). Suttles (1974: 472) notes that even in recent times the care of the dead was one of the elements that most distinguished natives from their white neighbours. It is essential to realize that although, in many ways, contemporary First Nations are indistinguishable from "mainstream" Canada; many traditional religious beliefs continue to persist and underlay many aspects of contemporary Salish thought and practice.

First Nations Burial Policies

Traditional beliefs centred on respect for the dead have been carried into modern band policy and practice regarding heritage resource management, particularly regarding the excavation and analysis of human remains by archaeologists. The perspectives of the Semiahmoo and Tsawwassen First Nations in the Boundary Bay locality are offered as a conclusion to this chapter. The Semiahmoo official band policy regarding human remains has only recently been drafted (1995). The Tsawwassen band does not have an official written burial policy at this time, "since [their] culture is rooted in oral tradition" (pers. comm. Chief Bowcott 1995). However, according to Chief Bowcott, the Tsawwassen band have many concerns about the excavation and analysis of human remains. Essentially what has been expressed is that all remains should be reburied as soon as possible if disturbed.

The Semiahmoo First Nation (1995) has outlined in policy format their official concerns regarding the disturbance of mortuary sites "on or off registered Reserve lands". The policy begins by clearly stating that "our burial grounds are blessed and sacred regardless of their age or locality". Their position of absolutely no disturbance by "developers or archaeologists or anyone else for whatever purposes" is clear.

However, they recognize that ancient human bones are often exposed 'accidentally'. In this event, the Semiahmoo band insists on immediate notification and, in the case of development activities, that "all development must cease immediately". Beyond that point, if mitigative measures for the site are approved, and archaeologists are called to exhume skeletal material, the policy proclaims that "the extent to which human remains

are studied is up to the discretion of the Semiahmoo First Nation" and that the "Semiahmoo First Nation will provide direction on how human remains are to be handled". Finally, the policy of "repatriation of human remains from museum collections" is apparent, however it is not clear whether this refers to collections currently housed in universities or rather refers to those potentially excavated/curated in the future.

The expression of the desire to be notified upon discovery and to exercise control over the nature and disposition (including repatriation) of human remains is explicit in the Semiahmoo policy. However, the policy indicates that the band recognizes the flexibility needed to deal with the complex issues of human remains discovery, and allows for individual circumstances to be dealt with on a case-by-case basis. This is an important point because it signifies a willingness towards a flexible/ positive working relationship with archaeologists and anthropologists.

The unofficial policy of the Tsawwassen band of "reburial as soon as possible" also demonstrates their concern over minimal disturbance of human remains. It also has the potential to be flexible in that should the band wish for scientific examination to take place prior to reburial, it remains possible. Again, we see the importance of dealing with the subject on a case-by-case basis albeit with the underlying intent of eventual reburial being present.

The importance of care and respect for the remains of the dead is reflected in the official policy of the Semiahmoo First Nation and in the stated position of the Tsawwassen band Chief. Respect for these positions by archaeologists and a willingness for tolerance of different cultural values (even if this means the loss of future opportunities to obtain

potentially unique scientific data) is crucial if a relationship of mutual understanding and cooperation between the two groups is to be upheld in the future.

In sum, this chapter has brought to light the importance of the relationship between the living and the dead in Coast Salish society. Acknowledging the retention of traditional beliefs and practices to the modern day is crucial to understanding First Nations' positions in the reburial issue. By extension, archaeologists are then forced to realize that the excavation and curation of skeletal remains may have serious negative impacts on the lives of the individuals who maintain these positions.

CHAPTER 3: HUMAN SKELETAL REMAINS -- THE SCIENTIFIC TRADITION

A human burial contains more anthropological information per cubic meter of deposit than any other type of archaeological feature. A burial represents the latent images of a biological and cultural person frozen in a clearly delimited segment of space and time (Peebles 1977: 124).

This chapter provides insight into the scientific tradition of human osteological research. It begins with a brief history of physical anthropology, followed by a general discussion of why physical anthropologists study human bone. Then, a brief review of some of the contributions made by physical anthropology on the Northwest coast is offered. Finally, a history of research on human burials in the Strait of Georgia region is outlined in order to provide a comparative framework for the more detailed critical analysis of the Boundary Bay research (see chapter four).

A BRIEF HISTORY OF PHYSICAL ANTHROPOLOGY

Physical anthropology is the study of human biology within the framework of evolution, with an emphasis on the interaction between culture and biology (Jurmain & Nelson 1995). Human osteology, on the other hand, is the study of human bone tissue which encompasses both contemporary and archaeological bone. The discipline of American physical anthropology was created by two eminent individuals, E.A. Hooton, and Ales Hrdlicka, during the first half of the twentieth century (Brace 1982). Along with the earlier work of Samuel Morton (1799-1851), these scholars were among the first to amass large collections of skeletal samples for study in the United States (Ubelaker and

Grant 1989). These collections were later augmented by the work of hundreds of archaeologists and physical anthropologists (see El-Najjar 1977) and include skeletons collected from diverse regions throughout the world. Collections of skeletal material are currently housed in medical schools, museums, and university laboratories in all parts of the world. In North America, skeletal collections include individuals from many regions of the world (El-Najjar 1977). However, the majority of collections there are of American Indians, Aleuts, and Eskimos, "because these groups occupied North America for thousands of years before other groups arrived" (Ubelaker and Grant 1989: 249).

The majority of the early studies in physical anthropology were strictly descriptive. Investigators were "engaged in documenting the biological diversity that existed within and between [living] populations in a 'salvage' effort" (Haas 1982: 436). In terms of osteological studies, they "consisted of recording large amounts of discontinuous morphological skeletal variants and of multiple osteometric measurements" (Manchester 1989: 6), usually from crania. The aim was usually to determine racial origins and genetic relationships of past populations.

Armelagos et al. (1982) review the major theoretical foundations and developments of skeletal biology between 1930 and 1980 in American physical anthropology. Traditionally, the conceptual framework maintained by skeletal biologists has been the "extensive utilization of historically oriented typological models as explanatory devices" (p. 306) which they say were not unique to skeletal analysis, but rather entrenched within broader scientific and cultural conditions. Culture change, in the

early decades of this century, was largely explained by scholars through diffusionist or migrationist paradigms (Gamble 1993).

More recently however, from the 1970s, functional approaches were applied to studies in skeletal biology in order to establish relationships between populations and elucidate processes in skeletal adaptation (Armelagos et al. 1982: 320). The post-processual theoretical era, from the 1980s to the present, has seen more interpretive, holistic types of endeavours.

Besides theoretical changes, the development of increasingly complex methods and techniques of analysis has propelled the discipline in recent decades into new and exciting areas of research. Owsley noted in the early 1980s, that

techniques and analytical procedures frequently include application of univariate and multivariate statistics, osteometrics, radiography, high resolution microscopy, and analytical chemistry (Owsley 1984: 2).

Other examples of the technological advances utilized in skeletal research include atomic absorption spectrometers for trace element analysis, and high-speed computers (Armelagos et al. 1982). All of these techniques have had a major impact on the development of skeletal biology in physical anthropology the world over.

More specific trends in skeletal biology over the past five decades (1930-1980) have been identified through a recent content analysis of the *American Journal of Physical Anthropology* (Lovejoy et al. 1982). Since the current work is likewise a content analysis of skeletal reports, the trends identified in this work are summarized below in order to provide a basis for comparison.

According to Lovejoy et al. (1982), in the period between 1930-1939, journal reports remained non-analytical, descriptive, anatomical studies. Cranial metric and nonmetric studies were most common at this time period. By the 1940s, skeletal studies in the United States began to focus more on skeletal identification, including age estimation, and sex and race determination. In the 1950s, the major trend in skeletal biology was a continued emphasis on metric and nonmetric studies, with a shift in focus to patterns of growth, development, maturation, and aging.

The 1960s saw several major shifts: skeletal reports began to reflect a more functional approach; interest in palaeopathology increased; interest in growth, stature, demography and health of skeletal populations increased; and finally an increased use of multivariate statistical techniques can be seen. In the 1970s-1980s, the use of statistical techniques continues. Simple metric and nonmetric studies shift to the "morphometric multivariate profile", and biological distance studies (using both kinds of data) become more common, according to Lovejoy et al.'s (1982) study. Finally, aging and sexing, palaeopathology, human adaptation and skeletal maturation remained areas of interest during the last two decades.

Developments in physical anthropology in Canada have been strongly influenced by developments in the United States (and the United Kingdom). Melbye and Meiklejohn (1992) trace the development of evolutionary thought in their history of physical anthropology in Canada. Melbye (1982) provides an excellent summary of contributions of physical anthropology to archaeology in recent decades. He states that while the American Indian Movement (AIM) virtually put a stop to the excavation of human remains in

Canada between the 1970s and 1980s, skeletal biologists were forced to concentrate their efforts on existing collections. Instead of continuing to collect vast amounts of skeletal data for determining genetic relatedness in past populations, focus shifted towards re-examination, re-analysis, and re-interpretations of existing skeletal data. What this did, in effect, was lead to substantial advances in laboratory studies: including osteometrics, palaeodemography, palaeopathology, palaeonutrition, and aging and sexing techniques. In other words, the effects of external socio-political factors on skeletal research in Canada, have, to some extent, been positive ones (Melbye 1982).

WHY STUDY HUMAN REMAINS?

What is the value of osteological research to the lives of living individuals, and does this information warrant the disturbance of ancient human skeletal remains? The following section addresses the former question, however the answer to the latter shall remain largely a matter of personal opinion. As outlined above, for well over a century, scholars have recognized the significance of human skeletal material for understanding human biological variation (Ubelaker and Grant 1989). Skeletal collections housed in museum and universities are "indispensable to the teaching of anatomy and human variation and to learning about medical and biological aspects of human history" (Ubelaker and Grant 1989: 249). The reburial issue has forced many physical anthropologists, concerned for the future of skeletal research, to address the issue of what will be lost through reburial (see Buikstra 1983; Cybulski 1976; Knüsel & Roberts 1992; Owsley 1984; Turner 1986; Ubelaker and Grant 1989). Stirling (1989: 52) states five reasons why

the study of excavated skeletons is important to interpretations of an archaeological site and thus to the study of the past:

1. They are the true remains of the people themselves and any archaeological interpretation is incomplete without them.
2. They are often the remains of 'ordinary' people and a potential sample of an ancient community.
3. Their study can supply a large body of information on the age, sex, physique, diet and nutritional status, disease, trauma, occupational activity, and mortality of a group.
4. Such studies allow us to establish patterns in the antiquity of disease and its prevalence in past populations.
5. The work can be extrapolated into the field of Forensic Science where unprovenanced human skeletal material from a variety of contexts may be brought to us by the police for identification or for information about the individual concerned.

A question frequently asked in light of recent native opposition is: how relevant is skeletal research (on native and non-native remains) to the lives of living indigenous peoples across North America? Many scholars believe that it is both relevant and directly applicable to contemporary native peoples. For example, Buikstra and Ubelaker (1994: 1) outline some of the contributions made through skeletal research to native communities. First, the identification of inherited skeletal features are now being used to resolve conflicting land claims. Information from studies of burial populations, along with other archaeological and cultural studies, has provided evidence favourable to aboriginal people in a number of cases in the United States in the 1950s and 1960s (Cheek and Keel 1984: 199). Secondly, evidence of bone and tooth pathology in the archaeological record augment medical studies on genetic predispositions to certain diseases, such as diabetes

and anemia, in living native populations. Finally, chemical analysis of ancient human bones helps to illuminate and contribute to nutritional assessments of traditional diets. This may contribute to the lives of contemporary peoples by complementing knowledge of specific dietary and nutritional needs.

In order to further highlight some of these contributions, selected examples of skeletal analyses in the United States and in British Columbia relating to modern day medical and forensic practice are presented here. John Gregg (Gregg et al. 1981) is a physician who has worked with Native Americans from the Upper Missouri River Basin (UMRB) in the United States. He noted that the number of cleft lips and palates in South Dakota Indian children was significantly higher than that of the general population (in South Dakota and the United States). By examining both clinical and archaeological skeletal data, he set out to gain an understanding of the history of this condition. He compared the presence of craniofacial anomalies in today's Native Americans in UMRB (high) to those in 3,750 ancient skeletons from the same region (none) and concluded that such craniofacial anomalies were possibly a recent phenomenon. He suggests explanations (ie: genetic inbreeding) to account for the differences between the past and the present.

Another example is Owsley (1984), a physical anthropologist, whose work focused on comparing recent studies on nutrition and growth of present-day Cherokees with physical data on growth processes and adult stature derived from both contemporary Cherokee adults and 18th century historic skeletons.

Also, two forensic case studies illustrate the obvious benefit and importance of skeletal research to contemporary communities. Skinner (1986) positively identified a

human skull as that of a particular native male missing seven years from central British Columbia. The identification was based on evidence of facial bone scarring matched to evidence of facial trauma observable in ante-mortem photographs.

Also, Skinner and Anderson (1991) positively identified a skull discovered near Taseko River in north central British Columbia. The individual identified was that of a native child, aged six years old, who was missing for eight years. The identification of this child was based on evidence in enamel histology, namely stress markers which corresponded to episodes of illness/ stress during the boy's life. The identifications of these and other individuals, or further implications for solving murder cases, depends upon continued research into human skeletal anatomy. Access to native and non-native skeletal populations alike are vital to the understanding of human variation in Canada. Forensic osteology has much to contribute, not least of which is peace of mind for relatives, friends, and a community at large.

Finally, future skeletal research has the potential to further impact positively the lives of individuals in native communities. Recent developments of techniques (e.g. Ortner et al. 1992) used to recover DNA and immunoglobulins from human skeletal material indicate that exciting new areas of research are emerging.

Deciphering the DNA code of ancient remains may allow the establishment of genetic relationships among past population samples and insight into the ancestral relationships of historic groups (Ubelaker and Grant 1989: 251).

Some contemporary First Nations may find this information useful for settling lands claims in British Columbia and elsewhere.

PHYSICAL ANTHROPOLOGY ON THE NORTHWEST COAST

For the Northwest Coast, three kinds of data have accumulated; physical characteristics of people living at the time of contact and during the nineteenth century; blood group studies undertaken as early as the 1930s but particularly in the 1950s and 1960s; and skeletal features and characteristics of early historic and of prehistoric Indians (Cybulski 1990a: 52)

This section deals primarily with the information attained through research on skeletal remains, and primarily on those dating to pre-contact times. The earliest skeletal studies on the northwest Coast usually dealt exclusively with skulls, and these were usually conducted in order to complement data collected on the living (Cybulski 1990b). Anthropologist Franz Boas, for example, in the 1880-90s, conducted studies on hundreds of living individuals from throughout the northwest Coast and adjacent Plateau area (in Cybulski 1990b). Boas' work led him to define three "physical types" (Northern, Kwakiutl, and Thompson River- as well as the possibility of a fourth Harrison Lake/Strait of Georgia type) in British Columbia, which he carried over into his interpretations of skulls. The concept of physical types was a common theoretical assumption which operated prior to 1900, and especially before 1925 in physical anthropology. It refers to physical variation reflecting distinct genetic populations presumably with diverse histories (Cybulski 1990b:116).

The majority of skeletal samples available for study at that time were those collected by museum expeditions in the late 19th and early 20th century (Cybulski 1990a, 1990b). These collections were normally lacking in temporal provenience -and many even lacked post-cranial elements. This seriously limited the early studies to questions of population 'identification' and cranial morphology. In the 1960s and 1970s, however, more chronologically- controlled archaeological excavations were conducted and thus yielded vast numbers of pre-contact human skeletons (Cybulski 1990a). It is these and more recent excavations that have enabled a rich and wide variety of skeletal investigations to emerge.

What have we learned from the study of human skeletal remains recovered from pre-contact sites throughout the coastal region of British Columbia? Cybulski (1990a, 1990b, 1992a, 1994) provides excellent syntheses of information yielded from skeletal investigations on the Coast (see chapter four for contribution of osteological research in the Boundary Bay locality). He has addressed issues of culture change, demography, and health and disease drawn from broadly gathered skeletal data. It is primarily these sources from which the following summary is derived.

To begin with, British Columbia prehistory has been divided by archaeologists into a series of stages: Lithic (8000 B.C.-3500 B.C.), Early Developmental (3500 B.C.-1500 B.C.), Middle Developmental (1500 B.C.- A.D. 500), and Late Developmental (A.D. 500 to European contact, ca. A.D. 1774) (Fladmark 1982), with further regional divisions or cultural phases designated to the northern, central, and southern regions of the province.

Human skeletal remains and mortuary sites on the coast are unknown prior to 3500 B.C. (Cybulski 1994). This date marks the beginning of shell-midden accumulations which comprise most of the known prehistoric sites in the area. According to Cybulski (1992a), the total number of known precontact deceased approximates 1000 individuals from a total of 42 shell midden sites. The two largest samples of skeletal remains currently known to archaeologists are 288 individuals from 10 sites at Prince Rupert Harbour (traditionally Coast Tsimshian territory); and, notable here, 342 individuals from 17 sites in the Strait of Georgia region (traditional Coast Salish territory) (Cybulski 1994). Some of these latter sites are the focus of the analysis conducted in chapter four.

These and other samples on the coast, namely Greenville in the Nass River Valley, Blue Jackets Creek on the Queen Charlotte Islands, and Namu on the central mainland, collectively span the last 5500 years of coastal history (see Cybulski [1994: 77] for temporal distribution of each sample). These data have provided a unique source of information useful for evaluating generally held notions, along archaeological lines, of cultural continuity which is purported to have taken place since the Early stage to the time of European contact (Matson & Coupland 1995; Mitchell 1971; Fladmark and Sutherland 1990). Cybulski notes that "mortuary and human skeletal evidence...suggest important cultural changes in the prehistoric period involving methods of corpse disposal, intentional head shaping, and the use of labrets or lip plugs" (1994: 77).

Corpse disposal on the British Columbia coast emphasized interment from the Early period up until ca. A.D. 1250 during the Late period. Subsequent to this, a shift to above ground disposal occurred and persisted into the Historic or contact period

(Cybulski 1992a). European influences, however, soon caused a shift back to below ground methods.

The practice of head shaping along the coast in pre-contact times was absent among groups in the northern regions, relatively rare in groups in the central coast region, but virtually universal in groups in the south region between the late Middle (500 B.C.) and the Historic period (Cybulski 1994). Conversely, labret use is known to have been common in the northern region throughout all stages of history, including the Historic or contact period. On the central coast, data on labret wear is incomplete for the Middle and Late time periods; however it is known in the Early and Historic periods. In the southern region, evidence for labret use occurs only in Early and Middle samples (up to 500 B.C.), and is thereafter completely absent (in the Late and Historic periods).

Other information yielded from skeletal research on the British Columbia coast includes information about health and disease. For example, evidence for adult trauma occurs throughout all stages of history; but in the Middle stage, trauma, especially violent trauma, occurs more frequently in the north than in the south (Cybulski 1994). Beattie (1980: 165-6), has suggested less inter-tribal warfare for the Strait of Georgia region than for other regions on the coast.

Evidence for disease in pre-contact times for all regions of the coast include those of treponematosi (syphilis), cribra orbitalia, dental caries (relatively infrequent), and dental abscesses (quite common). Evidence of bone tuberculosis or malignant tumours are reportedly absent in pre-contact times but appear in the Historic period (Cybulski 1994). Furthermore, dental and skeletal evidence has indicated the carrying out of certain cultural

practices. For instance, evidence of grooves left on teeth have suggested processing of plant or animal fibres, and labret wear (Curtin 1991; Cybulski 1974), and evidence on long bones has indicated the use of human bones in pre-contact ritual on southwest Vancouver Island (Cybulski 1978a) and at Prince Rupert Harbour (Cybulski 1978b).

Finally, demographic reconstruction has been attempted in more recent years through skeletal analysis. Although Cybulski notes that "inferences about prehistoric mortality are limited by the data at hand" (1994: 80), information concerning the vital statistics of past peoples has been attained. Selective burial practices involving females and infants, especially in the north, are one aspect known to cause problems in population reconstructions. Nevertheless, marked differences are apparent in adult sex ratios of remains between samples in the north region as compared to the south. In the Prince Rupert Harbour sample, males outnumber females 1.86:1, while in the Strait of Georgia, the ratios are more nearly equal (1.09:1 over a span of 2,000 years) (Cybulski 1990, 1992a, 1994).

HISTORY OF RESEARCH IN THE STRAIT OF GEORGIA REGION

The history of osteological studies on the south coast has developed hand in hand with archaeological investigations and developments since the turn of the last century. It is not feasible to discuss one without reference to the other. Archaeological investigations in the Fraser Delta, Strait of Georgia and Gulf Islands have yielded insight into the culture history of the region (Borden 1970; Carlson 1970; Mitchell 1971) (see Fig. 3 for regional phases and 'culture types'). Generally, regional 'culture types' are arranged in the following

DATE B.P. REGIONAL SEQUENCE LOCAL SEQUENCE
FRASER DELTA GULF ISLANDS

DATE B.P.	REGIONAL SEQUENCE	FRASER DELTA	GULF ISLANDS
150	GULF OF GEORGIA CULTURE TYPE	STSELAX PHASE	SAN JUAN PHASE
1000		MARPOLE/STSELAX TRANS.	MARPOLE/SAN JUAN TRAN.
2000	MARPOLE CULTURE TYPE	MAINLAND MARPOLE PHASE	ISLAND MARPOLE PHASE
3000	LOCARNO BEACH CULTURE TYPE	MAINLAND LOCARNO BEACH PHASE	ISLAND LOCARNO BEACH PHASE
4000	CHARLES CULTURE TYPE	ST. MUNGO PHASE	MAYNE PHASE
5000			
6000			
7000	LITHIC CULTURE TYPE	GLENROSE I COMPONENT	?
8000			
9000			

Figure 3: Strait of Georgia Region archaeological "culture types" and phases

sequence: Lithic (9000-5500/4500 B.P.); Charles (5500/4500-3300 B.P.); Locarno Beach (3300-2350 B.P.); Marpole (2350-1550 B.P.); and Gulf of Georgia (1550-150 B.P.).

Archaeological details of the culture history are dealt with extensively elsewhere (Fladmark 1982; Mitchell 1971, 1990; Matson & Coupland 1995), and will not be reiterated here. However, south coast culture history as it pertains to burial patterns is relevant to the current study and is briefly reviewed here.

Excavations of burials at all of the major sites at Boundary Bay and elsewhere on the south coast have contributed to archaeologists' understanding of the sequence of changing burial practices in Strait of Georgia culture history. Matson & Coupland (1995), and Mitchell (1971, 1990) provide the sources for the following review of burial patterns in the Strait of Georgia archaeological record.

Typical of the St. Mungo/Mayne phase or Charles 'culture type' are shell midden burials. Individuals interred during this time period were found in either flexed or extended positions. Grave goods are generally rare or limited to small shell disc beads and ochre. Evidence for labret wear is generally rare this early in history, although it has been identified at Tsawwassen (Curtin 1991), and at Pender Island (Carlson 1985, 1991; Cybulski 1991).

Interments in the Locarno Beach phase or 'culture type' tend to be undifferentiated flexed midden burials, with few signs of wealth accumulation. Some burials do appear under large boulders (as cairn burials). Labrets are more common at this time, for example as seen at Crescent Beach (Cybulski 1991; Percy 1974). Cranial deformation remains rare in this cultural phase.

Marpole phase or 'culture type' components show the widest variety of burial patterns in south coast prehistory. These include scattered human remains, individuals in flexed or semi-flexed positions, in shallow pits, rock cairns, mounds, midden burials, wood/stone box/cysts, and multiple interments. The differential treatment in burials of this cultural phase, including differential evidence of cranial deformation and inclusion of grave goods (especially in infant burials, such as that at Beach Grove), strongly indicates evidence of *ascribed* social status (Matson & Coupland 1995: 21; Fladmark 1982: 114) which appears to be absent from the earlier Locarno Beach phase.

A change in burial practices is noted in the Gulf of Georgia phase/ 'culture type'. Prior to this phase, interment was the rule, whereas at this time midden burials are less commonly found archaeologically. This may reflect a change towards tree, cave, mortuary pole or house burials; thus accounting for the high frequency of scattered human remains recovered from sites dating to this time period.

This change in burial practices is currently unexplained. Cybulski asks whether the data are "symptomatic of a larger sphere of cultural or social change on the coast of British Columbia by AD 1300? [or] was the change in burial practices a unique social element, unrelated to other cultural or social phenomena of the time?" (Cybulski 1992a: 37). Additional archaeological research on human burials is needed in order to provide the answers to these and other questions.

Discussion will now turn to an outline of the history of skeletal research in the Strait of Georgia region. The earliest osteological work in the Fraser River delta and Strait of Georgia area is attributed to Charles Hill-Tout (1895). From his archaeological work

on pre-contact middens at the Eburne (now Marpole) site, including cursory examinations of skeletons, he promoted the idea of an "invasion of a hostile people" (1895: 106).

This notion was generated by the presence of two 'types' of crania in the Eburne midden deposit. Like Boas, Hill-Tout (1895), also believed that a dolichocephalic or 'long-headed' population was subsequently replaced by an invading brachycephalic or 'broad-headed' population, the latter being identical to the modern (ethnographic) native populations. The origins of the dolichocephalic group he attributed to either Eskimo populations, or to populations from the south. In his report, he offered scant data on cranial indices, and only referred to skulls in his discussion of skeletal morphology.

In 1898, Harlan I. Smith, with the Jesup North Pacific Expedition, excavated seventy-five human skeletons from the Eburne (Marpole) site (1903: 187). Boas described the skulls for Smith and noted again, the presence of two types of crania shapes- this time a 'narrow' and a 'wide' variety. Smith relied on Boas' observations and reported the presence of two distinct types of skeletons at Eburne (Smith 1903) representing two types of morphologically distinct but co-existent populations. Similar to Hill-Tout (1895), Smith (1903: 188-189) noted that the 'narrow' head type was dissimilar to modern native populations, while the 'wide' head type was the same. Unlike Hill-Tout, Smith expounded a 'migration from the Interior' theory to explain the presence of two skeletal populations at Eburne (Smith 1903: 190). Unfortunately, in many instances, the original skeletal data were inadequate for supporting such theories (see Beattie 1985; Robinson 1976 for critical reviews), however, they seemed nevertheless to persist into later osteological and archaeological studies.

In 1930, Oetteking (1930) produced the first extensive volume on craniometric and cranioscopic studies on Pacific Northwest skeletal material. The samples he analyzed were collected by the Jesup Expedition and kept at the American Museum of Natural History. While the material consisted of "more or less complete skeletons", Oetteking's study was primarily concerned with craniology "owing to the artificial deformations to which about three fourths of the skulls had been subjected" (1930: 1). The sample was grouped on the basis of expressions of types of cranial deformation, rather than on the basis of ethnic affiliations.

In 1931, G.E. Kidd excavated two hundred human skeletons from Eburne and his report (1933) again concentrates only on crania. He noted morphological variations in features and calculated cranial indices on what he reported as 17 non-deformed crania. Though he himself never espoused the presence of more than one physical type at the site, Boas who analyzed the remains did. Once more, Boas (in Kidd 1933), guided by his theoretical presuppositions, concluded that the presence of two 'brachycephalic' or 'wide-headed' skulls in the overall skeletal sample "represented a tribe of Indians who at some time cut through the Coast from the Interior" (Kidd 1933: 55). Assumptions and presuppositions held by researchers (a concept inherent in critical theoretical thought) are clearly seen to be at work in the early period of skeletal studies.

More recent reviews of the earlier work by Boas, Smith and others reveal that the skulls representing so-called distinct physical types at Eburne and elsewhere plainly reflected differences in methods of cranial deformation and not genetic differences (Beattie 1980: 13, 1985). Beattie (1980) points out that although Heglur (1957; 1958a, 1958b,

1958c) noticed the problems inherent in the early interpretations in the 1950s, he did not publish his work and therefore his "important observations were (at the time) ineffective in countering the inertia of the head-shape hypothesis" (Beattie 1985: 33).

In the latter half of the 1940s, Charles Borden, from the University of British Columbia, spearheaded the era of modern archaeological research on the south coast when he began excavations at five sites in the Fraser Delta: Locarno Beach, Point Grey, Marpole, Musqueam, and Whalen Farm (in the study area). Heglar (1957) first analyzed the thirteen individuals recovered from the Whalen site, along with a large number of skeletons from the Columbia River valley area for his Masters thesis. His analysis of the osteometric data indicated to him that the pre-contact skeletons from the Plateau did not differ significantly in terms of 'physical type' from the Northwest Coast skeletal sample, although he does note a few noticeable differences in size and shape between crania. Namely, the Coastal crania were bigger, and had shorter, broader faces than those from the Plateau (Heglar 1957: 71).

Heglar (1958c) subsequently went on to conduct further comparative analyses on the remains from Whalen, as well as from two other sites in the lower Fraser region (Locarno Beach and Marpole sites) (Heglar 1958a, 1958b) excavated by Borden. The outcome of these analyses demonstrated again the possibility of the occurrence of two physical types and therefore two distinct populations, based on cranial variation as well as stature differences. One type (longer, narrower crania/ taller stature) is represented by the skeletons at Locarno Beach and Whalen Farm, and the other type (shorter, wider crania/ shorter stature) is represented by the skeletons at Marpole (Heglar 1958b: 4). This work is

reminiscent of the earlier works in that it is still preoccupied with the notion of 'physical types', but it differs in that it at least includes osteometric data from both cranial and post-cranial elements.

The next significant work on Coastal British Columbia skeletal material is the 1972 multivariate analysis conducted by Finnegan (1972) on non-metric morphological characteristics observed on 618 crania from fourteen Northwest Coast 'populations' (Seward Peninsula to Puget Sound). Finnegan established a migration model for the entire Coastal region based on biological distance studies calculated from each 'population' as represented by discrete character variation in the cranial samples.

Finnegan (1972) offered a series of interpretations regarding pre-contact populations and migrations (Finnegan 1972: 91-92). The data tended to support evidence for successive initial migrations from Asia and later Athapaskan and coastal movements. However, he recognized that "the total biological distinctiveness of these populations most probably reflects some microevolutionary changes *in situ*..." (1972: 91), rather than strictly confining his explanation of change to models of population replacement.

Gordon's (1974) work on Gabriola Island (DgRw-4) similarly exemplifies the trend away from the use of population migration to explain variations in osteometrical and morphological data. Her analysis of non-metric traits from cranial and post-cranial elements of seventy-five Marpole phase and five Developed Coast Salish phase burials yielded an interpretation of possible genetic continuity between the two chronologically distinct samples (1974: 73). Gordon (1974: 73) suggests that although the two samples

(Marpole age and Developed Coast Salish age) are distinct, they reflect microevolutionary development rather than population replacement.

Next, Cybulski (1975) reported his craniometric and non-metric cranial morphological data from 315 adult crania from eighteen local groups representing the four major ethnolinguistic divisions: Haida, Kwakiutl, Nootka, and Coast Salish in British Columbia. The materials sampled were relatively contemporaneous, all late prehistoric or historic in age. Cranial morphological variability within groups and between groups was the major focus of this research and ultimately Cybulski addresses questions of population affinity. He also tackles the effects of cranial deformation on methods of determining such affinities. In this study he concludes that in terms of the local groups analyzed, the Kwakiutl, Nootka, and Coast Salish (including Vancouver Island) were of a common 'population', as a result of frequent genetic interchange. The Haida, on the other hand, represented a distinct population, inferring that they were relatively genetically isolated from mainland populations. The trend toward broader biological distance studies is becoming strikingly apparent by the mid 1970s.

In 1978, Cybulski (1978a) analysed 108 historic period skeletal remains as part of the larger Hesquiat Harbour Project in 1971 in Nootka territory on the west coast of Vancouver Island, B.C. These analyses were conducted *in situ* since the local band would not permit removal of bones to the laboratory. This project was initiated by the Hesquiat Band as an attempt to reconstruct and preserve their cultural and biological heritage in the face of widespread vandalism. Members of the Hesquiat Band initiated and actively participated in the excavation and preparation of skeletal material for analysis. Of note is

the fact that the remains were ceremonially reburied in a crypt at the Hesquiat Cultural Centre (Cybulski 1978a: 5).

Cybulski (1978a), as physical anthropologist, fully described the individuals recovered in terms of physical and biological characteristics, demography, pathology, and related aspects. Metric and non-metric analyses of cranial and post-cranial elements were carried out, as well as skeletal and dental pathology, and cultural practices affecting bone. Morphological comparisons were made to other skeletal collections in Nootkan territory.

Around the same time, Beattie (1980) examined previously unanalyzed human remains from a number of sites in the Strait of Georgia region. His work was similarly comprehensive with respect to lines of inquiry. His descriptive, metric, and morphological analyses on 115 pre-contact skeletons attempted to bring to light two aspects of local indigenous history. First, he tested a model for biological and cultural continuity over the last 5000 years of south coast prehistory, and secondly, he identified aspects of the indigenous Coastal lifestyle through the examination of skeletal pathology present in the sample.

Beattie (1980: 170) concluded that: a) microevolution and shifting lifestyles is the most attractive model for explaining varying features between the Early and Late sample in the Gulf of Georgia region, however, neither model (population dislocation or continuity) can presently be verified, and b) skeletal and dental pathological observations indicated a rigorous lifestyle throughout time (see also Beattie 1976). Beattie (1980) identified all of the types of cranial modification alluded to earlier by Hill-Tout, Boas, Smith and Kidd, and suggested that from the Marpole phase through to ethnographic

times, the cultural practice of cranial deformation was universal among groups in that region.

Next, Hall and Haggarty (1981) reported their description and analysis of human skeletal and associated cultural remains recovered during salvage excavations at the Hill Site (DfRu-4) on Saltspring Island, B.C. Excavations took place in 1973, under the auspices of the Archaeology Sites Advisory Board of B.C., after notification of developments at a known site on private land. Twenty-two burials representing thirty-two individuals were recovered and reported on in terms of sex, age, cranial and post-cranial morphology, metrics, and pathology. Some limitations on the research were indicated in the report, such as: the fragmentary nature of the remains limiting description and comparisons to other early Gulf of Georgia samples; and the fact that neither author was present in the fieldwork phase of the work.

Salvage/ research excavations conducted during the summers of 1984-1986 at two Pender Canal sites (DeRt-1 and DeRt-2) (Carlson 1985, 1986, 1987), yielded yet another large skeletal sample which became the focus of several osteological and dental analyses (Dale 1994; Lazenby 1986a; Weeks 1985, 1986, 1987). Over 119 burials representing at least 129 individuals were recovered over three field seasons. The remains from this site are significant for several reasons. First, their chronological context at the site spans over 4,000 years of pre-contact history, (from 5000-400 B.P.) allowing for unique insights into the questions of biological (and cultural) continuity and change (see Carlson and Hobler 1993). Secondly, one of the skeletons represents the earliest radiocarbon dated remains anywhere on the south coast (5170 ± 220 B.P.). Also significant is the high number of

radiocarbon dates (27/ 45, 60%) obtained directly from skeletons, as compared to those obtained at other sites. Also notable at this site is the evidence for ritual feeding of the dead (at between 4500-3000 years ago), shown by the presence of clam shell bowls in the hands and elaborately carved spoons at the mouths of seated skeletons (Carlson & Hobler 1993: 49).

The osteological analyses conducted by Weeks (1985, 1986, 1987) on the Pender Island skeletal sample involved age-at death, sex, stature, pathology, provenience, position and condition using standard metric and morphological techniques. Her results showed that extensive degenerative changes characterized the sample, which therefore indicated a mature age profile. Generally, however, she concluded that the Pender population was a relatively healthy one, wherein most deaths were caused by accidents, warfare, and interpersonal violence, rather than by illness or disease (Weeks 1987).

Finally, Curtin (1991) conducted extensive osteological analyses on the remains of eighty-seven individuals recovered from archaeological investigations in the late 1980s at the Tsawwassen site (DgRs-2), near Vancouver, British Columbia. Like Hall and Haggarty's work (1981) these excavations were the result of mitigative measures undertaken in the face of development. Curtin's comprehensive analysis will be discussed below in more detail since this site falls within the limits of the study locality. The three main goals of her analysis (Curtin 1991: 2) were 1) to compile an osteological profile of the Tsawwassen skeletons, 2) to compare these human remains to other pre-contact samples on the northwest Coast, 3) to provide a body of descriptive data to be used in future studies.

While Curtin accomplished much of what she set out to do, her goals were not completely realized on account of an early request by the Tsawwassen band for the return of all human remains. According to Curtin, had she known that the remains were to be returned at that time, she would have adjusted her analysis strategy accordingly -ie: recorded less detailed data for each skeleton (pers. comm. A.J. Curtin 1995). Despite these limitations, her work provides a valuable source of information to Gulf of Georgia osteology.

FACTORS AFFECTING SKELETAL RESEARCH

The above description of the history of south coast osteology has provided a framework wherein several factors influencing past skeletal research may be highlighted. The major theoretical shifts in osteology are characterized by earlier concepts of migration and invasion to explain the presence of different 'physical types', replaced by later models of biological and cultural continuity through time. Also, the early studies which were primarily descriptive accounts -- usually of crania; were later replaced by increasingly statistical and comparative studies addressing biological distance concepts through metric and non-metric data. A trend toward more holistic, descriptive, comparative, and interpretive works which address a variety of questions of pre-contact biology, demography, and health and lifeways can also be seen in this historical review.

Similarly, striking methodological and technical changes through time are apparent in this historical review. It is evident that strategies for data collection have changed quite dramatically since the time of the earliest skeletal researchers. The fact that early skeletal

studies in the Strait of Georgia dealt almost exclusively with simple macroscopic, morphological and metrical analyses, usually on crania, signifies some contrast to the present wherein radiocarbon dating, radiographic, and chemical analyses are commonly carried out on a wide range of elements. Although the earlier standard techniques continue to be employed in many studies today, the methods themselves have undergone much refinement over the years.

Other factors affecting skeletal studies besides those theoretical or methodological in nature, include those factors which are external to the discipline. The historical summary above has indicated that some of the later skeletal studies were brought about not necessarily for research purposes, but as part of cultural resource management initiatives (e.g. Curtin 1991; Cybulski 1978a; Hall & Haggarty 1981).

Since 1974, cultural resources management has become an increasingly important part of the discipline of archaeology in the United States and Canada (Fowler 1982: 1; see Spurling 1986 for review of CRM in Western Canada). The advent of many salvage programmes in B.C. archaeology in the late 1960s and 1970s (Fladmark 1980) represented a dramatic change from earlier strictly research-oriented investigations. Changes in legislation at this time likewise meant formal protection and management of archaeological sites. The formal establishment of the Provincial Archaeologist's Office in Victoria in May 1971, symbolized that archaeologists in B.C. were truly taking on new roles as important players in the management and preservation of historical resources throughout the province.

Working with the Archaeological Sites Advisory Board [established in 1960] and under the guidelines of the Archaeological and Historical Sites Protection Act (replaced by the *Heritage Conservation Act* passed in 1977 [and amended in 1994], the Provincial Archaeologist's Office has provided managerial control and planning affecting the nature and long-term direction of archaeological [and osteological] inquiry in British Columbia (Fladmark 1980: 12).

Prior to this time, legislation was generally ineffective or absent in terms of protecting archaeological resources, including human remains in B.C. and Canada. The importance of protecting human remains, however, was recognized as early as 1867 when the Colonial Legislative Council of B.C. passed the B.C. Indian Graves Ordinance (1867). This act was designed to prevent the violation of Indian graves on all provincial and federal lands in the province, "but has rarely, if ever, been enforced since its inception in 1867" (pers. comm. from Simonsen to Mohs 1987: 143).

Coupled with the rise of legislative and cultural resource management initiatives in the 1960s and 70s was an increasing struggle in British Columbia for First Nations groups to gain control over their lives and their lands (Point 1991), and their heritage resources.

Melbye (1982) notes that

Perhaps the single most important event that has shaped our [skeletal] research in the past decade has been a political one. About 1974 the American Indian Movement (AIM) expanded its political base into Canada, and with it the notion that anthropologists were racists and exploiters of Native peoples. Many aspects of archaeological research were challenged; however, the greatest focus of attention was the excavation of human remains (1982: 56).

Despite friction, great strides have been made since then to improve and maintain good relationships between First Nations and archaeologists. In British Columbia, as early as 1976, Cybulski (1976) notes instances whereby native bands and physical

anthropologists worked together to protect and study human remains. In both cases, it was the bands who initiated field analyses and excavation of remains, stemming from a concern over vandalism and destruction. The first was the aforementioned Hesquiat Harbour Project, and the second, a salvage project of a major burial site, which was initiated by the Owikeno Band of River's Inlet on the central coast of B.C. Cybulski (1976) reports that following his osteological analyses in both projects, the remains were re-interred by the band either in crypts or gravehouses. Both projects received support from the National Museum of Man, the Archaeological Sites Advisory Board of British Columbia, and, of course, the concerned native bands (Cybulski 1976: 181).

Cybulski, who was personally involved in both projects, wrote that:

In both instances, physical anthropology proved a significant stimulus to cultural recovery programs initiated by the people themselves. Both projects demonstrated active involvement in the scientific aspects by band members and the cooperation attained between anthropologists and native peoples in the reconstruction of native cultural and biological histories (1976: 181).

Participation of First Nations in skeletal research, even if it means subsequent repatriation and reburial of material, has remained a central goal to many researchers in both archaeological and osteological investigations (see chapter four) on the coast of British Columbia.

The objectives of this chapter have been twofold. First, the reviews offered here concerning the values, contributions, and history of research on the coast of British Columbia will hopefully heighten awareness about what can and has been gained through the study of ancient human remains. This information comes at a crucial time when many

First Nations groups are drafting policies outlining their band's position on the excavation and analysis of ancient human remains within a cultural resource management context.

Secondly, this review has highlighted some of the major theoretical, methodological, and socio-political changes which have affected skeletal research in B.C. since it began almost a century ago.

CHAPTER 4: THE CONTEXT AND DEVELOPMENT OF BOUNDARY BAY

OSTEO-ARCHAEOLOGY

Some of the major historical trends in osteological research on the coast of southern British Columbia have been identified (in chapter three) in order to establish a comparative framework for the more detailed critical analysis of the Boundary Bay skeletal reports provided here. In this light, it is possible to critically examine the presence (or absence) of those general historical trends in the study area, and to further scrutinize some of the details of their context and development through time. Results and discussion of this critical analysis follows a brief outline of past research at Boundary Bay.

RESEARCH AND RESEARCHERS

The Boundary Bay locality has been the focus of osteological interest by archaeologists and physical anthropologists for nearly one hundred years. Human remains have been recovered from all of the major archaeological sites in the region, namely Tsawwassen (DgRs-2), Whalen Farm (DfRs-3/DgRs-14), Beach Grove (DgRs-1), and Crescent Beach (DgRr-1) and at smaller adjacent sites.

The first formal investigations in the study area took place between 1897 and 1899. Harlan I. Smith, under the auspices of the Jesup North Pacific Expedition, was first to record large prehistoric shell heaps and cairns containing skeletons at the Whalen Farm site and the adjacent Beach Grove site (Smith & Fowke 1901; Smith 1907). Two decades later, Smith (1924) published an article describing two skulls salvaged from a road

construction site near Whalen Farm. In the 1930s and 1940s, essentially no archaeological work took place at Boundary Bay.

Then, in the late 1940s and early 1950s, professor Charles Borden at the University of British Columbia, conducted archaeological excavations at Whalen Farm and several other sites in the Fraser Delta region, which formed the basis of his interpretations of Fraser Delta culture history (Borden 1951, 1970). Thirteen skeletons were recovered during the summers of 1949-50 at Whalen Farm. Cranial (and other) attributes of these thirteen individuals were eventually incorporated into a Masters thesis (Heglar 1957). The following year Heglar (1958c) completed a more comprehensive morphological and metrical analysis of those same skeletons from Whalen Farm, although he never published his data. Around the same time, in 1955, Duff (1956) published an article describing a burial he salvaged at Whalen Farm. However, he was more interested in burial context, grave goods, and noting influences from the Interior, than in osteology.

Osteological (and archaeological) interest in the area rose dramatically in the post-1960s era at Boundary Bay as a result of various factors, including increasing salvage archaeology programmes. The first site to receive such attention was the Beach Grove site (Abbott 1962; D. Smith 1963, 1964), which has continued to remain a focus of salvage efforts today (see case study in chapter four).

Since the 1970s, archaeological investigations yielding skeletal material has flourished at Boundary Bay. Human remains recovered from Beach Grove are reported/ analyzed in Ball (1979), Lawhead (1980), and also in Beattie (1980); Chisholm (1986), and Chisholm et al. (1983).

Remains from Crescent Beach (DgRr-1) are analyzed or reported in Beattie (1976, 1980); Conaty and Curtin (1984); Chisholm (1986); Chisholm et al. 1983); Cybulski (1991, 1992b); Ham (1982); Ham & Broderick (1976); Percy (1974); and Trace (1981).

In the late 1980s, at the Tsawwassen site (DgRs-2), an impact assessment (Arcas 1988), a burial recovery project (Arcas 1989), and large scale excavations (Arcas 1991), yielded the largest collection so far of osteological remains from any single site at Boundary Bay. Extensive osteological analyses of these remains are reported in Curtin (1991).

At the Whalen Farm site, skeletal remains were recovered through salvage excavations conducted by Seymour (1976); through research excavations carried out by Hammon (1986); and finally, burial information recorded earlier by Borden was re-analyzed by Thom (1992).

Lastly, a number of smaller reports dealing with isolated human skeletons or fragmentary material, usually in general proximity to the larger archaeological sites at Boundary Bay, have been produced since the 1980s. These include Lazenby (1986b); Oliver and Skinner (1987); Knüsel (1989); Montgomery and Skinner (1990); Oliver (1990, 1992a, 1992b, 1993, 1994), and Skinner and Waddell (1990).

Appendix A provides more detailed information, by site, on the history and description of burial excavation since the earliest work in the Boundary Bay locality. While understanding the details of excavation is not crucial to the proposed analysis of skeletal reports, it does provide context and insight into the limitations of skeletal analysis set forth by original burial context and excavation circumstances.

What information has been gained as a result of these studies at Boundary Bay?

What value do these studies have for First Nations communities? To begin with, 239 burials representing over 250 individuals have been recovered from Boundary Bay, which date back to nearly 4000 years ago. Archaeological components dating back to over 5000 years have been identified at all the major sites in the locality. St. Mungo-Mayne phase components are found at Crescent Beach and Tsawwassen; while Locarno Beach components are found Crescent Beach, Beach Grove, and Whalen Farm. Marpole phase components can be found at Tsawwassen, English Bluff, Beach Grove, Whalen Farm and Crescent Beach (see Matson and Coupland 1995). Finally, Gulf of Georgia phase components are found at Tsawwassen, Whalen Farm, and Crescent Beach.

While some radiocarbon dates have been obtained, most burials from the Boundary Bay locality have been dated by the contexts in which they are found. Curtin (1991: 6) reported that twenty-three of the recovered Tsawwassen skeletons yielded dates. Seven were within the St. Mungo Phase (4500-3300 BP) (including 2 dates at 3800 BP and another at 3500 BP). One Marpole phase date of 2060± 90 BP was also obtained from the site, which could be applied to two other closely associated burials. Most of the remaining dates from Tsawwassen cluster within a 500 year period between 1150 and 1670 BP (Marpole/Stelax Transition Phase) (Curtin 1991).

Ball (1979) obtained a radiocarbon date of 2800 BP (Locarno Beach Phase) directly from a skeleton at Beach Grove. Other skeletons at Beach Grove have been dated at 2720±80; and 1771±120 (Chisholm 1986). Oliver and Skinner (1987) obtained a date of 1280 BP (Gulf of Georgia) from remains recovered near White Rock.

A wide variety of burial patterns have been identified archaeologically at Boundary Bay. These include individuals interred in varying degrees of flexion, in shell middens, buried in shallow/rock-lined pits, under rock cairns, and with grave inclusions. However, common also are highly fragmented and scattered human remains which have suggested either simple subsurface interments or above ground modes of disposal (which are consistent with the ethnographic pattern).

The overwhelming majority of individuals recovered in intact burial contexts at Boundary Bay were in tightly flexed positions. However, other burial positions, such as semi-flexed and semi-extended, were also noted at Boundary Bay (ie: at Crescent Beach and Tsawwassen). Fully extended burials are absent except for one instance at Tsawwassen (Arcas 1989). Grave inclusions are known to be the most common in Marpole burials (notably at Beach Grove), but are also present in some earlier burials at Tsawwassen and Crescent Beach. These inclusions are generally personal ornaments (bracelets and anklets made of dentalia and other stone beads), though other more utilitarian objects were seen associated with burials as well.

Other information elucidated through skeletal analyses at Boundary Bay include indicators related to health and disease. The most common pathological condition observed in the skeletons was osteoarthritis, or degenerative joint disease. Collapsed vertebrae, trauma (fractures), and cribra orbitalia were present as well. Based on pathological evidence, inferences suggesting a rigorous and demanding lifestyle, especially for females, have been put forward (Beattie 1976, 1980: 168; Curtin 1991).

Evidence of varying cultural practices which left their mark on teeth and bones were also observed in the skeletons at Boundary Bay. Trephination, an early surgical practice, was observed in skulls at Crescent Beach, Beach Grove and Whalen Farm. Likewise, labrets have left facets on anterior teeth, such as those observed at Tsawwassen. Skeletons exhibiting evidence of labret wear are commonly dated to the earlier St. Mungo and Locarno Beach phases, and are not observed as a rule in Marpole or later phases.

It is generally maintained that, at Boundary Bay and elsewhere on the south coast, labret wear was eventually replaced as a status indicator by widespread cranial deformation in the Marpole phase of culture history (Beattie 1980). Cranially modified skulls were observed at all the major sites in the study region, though considerable variability in type and location can still be observed in intra-site skeletal samples.

Other studies on dentition at Boundary Bay have revealed heavy attrition to teeth surfaces, often leading to exposed pulp cavities, periapical abscess formations, or ante mortem tooth loss. Dental disease is usually attributed to advanced age, or the result of an abrasive diet which may be exacerbated by non-masticatory functions (Curtin 1991). Carious lesions (cavities), while present, are not abundant in dental remains at Boundary Bay, probably due to the high attrition rate and low carbohydrate diet.

Recently, analyses of human remains at Boundary Bay have yielded insight into the origins of the ethnographic Northwest Coast culture pattern (Cybulski 1991). Specifically, dental wear patterns were used "to identify the origins and distribution of rank and status in Northwest Coast societies as... labrets were markers of rank and status historically" (Cybulski 1991: 1). Lastly, osteological data from Crescent Beach, Beach Grove, and

other sites in the region, have been used to evaluate current archaeological interpretations claiming cultural continuity on the coast over the past 5,000 years (Beattie 1980; Burley and Beattie 1987).

Collectively this information contributes to the elucidation of past life and lifeways of ancestral populations in the region. In general this information may contribute to the lives of First Nations by enhancing feelings of pride and identity as a community tied to centuries old cultural traditions. Skeletal studies may be important to those who are interested in the archaeological record as it pertains to questions concerning continuity and change in their biological and cultural heritage. This information may be useful in lands claims issues. Likewise, osteological analyses which have yielded insight into pre-contact patterns of diet, nutrition, and disease, may be of interest to contemporary medical practitioners on reserves. Finally, examination of the physical variation of skeletal populations (discrete traits, or metrics) at Boundary Bay may be useful in the identification of skeletal material in a forensic context. While scientifically-based studies concerning the elucidation of past human lifeways through skeletal research does not replace traditional forms of knowledge maintained through native oral histories, they may prove to complement them.

MATERIALS AND METHODS

Thirty-seven skeletal reports from four major archaeological sites and adjacent smaller sites in the Boundary Bay locality are scrutinized below in terms of their content and context. The sample utilized in this analysis is comprised of a variety of reasonably

accessible reports and publications spanning nearly one hundred years of time. Some references are strictly archaeological reports, with brief descriptions of burials; while others are more in-depth osteological reports concerned with osteological problems. It should be noted that some of the sources in the sample here report on the same skeletal collection. This is so because osteological remains are usually first reported on briefly by the archaeologist (usually in terms of burial context, position, association of grave goods); and then later 're-analyzed' by a physical anthropologist, who may report on any number of osteological questions. Both types are included in this critical analysis as they collectively represent past human skeletal research in the Boundary Bay locality.

Publications such as those in *The Midden* (the newsletter of the B.C. Archaeological Society), or general published articles which draw upon previous osteological interpretations and analyses in order to address more theoretical or culture historical questions (but do not report first-hand osteological data) were not included in the sample. Likewise, papers presented at archaeological conferences were not included in the sample either, due to their relative inaccessibility.

The sample, then, by virtue of its diversity, requires special treatment in terms of the critical analysis conducted here. Each reference/source is treated as a unique piece of research understood within its own historical context and direct comparisons are at best difficult to make. These sources are in and of themselves tangible products left behind by researchers and they represent individual and specific bouts of scientific interest. They are, in effect, artifacts of the past to be reread and reinterpreted here within a present day focus.

To be more specific, the sample is comprised of published articles or monographs, unpublished consulting reports, manuscripts, found human remains reports¹ (FHR), and unpublished research theses (Honours, Masters, and PhD) from anthropology and archaeology departments in universities. Despite the large number of characteristics demarcating the nature and context of each report analyzed below, the common thread is that they all note, describe or present the results of analyses of ancient human skeletal remains recovered from archaeological sites in the Boundary Bay locality. The general terms 'reports' or 'sources' will be used interchangeably throughout the remaining text in reference to the 'sample' described here, unless otherwise specifically stated.

The methodology employed in this study involved scoring individual classes of information in terms of presence/ absence. Specifically, data are coded with an X in order to denote their presence in the skeletal reports. This methodology is based upon the supposition that research is guided by factors inherent in the researchers' social and political milieus and that these can thereby be exposed through scrutiny.

Criteria investigated in the *context* analysis portion of this study are provided below. An examination of these criteria will reveal broader information about the context and nature of osteological research and reporting through time.

-salvage-oriented skeletal recovery

¹ Ancient human remains are often "accidentally" discovered by passers-by or developers outside of planned archaeological excavations. Typically, when remains are encountered, the nearest detachment of the R.C.M.P. or Coroner's Office is notified. The Coroner's office (usually in conjunction with a forensic anthropologist) will determine whether the remains are of pre-contact or modern (recent) times. If the remains are modern, the Coroner's office provides further management direction. If the remains are deemed to be pre-contact in age, then they fall under the jurisdiction of the Archaeology Branch (under section 6 of the Heritage Conservation Act, 1979) of the Ministry of Small Business, Tourism and Culture. At that point, the project officer responsible will arrange for a qualified physical anthropologist to conduct a field reconnaissance, recovery, and analysis (where necessary) of the remains (Archaeology Branch n.d.).

- research-oriented skeletal recovery
- reported First Nations involvement
- reported reburial of remains
- other repository stated
- burial illustrations
- catalogue of remains
- photographs

Listed below are the criteria investigated in the *content* analysis portion of this study. First, a list of lines of inquiry is provided, followed by a list of methods and techniques of analysis. The presence or absence of each of these criteria were scored in the

Boundary Bay sources:

- determination of Minimum Number of Individuals in sample
- estimation of age
- determination of sex
- determination of ancestry
- determination of stature
- identification of skeletal pathology
- identification of dental pathology
- identification of cranial deformation
- identification of cultural modification
- calculation of palaeodemographic information
- information about diet and/or nutrition
- identification of social status
- identification of burial context
- identification of burial position
- identification of presence of associated grave goods
- determination of site integrity
- description of condition/preservation of remains

and,

- microscopic analysis
- macroscopic analysis
- radiography
- radiocarbon dating
- stable isotope analysis
- metrical analysis
- morphological analysis

While most of the variables described above are self-explanatory, some require further definition. To begin with, salvage vs. research-oriented recovery refers to the circumstances of the original exposure and recovery of remains. The data presented here do not refer to the nature of the report *per se*, but rather to the circumstance of the *initial burial excavation* from which that report is derived. Next, the criterion *First Nations involvement* and *reburial* refers to any evidence (reported in the sources) of consultation or cooperation with local bands. These two variables are discussed in more detail below. The variable *other repository* stated refers to whether or not mention was made of the whereabouts of final curation, say in a museum or university. The variable *burial illustrations* refers to any kind of map/drawing located in the report which denotes either *in situ* remains, or individual skeletal elements. The variable *catalogue* refers to the presence (usually in an appendix) of a detailed record of individual skeletal elements of either burials or scattered remains. The criterion *photographs* refers to those which illustrate either entire *in situ* skeletons or individual skeletal elements (usually denoting a pathology or anomaly).

Variables scored in the content analysis are defined as such: *MNI* refers to whether or not an attempt was made to determine the minimum number of individuals in the skeletal collection. *Age* refers to whether or not an attempt was made to estimate absolute age (in years) or even categories of age, such as sub-adult, adult, old-adult. The variable *ancestry* refers to whether or not some kind of analysis was conducted to determine race or ancestry. Many of the reports seemingly ignored this aspect of osteobiographies, likely because of the assumption that all pre-contact remains in the locality are those of native

individuals. Some reports indicate the presence of shovel-shaped incisors, a native racial indicator, however, unless the question of race was made explicit by the author, it was not scored as present.

Next, *skeletal pathology* and *dental pathology* criteria refer to any mention of ill health, anomalies, or degenerative changes in bones or teeth (including attrition). The variable *palaeodemography* may be misleading. In this analysis it refers to any attempt by the researcher to say something about the population as a whole during life. It refers to information about mortality, life expectancy, or merely information about age/sex distribution within that skeletal sample. When comparisons of one skeletal sample are made to neighbouring or other skeletal samples, this variable was scored as present. The variable *diet and nutrition* was scored whenever a researcher reported that a certain type of food was being consumed, as in the case of isotopic studies. Likewise, it was scored when certain deficiencies in nutrition were reportedly observed macroscopically (as in the case of vitamin or iron-deficiencies). The variable *social status* was scored in any case where a researcher reported information concerning an individual's position in living society. Inferences made of the presence of slaves in a skeletal sample (such as at Tsawwassen) is a good example of this criterion, however, the simple denotation of cranial deformation or labret wear (without reference to it as a status marker) was not considered sufficient to warrant scoring.

Next, the variable *burial context* refers generally here to any information regarding type of inhumation, its location, provenience, orientation, or association with artifacts or features. The criterion *burial position* is an aspect of burial context which I decided

should be scored separately, and refers to specific details on the position that the individual was originally buried (ie: flexed, lying on right side). *Site integrity* is a variable which refers to a general interest in establishing or describing whether or not disturbances (natural or cultural) have affected the remains. These ranged from mentions of the effects of bulldozing to animal scavenging. *Condition of bone* refers to a description of the preservation of the individual bones, and/or whether they were highly fragmentary.

Next, variables representing techniques of analysis may require further explaining. Microscopic and macroscopic analyses are self-explanatory. However, it should be noted that authors rarely made it explicit that macroscopic analyses were undertaken. Since it remains fairly self-evident, it was scored as present in all cases where visual observations on skeletal remains were reported. The criteria *radiographs*, *radiocarbon dating*, and *stable isotope analyses* were all scored where an author reported such an analysis to have taken place, and even in cases where the investigator reported that the respective analysis was *going* to be conducted.

Some further clarification concerning the content analysis is needed since this analysis turned out to be relatively less straightforward than originally supposed. To explain, the 'content' data collected in this study pertains to whether or not a particular research question was pursued by an investigator, or whether or not a certain technique of analysis was employed. In terms of the lines of inquiry, it is vital to remember that, for instance, if skeletal pathology was scored as being a concern to the researcher, this does *not* necessarily mean that skeletal pathology was *present* in the skeletal sample analyzed in

the report. In sum, this study is strictly concerned with scoring for research *interests* as opposed to research *findings*.

However, limitations in the methodology are still apparent. It is recognized that our ability to determine fully an investigator's research interests is dependent upon whether those lines of inquiry were made explicit by the author/ investigator in each skeletal report. The problem inherent in the methodology is this: some researchers may not have reported that a particular research question was addressed, if there was no evidence of that particular condition in the skeletal sample. For example, the reason that cultural modification was not reported to have been investigated, could be because there was no obvious evidence for it in the sample. The analytical position taken here is that unless a researcher reported that a specific line of inquiry was addressed, subsequent readers have no way of knowing for sure whether or not it was overlooked. The reader then must make the assumption that a line of inquiry was not pursued unless it was stated explicitly in the report. This, it is realized, may not necessarily reflect reality. Nevertheless, it does provide some information about the nature of past human skeletal research as it is represented by the written reports.

Other methodological concerns arose during data collection for this study. It is well understood (and an underlying theme of this thesis) that a number of factors can combine to determine the type and extent of any particular osteological analysis. For example, if skeletal remains recovered from an archaeological site are highly fragmented or in very poor condition (as they often are on the Northwest coast), it may be impossible to even determine sex or estimate age. If the entire skeletal sample at a site, for example,

consisted only of a single skull, obviously palaeodemographic data will not have been collected for the sample. If the sample consisted of one femur, some rib fragments, and a vertebra, obviously dental data could not be collected. Essentially what is being recognized is the fact that all the skeletal samples recovered and reported upon in the Bay locality **are not equal** and therefore should not and cannot be directly compared. This problem is circumvented by refraining from direct comparisons for the purpose of exposing shortcomings in particular reports, and instead focusing on the collective nature and context of the research conducted as a whole.

At this point I stress the fact that if a particular technique or research question (or other factor) was not included in any particular report, this does not necessarily signify inadequacies on the part of the researcher. As mentioned above, a number of factors (internal and external) shape and limit every osteological analysis. Most significantly perhaps is the integrity of the samples themselves. Likewise, specific research interests of individual investigators also play a vital role in the kinds of analyses conducted. For instance, an entire report may focus on instances of cranial deformation to the exclusion of other osteological questions. This is important to keep in mind when viewing the results of the critical analysis. What is being examined in this thesis, then, is the **total** kinds of information yielded from a variety of individual researchers, guided by different research approaches, utilizing various methods, on skeletal collections of varying degrees of integrity.

This survey is therefore intended to serve as a reconnaissance mission with the basic units of analysis being the skeletal reports themselves. It is not intended to serve as the definitive statement on all aspects of past human skeletal research at Boundary Bay.

RESULTS AND DISCUSSION

Results of this analysis are provided below in graphic form in order to better illustrate what the collected data 'say' about past human skeletal research. The complete results can be found in the Data Tables (2, 3, 4) in Appendix B. Figure 4 is a cumulative frequency graph showing the increase through time of osteological research in the Boundary Bay locality as represented by the number of skeletal reports available for study here. A dramatic increase in the number of reports is visible post-1950. Figure 5 offers an illustration of the total number of osteological or archaeological reports that have been generated from sites at Boundary Bay by time. There is a scant number of archaeological projects yielding reports in the study area prior to 1955. The overall number of sources available increase from the late 1950s, but especially flourish in the late 1970s, 1980s, and 1990s. These data are generally compatible with the notion that "substantial development of a domestic archaeology in Canada has taken place only since 1960" (Burley 1994: 78).

Scrutiny of the reports dated to the 1990s time period reveals that the majority of these reports (7/11 or 63%) are unpublished found human remains documents concerning isolated skeletal finds. These kinds of reports did not exist prior to the 1980s, and if they had they would probably have increased the overall sample for each half decade as a whole. The presence of the FHR reports are themselves significant in that they

Figure 4: Cumulative Frequency of Sources Through Time (n = 37)

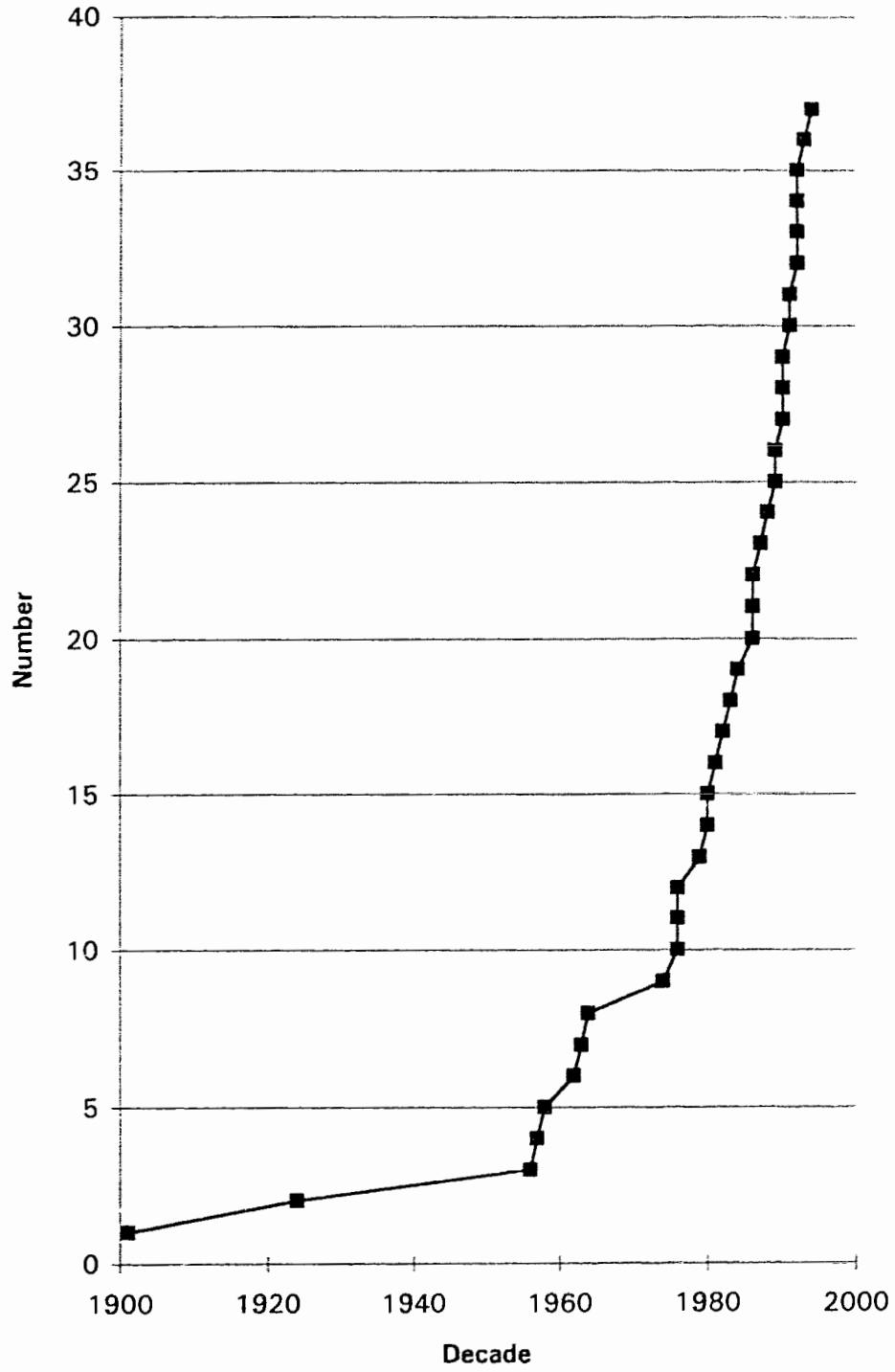
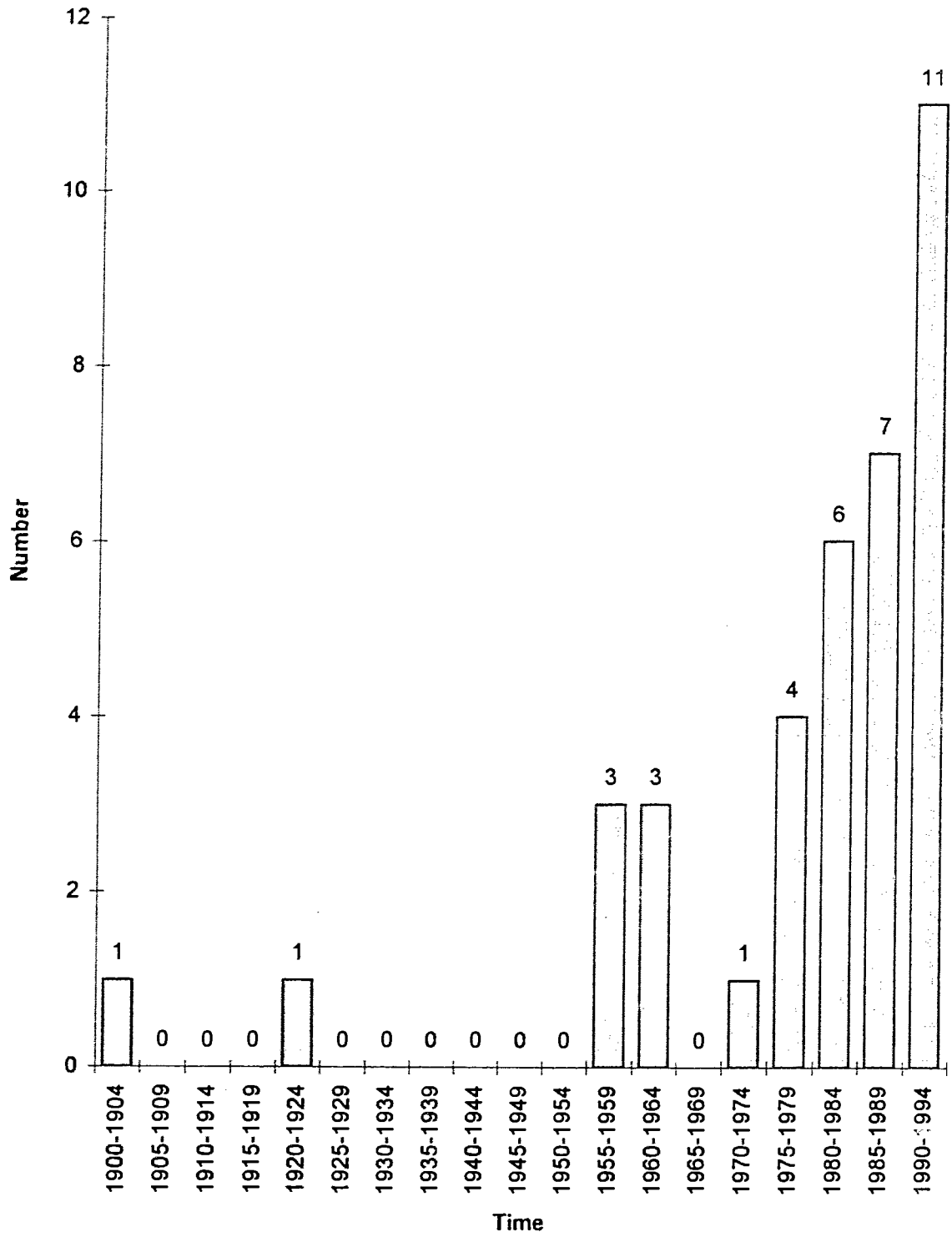


Figure 5: Distribution of Sources by Time (n = 37)



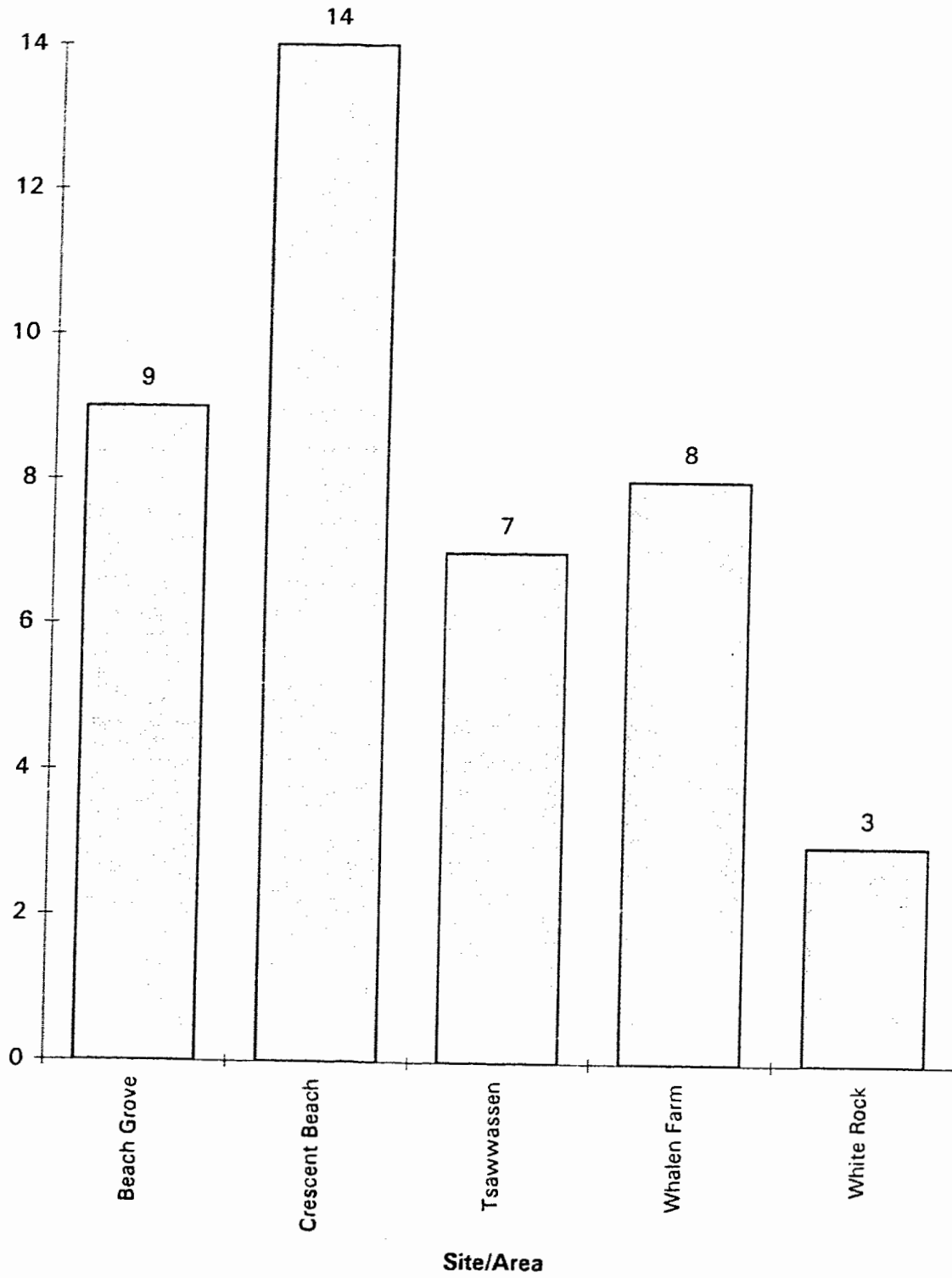
demonstrate that osteological information is being attained through 'accidental' skeletal finds and not just through large-scale archaeological site excavations. They are important to our historical perspective of human skeletal research at Boundary Bay in that they represent a modern phenomenon in osteological work.

Figure 6 illustrates the distribution of skeletal reports by site. Note that some reports deal with remains from more than one site in the region and are therefore scored more than once. The greatest number of reports (n=14, 34%) from Boundary Bay have been generated from excavations at the Crescent Beach site and adjacent areas. Skeletal remains from the site of Beach Grove were reported on by the next largest number of authors in the sample (n=9, 22%). Whalen Farm skeletons were described in eight reports (20%), followed by Tsawwassen reports (n=7, 17%), and finally from the White Rock area (n=3, 2%).

Next, a breakdown of the sources in terms of archaeological vs. osteological studies is warranted. Twenty-two sources (59%) in the sample analyzed here are primarily osteological investigations; while the remaining fifteen reports (41%) are primarily archaeological site reports which reported (to varying degrees) on the presence of burials. One source (Conaty & Curtin 1984) was more or less equally concerned with both, however, was scored here nonetheless as osteological, because of the relatively high number of burials recovered.

Next, the data show that the number of unpublished reports is five times greater than the number of published sources (31: 6). However, without comparisons to other regions, it is not possible to accurately assess if this ratio is excessively high. In any case, it

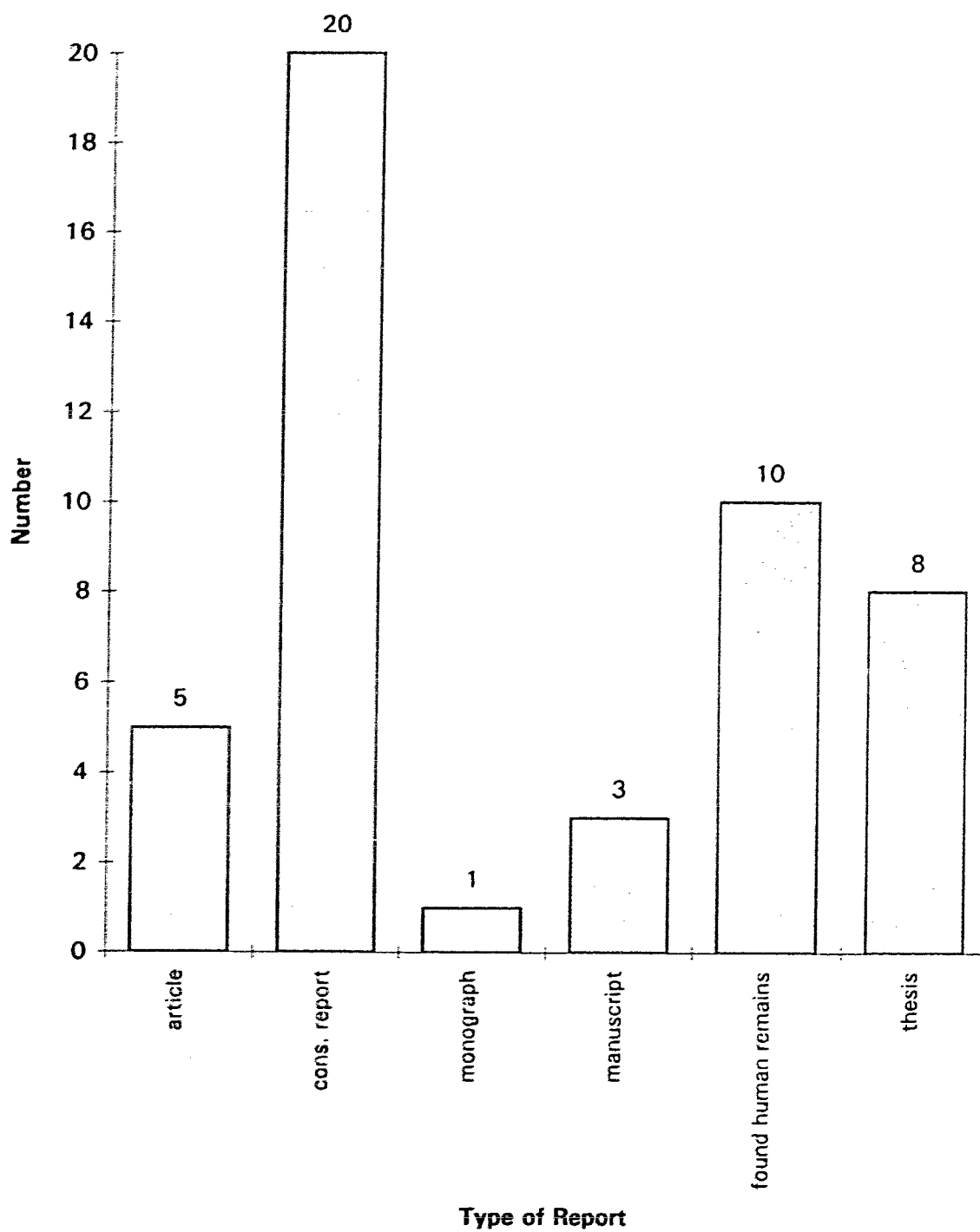
Figure 6: Distribution of Sources by Site (n = 41)



still can be said that the number of published accounts out of the total number of written reports is quite low. Published reports, by definition, are more accessible to the general public than unpublished reports, which are usually housed at government agencies or other institutions. This means that unless the information is specifically sent by authors to non-archaeologists, such as native band offices or other interested parties, it is less likely that the information is being revealed to them to any significant degree. Generally today, however, accepted protocols require archaeologists to submit reports to local native bands and obviously to clients in the case of consulting reports.

Figure 7 further identifies the reports as being either articles, consulting reports, monographs, manuscripts, found human remains reports, or research theses. The majority of the sources (20/37 or 54%) in the sample are consulting type reports. These data signify the contribution of the archaeological consulting industry in terms of producing osteoarchaeological information to scholars or other interested parties. The second most frequent type of source in the sample is the found human remains report (10/37 or 27%). This is significant since they are a relatively recent phenomena. Thirdly, eight (22%) out of the thirty-seven sources in the sample are research theses. Considering the proximity of the study region to a number of local major universities and colleges in the lower mainland and Vancouver Island region, this information is not particularly surprising. The fact that a large number of remains from the Boundary Bay locality have been curated at either the University of British Columbia, Archaeology Laboratory, or the Dept. of Archaeology at Simon Fraser University, means that the remains have been relatively accessible to

Figure 7: Distribution of Sources by Type (n = 37)



students and researchers within the academic realm. Finally, articles, manuscripts, and monographs are, respectively, the next most frequent kinds of sources in the sample.

The next concern of this study is to try to determine the context of past work in terms of whether or not the human remains analyzed in these sources were recovered through salvage or research-oriented excavations. This is important in terms of the reburial issue as archaeologists have often been perceived by those opposed to skeletal research as 'grave-diggers' or 'looters' (Hubert 1989:136) disturbing ancient graves to satisfy research interests or scientific curiosity. The results of this analysis clearly demonstrate that this has not been the case at Boundary Bay. For the past century, most of the osteological information attained at this locality has overwhelmingly been obtained through the analysis of 'salvaged' skeletal remains. In other words, osteological information about past human life at Boundary Bay was obtained primarily from skeletal material threatened by development or other activities.

Table 1 provides numbers and percentages of each type of report in terms of whether initial skeletal recovery was salvage or research. Note that only thirty-six out of the possible thirty-seven skeletal reports were included in this analysis, since only thirty-six made available sufficient information concerning the nature of the initial burial recovery.

Table 1: Nature of Burial Recovery: Salvage vs. Research

	Number	Percentage
Research	7	19
Salvage	29	81
Total	36	100

It is apparent that studies of salvaged remains constitute a much higher proportion of the total number of studies analyzed here. However, it is important to remember the fact that some of the reports, especially in later times, utilized previously excavated materials in their analyses, thereby 'skewing' the total number of sources. The total number of reports coded for either 'salvaged' or 'research' remains, therefore does not necessarily represent the total number of salvage or research excavations which took place in the region. Since re-analysis of remains has taken place on *both* salvaged and research-excavated material, it was considered that the numbers of actual projects would not be markedly different, and, in fact, they were not. The actual number of salvage projects relative to research projects *yielding human remains* at Boundary Bay is: 24 to 5. Therefore, it is justified to keep the reports as the basic units of analysis here, and present the data in terms of the number of sources reporting on salvaged vs. research-excavated remains, rather than the number of salvage vs. excavation *projects*.

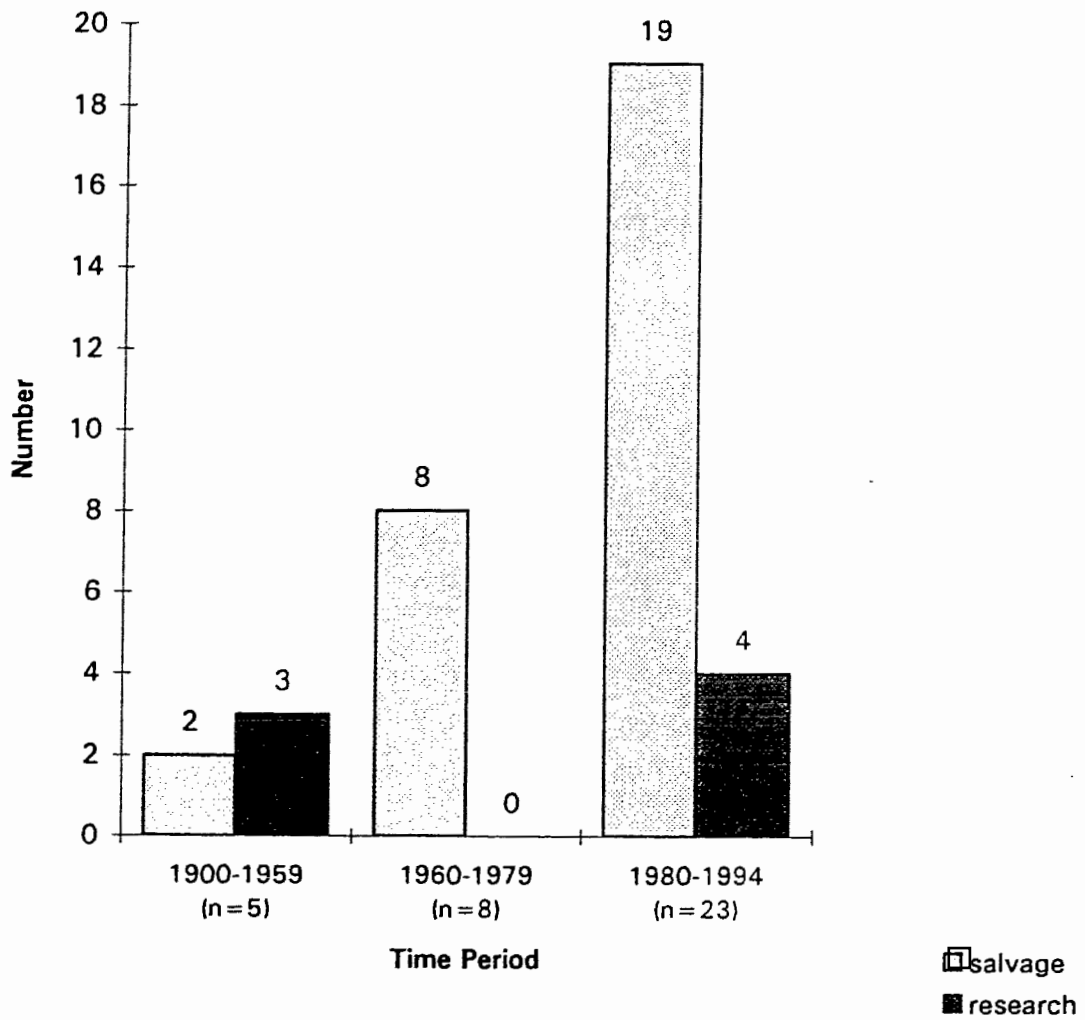
Moreover, it was calculated that at least seventeen burials were excavated at Boundary Bay through research-oriented excavations; while at least 203 burials were recovered through salvage excavations (the origin of nineteen others is not clearly documented). This is quite a difference.

Next, some of the data has been divided into three time periods (1900-1959, 1960-1979, 1980-1994) spanning the past century in order to illuminate shifts through time. First, the rationale for dividing the century into such time periods is required. The sample size (five) for the pre-1960s time period was so small that a division by decade would have yielded little information. Also, most of this time period is overall similar in

terms of its theoretical perspectives- it is regarded by archaeologists as the Descriptive and Classificatory-Historical Period (concerned with description and chronology) (Willey & Sabloff 1980). The middle time period (1960-1979), represents the beginning of the Explanatory Period and processualist thought in the New Archaeology (see Binford 1962; Trigger 1989, Willey & Sabloff 1980). Also, this time period was chosen as such since the 1960s marked the origin of a consulting industry and subsequent rapid growth of archaeology in B.C. in the 1970s (Fladmark 1980). The most recent period (1980-1994), marked a transformation in archaeology into the post-processualist era (Hodder 1984, 1986) characterized by more holistic, interpretive kinds of archaeological research, and a general move away from a preoccupation with covering laws.

Figure 8 illustrates the breakdown of the reports by recovery type through time. In the earliest time period (1900-1959), there were slightly more reports from research-oriented excavations (n=3, 60%) than reports on salvaged remains (n=2, 40%), however, this difference is probably not very meaningful. In later time periods, there is a definite increase in the number of reports on salvaged remains in proportion to reports on research-excavated remains. In the middle time period (1960-1979), there were eight reports on salvaged remains and no reports on research-excavated remains. In the 1980-1994 time period, there were nineteen (83%) reports on salvaged remains and four (17%) reports on research-oriented remains. What factors have operated in recent decades to influence osteoarchaeologists to concern themselves more with salvaged remains than research-excavated samples?

Figure 8: Distribution of Sources by Recovery Type Through Time (n = 36)

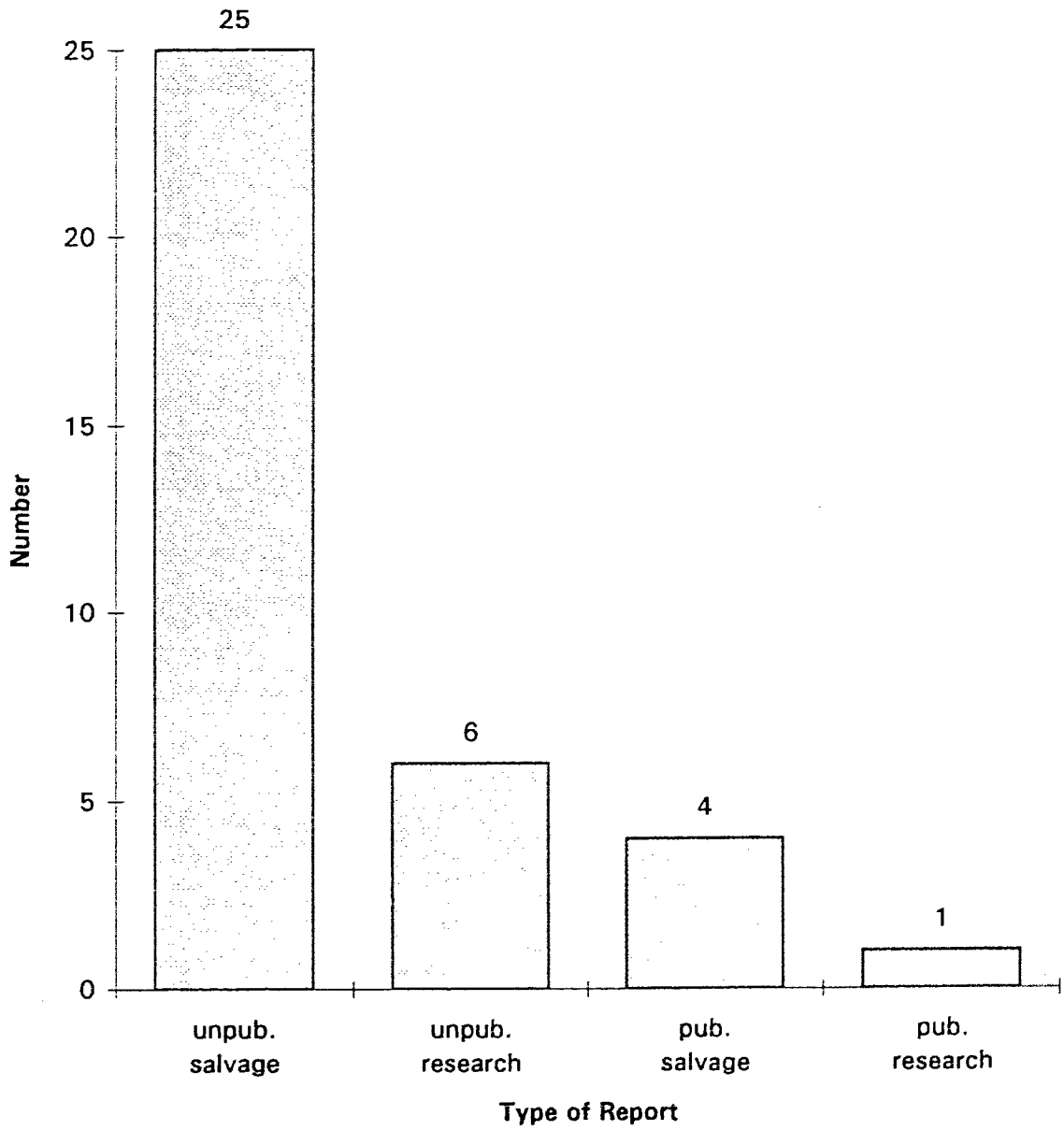


Socio-political factors have likely influenced the nature of skeletal research at Boundary Bay. Since the 1960s and 70s, increasing demands by First Nations across the continent regarding the disturbance of skeletal remains by archaeologists have likely contributed to the proportionately smaller amount of research-oriented excavations at Boundary Bay, thus producing proportionately fewer skeletal reports. In effect, it was less 'politically acceptable' for archaeologists to do research-oriented excavations at sites where burials were likely to be encountered. First Nations were and probably still are more likely to understand and accept the removal of ancient graves if they are in danger of being destroyed by bulldozers, than if they are merely the object of scientific curiosity.

Economic factors have also undoubtedly contributed to the fact that more salvage and less research archaeology has been conducted in recent times at Boundary Bay. The general recent economic downturn, since the 1980s, both provincially and federally, have made it increasingly difficult for scholars to obtain research grants and other funding for archaeology. On the other hand, the birth of cultural resource management initiatives since the 1960s and 1970s at both the national and provincial levels (Burley 1994: 80), has produced a flurry of archaeological activity. The new (at the time) policy of proponent pays meant the advent of a consulting industry and the financial means of producing more and more archaeological (and osteological) information. Perhaps, the increased number of salvage archaeology programs in the region at this time made available so many skeletons for analysis that there was probably little time or need for purely research-driven excavations at Boundary Bay.

Further inquiry of the above data asks: are the reports describing research-excavated remains (7), the same reports which were published (6)? Figure 9 illustrates that, in fact, they are not the same. This graph visually breaks down the sample in terms of published and unpublished 'salvage' reports, and published and unpublished 'research' reports, in order to gain an understanding of the relationship between these two factors. It appears that the overwhelming majority of reports in the sample (36) are unpublished reports describing/analyzing salvaged remains (n=25, 69%). Six (16%) are unpublished reports which describe research-oriented skeletal excavations; while four (11%) are published reports describing salvaged remains. Finally, only one source out of the thirty-six available for this analysis was a report on research-excavated remains that was published. Although this data might appear somewhat startling, it is important to remember that articles and book chapters have been published by researchers concerning general information derived from Boundary Bay skeletal material (e.g. Beattie 1985; Cybulski 1992a, 1994). Admittedly, acknowledgment of these published data is important to our understanding of the context of past research in the region, since they demonstrate that information is being disseminated more readily through the publication process than this critical analysis shows. However, these particular sources themselves were not considered suitable for this analysis since they were too general in scope and did not offer enough specific information about which skeletal samples were used, which sites they came from and so on. Therefore, they could not be scored in terms of the proposed criteria.

Figure 9: Published and Unpublished Sources by Recovery Type (n = 36)



Other important information which came to light during the critical analysis of the skeletal reports is related to First Nations involvement in skeletal research. I was interested in attempting to determine the nature and extent of First Nations involvement either in research design, excavation or analysis portions of any given project. This was no easy task. Due to the lengthy span of time which has passed since the earliest skeletal analyses were conducted at Boundary Bay, it was not possible to contact the authors of each report in order to ask them directly about the nature of First Nations involvement.

Therefore, in order to keep consistent between the earliest and more recent reports, and in keeping with the aforementioned goal of maintaining the skeletal reports as the basic unit of analysis, the involvement of bands was scored in terms of *reported* First Nations involvement. In other words, the critical analysis asked whether or not a report mentioned First Nations either in its text or acknowledgments.

Mention of such involvement appeared in a variety of different forms. For instance, an author may have acknowledged the support of a Chief or band in research; or else of participation of band members in field excavations; or else of specific influences brought on by a band's concerns during analyses. Otherwise, it may have taken the form of a simple mention that a copy of the report was submitted to the local band. This may not be a particularly accurate picture of First Nations involvement, however, if understood within the context of this analysis, it does provide information about *reported* First Nations involvement through time.

Despite shortcomings on this matter, the study revealed some notable information on this topic. First, the earliest evidence of reported First Nations involvement in

Boundary Bay skeletal research is found in Ham and Broderick's (1976) report on a portion of the Crescent Beach site which appeared to be used as a burial ground. For the first time, a source from Boundary Bay directly notes the involvement of a local band in a project. In their report, Ham and Broderick recommended that no further development take place at the site to ensure the protection of other human burials. This was, they said, "in line with the stated policy of the Semiahmoo Band that burials will not be disturbed" (Ham and Broderick 1976: 9).

The next report to mention First Nations involvement is Ball's (1979) salvage report from the Beach Grove site. First Nations involvement is clearly indicated.

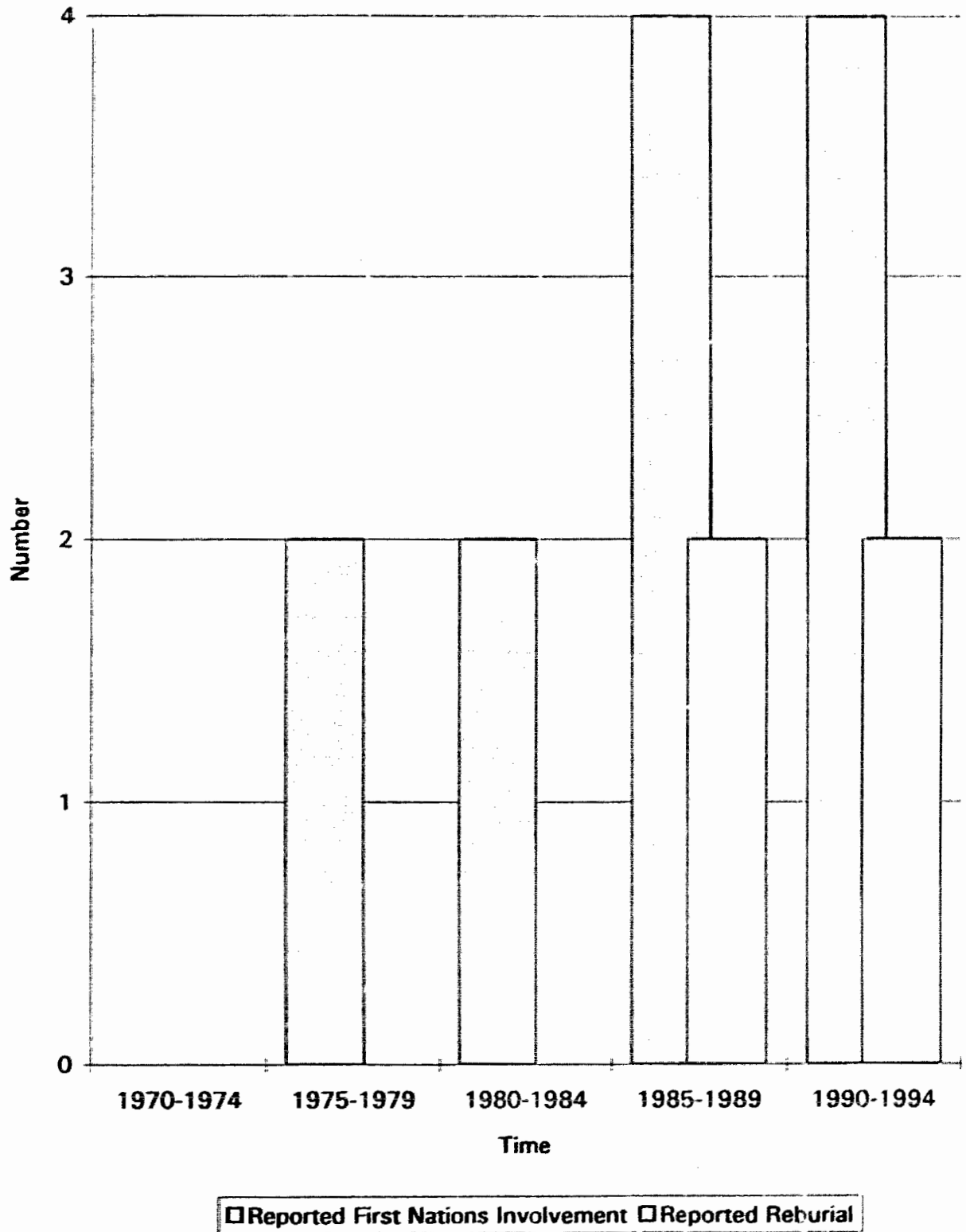
After discovery [of the first burial] the bones were reburied pending discussion with the local Indian group as to its disposition. After permission was received the burial was removed...and taken to Simon Fraser University for further study (Ball 1979: 98).

The sensitivity exhibited by Ball's crew in temporarily reburying the remains may have contributed to the willingness and cooperation returned to them by the local band in terms of allowing the remains to be excavated and analyzed. In the same report, it was also stated (1979: 99) that the Tsawwassen band *requested* that a portion of a skeleton from the site be sent to the lab for radiocarbon dating. The above is significant in that it illustrates that First Nations are not unequivocally opposed to skeletal excavation and also that they may in fact themselves be interested in specific kinds of scientific analyses. First Nations peoples can and have been active participants in skeletal research at Boundary Bay. This has important implications for future research on skeletal remains in general.

Figure 10 illustrates the breakdown of the skeletal reports in terms of reported First Nations involvement in the past. Out of the thirty-seven reports scrutinized here, twelve (32%) exhibited involvement by local bands in research. All of these reports are relatively recent (since 1976), therefore the data show zero reports for the early 1970s. Out of the twelve sources, two (17%) reported band involvement in the late 1970s, and again the same number in the early 1980s. In the latter half of the 1980s, there were four reports (33%) that mention First Nations involvement- twice as many as the previous half-decade. Finally, the data show that for the 1990s, there were also four (33%) sources reporting band involvement. The data demonstrate a general increase through time in the amount of reported First Nations participation in human skeletal research at Boundary Bay. Also, the data indicate a dramatic increase overall in recent years (1975-1994), as opposed to the first six decades (1900-1969) at Boundary Bay which attest to an absence of *reported* participation by local bands in the management of archaeological and skeletal materials.

Next, the critical analysis was concerned with information concerning the final curation of Boundary Bay skeletons, vis-à-vis information regarding repatriation and reburial to local bands. On the one hand, thirteen reports (35%) out of the thirty-seven analyzed here mentioned the location of the repository in which the remains were held. According to the reports, skeletal remains from Boundary Bay have been or are currently being curated at the National Museum of Natural History, Washington State Museum, University of British Columbia, Simon Fraser University, and Vancouver Community College. The remaining reports that did not mention a repository are likely to have utilized

Figure 10: Number of Sources Reporting First Nations Involvement and Reburial (n = 12)



one of these institutions, although others may have served as well. Of note here is the fact that current procedures (of the Archaeology Branch) prior to the issuance of an archaeological permit require a clear statement of a suitable repository for recovered artifacts and human remains.

On the other hand, only four (11%) sources in the critical analysis (Fig. 10) mentioned any instances whereby the remains were to be returned to the local band for reburial, as opposed to being curated in a local repository. All were dated to the late 1980s and early 1990s. Interestingly, all of the sources which indicated that reburial was to take place, were sources which dealt with human remains excavated on reserve land (the Tsawwassen reserve). The recovered remains therefore would not have fallen under the jurisdiction of the Archaeology Branch and the decision on final disposition of the remains would be left up to the band. It is clear from these sources that reburial is a preferred option for at least one local band at Boundary Bay. Details of actual reinterments are not described in any of the skeletal reports analyzed here.

It is felt that the number of repatriation events (four) as revealed through the critical analysis is probably under-representative of the actual number that have occurred at Boundary Bay. Reburials could potentially take place years after the excavation, analysis and completion of a skeletal report, and therefore would not appear visible in this critical analysis. For this reason, the author sought further information which could shed light upon the nature and extent of repatriation and reburial of Boundary Bay osteological remains.

It was felt that the best place to attain such information would be a) the Archaeology Branch in Victoria which monitors all archaeological activity in the province presumably including transfers of human remains, b) curators of skeletal collections who would authorize such repatriations, and c) local bands themselves who would be aware of past requests for repatriations of human remains or artifacts from institutions. A review of all three of these factors was attempted by the author, although a more thorough investigation could prove to be a worthwhile future endeavour.

Repatriations of human remains to the Semiahmoo and Tsawwassen at Boundary Bay have ranged in "size" from single elements recovered as found human remains to the large collection of eighty-seven burials (over 100 individuals) from a salvage excavation (see Curtin 1991). Collections records at the Department of Archaeology, Simon Fraser University, and communication (pers. comm. J. Johnson 1996) from the Archaeology Laboratory at the University of British Columbia have both indicated that particular sets of human remains have been repatriated to the Tsawwassen or Semiahmoo band in recent years. In both cases, the Universities acted strictly as "temporary repositories" for the small amounts of remains which were excavated under salvage conditions. Other human remains in these collections, which so far have not been the subject of formal repatriation requests, may in the future become so.

Other, more major repatriations of larger collections excavated by consulting archaeologists at the Beach Grove and Tsawwassen sites, have occurred in recent years (discussed in more detail in chapter four). Finally, the Semiahmoo band itself has indicated

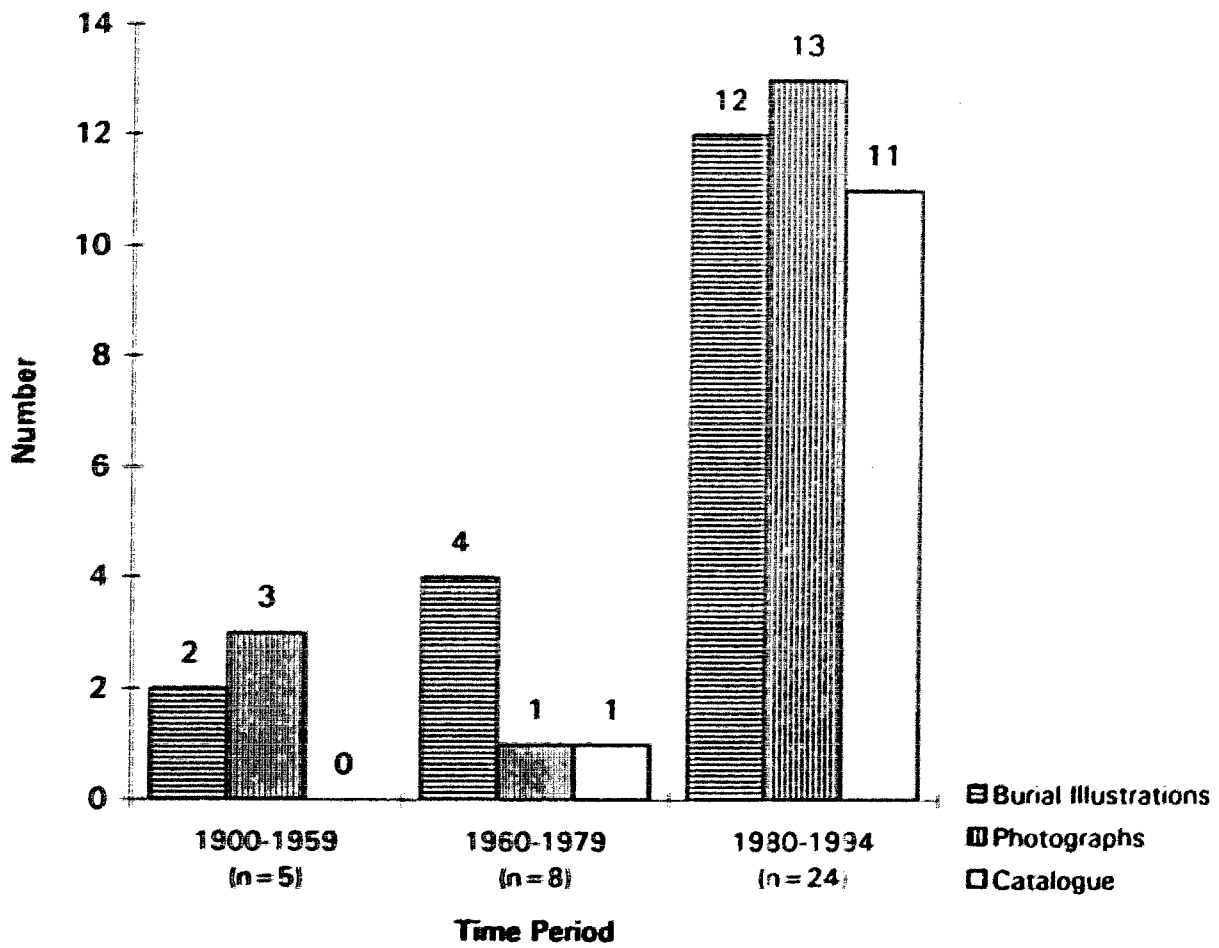
that it has recently had "old boxes of bones" of unknown provenience returned to them from a school in New Westminster, B.C. (pers. comm. L. Wells 1995).

From the albeit scanty information above, it may be concluded that instances of reburial of human remains has occurred since the late 1980s at Boundary Bay. This signifies a relatively recent but extremely important phenomenon in skeletal archaeology in British Columbia. What does reburial mean to skeletal researchers in this area and elsewhere in British Columbia? This analysis sought to identify whether the recent trend of reburial has had a tangible effect on the research and reporting of skeletal remains at Boundary Bay. The data appear to demonstrate that in fact it has.

Figure 11 demonstrates that there has been an increase through time, especially since the 1980s, in the inclusion of primary skeletal data in reports. Primary skeletal data here refers to any basic information which will allow for future researchers to observe first hand, re-examine or re-analyze previously recovered skeletal collections. The presence (or absence) of burial illustrations, photographs, and catalogues were scored for each report in the analysis. Radiographs, too, could have been included in this analysis, however, they were not since they were treated in this study more as a technique of analysis, rather than as an archival method. In any case, the critical analysis has demonstrated an increase in radiograph use through time as well (see below Fig. 13).

In terms of illustrations, photographs, and catalogues, Figure 11 illustrates that between 1900- 1959, burial illustrations and photographs are included in sources, while catalogues remain absent. Incidentally, it should be noted that some of reports from this time period (e.g. Smith & Fowke 1901; Heglar 1957) while they depicted photographs of

Figure 11: Number of Sources Showing Inclusion of Primary Skeletal Data by Time Period (n = 37)



mostly cairns and crania, dealt with remains from large geographic regions and did not actually illustrate any remains from Boundary Bay.

In the middle period (1960-1979), burial illustrations appeared in half of the reports (n=4, 50%), while photographs were quite rare (n=1, 13%). In 1979, the first inclusion of a human remains catalogue appears in the Boundary Bay skeletal sources sample (Ball 1979). This means that out of the total number of reports from this time period, only one (13%) included a catalogue.

The effects of reburial threats, I believe, can be clearly seen in the most recent time period (1980-1994). There is a clear increase in the number of instances wherein catalogues of remains are included (n=11, 46%) as compared to the middle period (13%) and the early period (0%). Further scrutiny of the reports at Boundary Bay has revealed an increase in the amount of descriptive information on individual burials, usually appended to the text (for e.g. see Beattie 1980; Curtin 1991 and others). This suggests to me that researchers may have been becoming increasingly concerned over the ultimate fate of skeletal material in the late time period. In prior times, it was perhaps generally taken for granted that remains would be "safely" curated in perpetuity in museums and other institutions. By the 1980s, however, it appears that certain precautions were taken to ensure that future researchers had access to at least some of the primary skeletal data. Photographs and illustrations continue to be present in at least half (n=12) of the reports dating to the post-1980s time period.

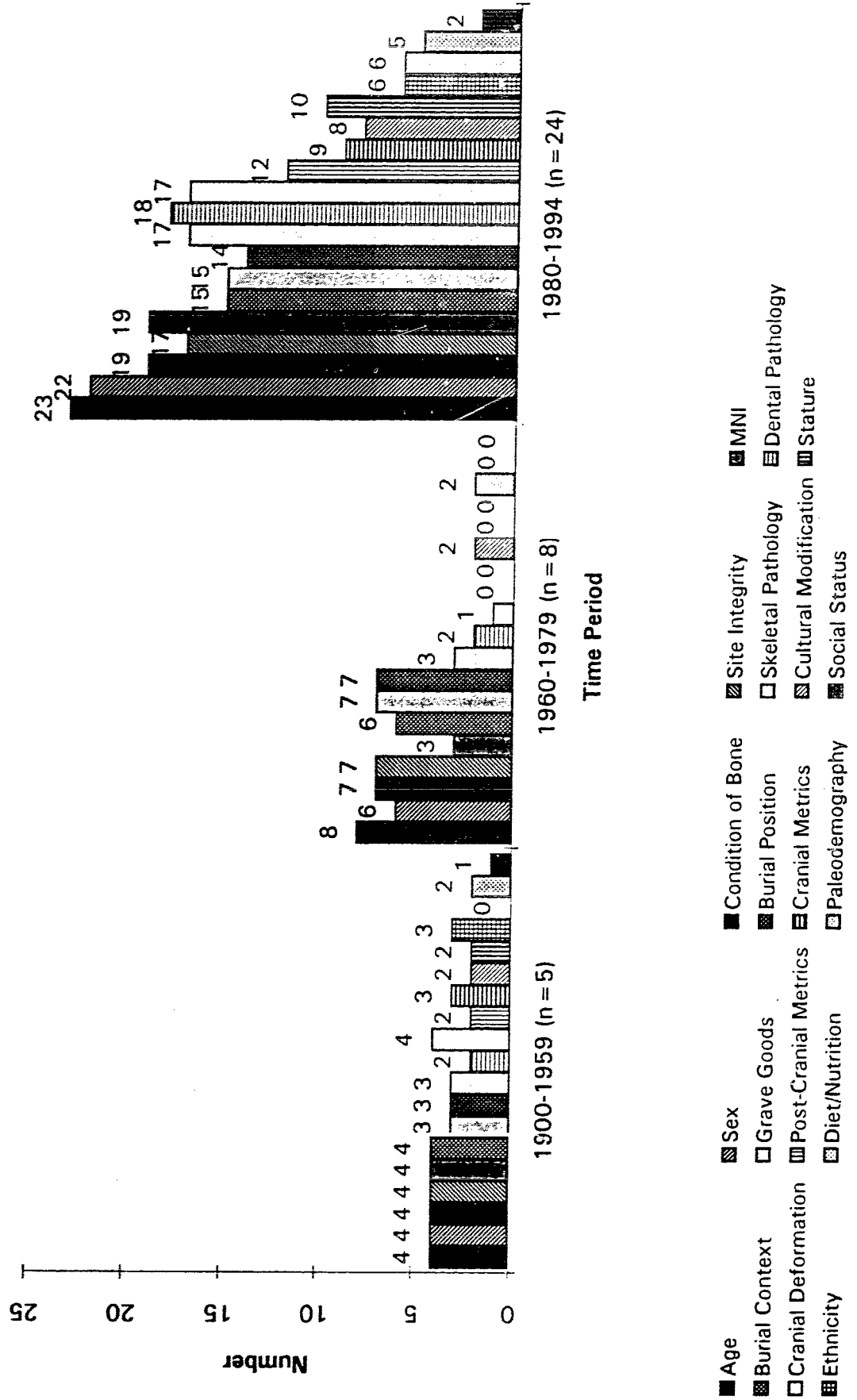
The preceding discussion of the skeletal reports has primarily focused on the *context* of past work. Now, attention is drawn to more particular questions concerning the

content of the reports. Specifically, two aspects of content are focused on: lines of inquiry pursued and techniques of analysis utilized by researchers.

Lines of inquiry range from basic age/ sex data of a skeletal sample to broader questions about health and lifestyle. As seen in Figure 12, the data have been divided into three time periods in order to illustrate any apparent shifts through time. The results of the content analysis do show that there is a slight overall increase in the number of different lines of inquiry pursued by the researchers through time, although it is not a substantial difference.

In the earliest time period (1900-1959), the sample size is quite small, however, some information can be gleaned. The most common lines of inquiry pursued in this time period were *age*, *sex*, *condition of bone*, *site integrity*, *MNI*, *burial context*, and *cranial deformation*. These variables were scored in 80% (n=4) of the sources. The next most common variables scored were: presence of *grave goods*, *burial position*, *skeletal pathology*, *cranial metrics*, and *ancestry*. These variables were each scored in three (60%) of the skeletal reports from that time period. Other lines of inquiry pursued less often were *dental pathology*, *post-cranial metrics*, *cultural modification to bone*, *stature*, *palaeodemography* (all occurring in 40%, n=2). *Diet and nutrition* was the only line of inquiry not pursued in the early time period. It appears, by looking at the most common research interests, that investigators in earlier times were more focused on the archaeology of the burial, such as *burial context*, *position*, and *grave goods*. Basic osteological data such as *age*, *sex*, and *pathology* were also of concern, however, it appears that the focus was on the crania. *Cranial deformation* and *cranial metrics* were common. The fact that

Figure 12: Number of Sources Showing Lines of Inquiry Pursued By Time Period (n = 37)



interest in *ancestry* scored relatively often is interesting as well. All of these data are compatible with the notion that theoretical assumptions which linked race and cranial size and shape dominated scientific practice in the late 19th, early 20th century (Gould 1981).

A closer look at the early work at Boundary Bay confirms that there was a preoccupation with burial practices (and inferring their origins) (e.g. Duff 1956: 70) and determining race through analyses of cranial shape and size (e.g. Smith & Fowke 1901; Smith 1924; Duff 1956; Heglar 1957). More holistic sorts of inquiries about subsistence patterns, social organization, health and disease did not become prevalent until the 1980s (e.g. Beattie 1980).

In the middle period, the number of sources available has increased, however the number of variables scored as present actually decreased. Only thirteen out of the possible nineteen variables were scored for this time period. The variables, *post-cranial metrics*, *cranial metrics*, *stature*, *ethnicity*, *palaeodemography*, and *social status* became absent in this time period. It is thought that this shift is not necessarily meaningful, rather it just demonstrates that broader more holistic sorts of inquiries really were not emphasized until later decades. Another factor which could account for the relatively low number of research inquiries is the fact that 100% of the reports from this time period were based on salvage work (rather than research-oriented excavation). Perhaps time constraints imposed by developer's schedules, or a lack concern with the osteological material by consulting archaeologists, can account for the decrease in lines of inquiry in this 'era'.

The most common research variables seen in the eight skeletal reports from 1960-1979 are: age at death (n=8, 100%), *condition of bone*, *site integrity*, *grave goods*,

and *burial position* (each of which were scored in seven reports, 88%). Thirdly, *sex* and *burial context* were both scored in six reports (75%). *Cranial* and *post-cranial metrics*, *stature*, *ancestry*, *palaeodemography*, and *social status* were not observed in any of the reports from this time period.

In the most recent time period (1980-1994) the data show a substantial increase in the overall number of reports available, as well as an increase in the number of inquiries present in those reports. All nineteen of the variables were scored as present in at least two reports. The most common variable, again, is *age* at death (n=23, 96%).

Determination of *sex* is the next most common research inquiry (n=22, 92%) in the reports, followed by both *condition of bone* and *MNI* (n=19, 79%). *Dental pathology* was scored next for eighteen reports (75%), which is a most striking increase from earlier times when it was scored for only two reports in each time period (40% and 25% respectively). The next most commonly scored variable in the skeletal reports were *site integrity*, *skeletal pathology*, and *cranial deformation* (n=17, 71% each).

A variety of factors may have contributed to this burgeoning era of skeletal research. As mentioned above the salvage archaeology programmes at Boundary Bay and elsewhere in the lower mainland area, produced large collections of skeletons which could then be analyzed by physical anthropologists. Continued growth at local universities and colleges in the province (Fladmark 1980) meant that more skeletal remains were becoming incorporated into research theses (such as Beattie 1980; Chisholm 1986; Ham 1982; Thom 1992; Trace 1981). Shifts in theoretical perspectives, from the New archaeology of the 1960s, to the current era of post-processualism which encourages expanding the confines

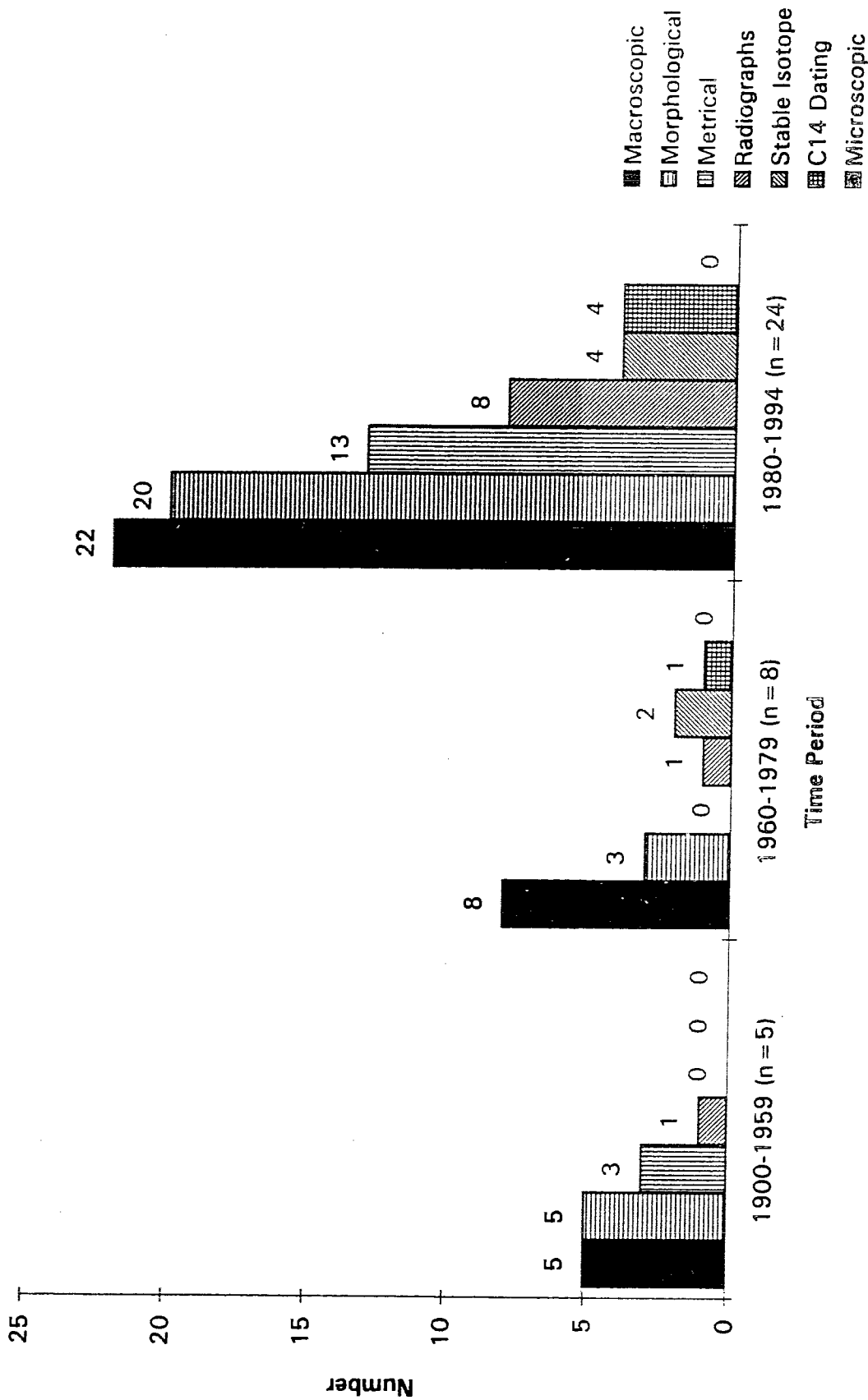
of interpretations into more holistic, interpretive kinds of questions about health and lifestyle, also may have played a role. This shift in research does not necessarily symbolize poor research in earlier times. As researchers learn more through time, inevitably even more unanswered questions arise. Finally, the development of increasingly complex and sophisticated techniques of analysis in recent decades, probably more than any other factor, has spurred researchers to expand their range of inquiries concerning skeletal data.

We now move into the final stage of the critical analysis. According to the data, radiocarbon dating techniques, stable isotope analyses, and radiography are among those technologically complex methods utilized on skeletal material from Boundary Bay since the 1970s. Other techniques utilized include macroscopic, morphological, and metrical analyses. Microscopic analyses were not carried out on any skeletal material from Boundary Bay.

Figure 13 shows that there were more techniques employed in skeletal analysis at Boundary Bay in later rather than earlier times. In the earliest time period, four techniques could be observed as having been utilized in osteological studies. Both *macroscopic* and *morphological* techniques were employed in all of the reports (n=5) from this time period. Next, *metrical analyses* were scored for three reports (60%). Finally, one source (Heglar 1957) reported that dental radiographs were taken of the remains in his Columbia River sample however, it was not made clear whether or not this included the Whalen Farm material. An assumption is made that it did.

Neither stable isotope, radiocarbon or microscopic analyses were undertaken in the earliest time period. The data comply with the knowledge that in the first half of the

Figure 13: Number of Sources Showing Techniques of Analysis Employed By Time Period (n = 37)



century, advanced technological developments had yet to be developed. As well, the techniques which were commonly employed, that is, macroscopic, morphological and metrical, were useful for identifying variations in size and shape of crania to identify population origins and movements.

In the middle time period (1960-1979), the number of analytical techniques reported to have been employed increases slightly from the earlier period. Five techniques were observed. The most common technique was *macroscopic*, which was scored for all eight reports (100%). The next most common technique is *morphological analyses* (n=3, 38%), followed by *stable isotope analyses* (n=2, 25%) (these analyses first appear in reports in 1976). No *metrical analyses* were conducted between 1960-79, which is surprising considering the increasing statistical uses of the New Archaeology during this time. Finally, microscopic analyses remain absent at Boundary Bay between 1960-79.

In the most recent time period, there is also a slight increase in the number of techniques employed. All of the variables, except one, were scored in at least four reports. The most common technique employed was *macroscopic analysis* (n=22, 92%), followed by *morphological analyses* (n=20, 83%). *Metical analyses* were the next most common (n=13, 54%), a considerable jump from the preceding time period wherein they were conspicuously absent. Perhaps the common practice of measuring skeletal material, especially crania, in the early part of the century, went "out of fashion" temporarily in the 1960s and 1970s, and has subsequently returned as a viable means of studying human physical variation. This "shift" however might be attributable to the small sample size. Radiographs were reported to have been taken in eight (33%) of the sources. Finally,

stable isotope and radiocarbon dating (n=4, 17%); while definitely more prevalent here than in earlier time periods, are still not standard techniques employed in all osteological analyses.

Further discussion on the origin and development of these and other specialized techniques is warranted. This information will shed light upon their relationship to the nature of change in skeletal research conducted at Boundary Bay . The invention of radiocarbon dating in the 1960s revolutionized the discipline of archaeology. At last, archaeologists were able to acquire fairly accurate absolute dates from organic material recovered from archaeological sites. In addition to chunks of charcoal, human bone collagen was found to yield radiocarbon dates. By the 1970s, it was finally possible to determine the absolute age at which specific individuals entered the archaeological record. The invention of radiocarbon dating has had enormous implications on researcher's interpretations of the pre-contact past because of increased chronological control over various observations. For example, researchers could get a better hold on the appearance of specific health and disease indicators, cultural practices such as labret wear and cranial deformation, specific burial practices and so on.

An interesting point is that, in the mid- 1970s, the traditional radiocarbon laboratory, such as that at Simon Fraser University for example, required practically half of an entire long bone (more than 70-80 grams and sometimes double) in order to acquire a date. By 1985, accelerator mass spectrometry as a method for obtaining radiocarbon dates had been developed. Since then, only minute fragments of bone, 1/4 of a gram, are required to obtain a radiocarbon date. This has enormous implications for the reburial

issue since the method is minimally destructive to skeletal material and samples can be obtained quickly and relatively easily should a request for reburial occur.

Using this technique, radiocarbon dates have been obtained from precontact native remains in recent years from Boundary Bay and other areas in Canada, including some that have been returned and subsequently reburied by First Nations (pers. comm. E. Nelson, SFU, 1996). Obtaining dates from skeletal material is important not only to archaeologists and physical anthropologists as a crucial aid to understanding the timing of events and aspects of the past, but may also prove to be useful information for First Nations involved in land claims disputes.

Radiography is another sophisticated technique of analysis which has been utilized in recent years on skeletal material, including remains from Boundary Bay. The Department of Archaeology at Simon Fraser University has recently acquired full radiographic capabilities in its Osteology Laboratory. Radiography reveals information about growth and development, for example, the presence of Harris lines in long bones. Likewise, x-rays reveal evidence of past trauma in the form of healed fractures, not visible to the naked eye. Beyond this, radiography may prove to be vital to the discipline in terms of providing a means to preserve information for future scientists. If remains are expected to be reburied, x-rays are again relatively easy to acquire (given access to equipment) and provide an infinitely more detailed record of skeletal material than photographs or drawings alone. Future generations of researchers may depend greatly on this information.

In the same vein, recent applications (Brown 1995) on the nearby Gulf Islands of computer tomography (CT scans) on skeletal material destined for reburial by First

Nations suggests that an even greater amount of information may be preserved for future generations. Computer tomography captures a three-dimensional image of skeletal specimens which is based on precise computer derived measurements. Future researchers will then not only be able to macroscopically observe skeletal remains on a computer, but they will be able to obtain measurements as well. This technique is relatively quick, and inexpensive, and the information is stored on a minimal amount of disc space. Had this technique been more readily available to researchers working in the Boundary Bay locality, the amount of information lost through reburial (see case studies below) would have been dramatically reduced.

One final technique of analysis utilized on skeletal material at Boundary Bay is now discussed. In the late 1970s, a technique using stable isotope data from human bone collagen for reconstructing aspects of ancient diet was developed (Vogel and Van der Merwe 1977). Advances in the technique were further developed by Chisholm et al. (1982) to determine reliance in ancient populations on marine vs. terrestrial foods. Skeletal material from Beach Grove and Crescent Beach were utilized in the development of this method, which has since been applied in other parts of the world, including Sweden. Once again, only minute fragments of bone (preferably thick cortical bone which yields more collagen) is needed for a sample. Interestingly, it is now believed that isotopic information is attainable from human teeth as well as bone, and that different skeletal elements of a single individual may yield different isotopic information about that individual's diet (pers. comm. E. Nelson, SFU 1996).

The application of isotopic studies to skeletal material at Boundary Bay and other sites on the B.C. Coast and in the Interior (Chisholm 1986; Chisholm et al. 1983; Lovell et al. 1986) has had a profound effect on the archaeological interpretations concerning diet and subsistence patterns in this area in the distant past. Earlier beliefs maintained that the diet of Coastal peoples in prehistory was composed of relatively equal amounts of marine and terrestrial protein (essentially a 50-50 split) based largely on ethnographic accounts (Murdock 1967 in Chisholm 1986: 92), as well as numerous archaeologically based faunal studies (see Chisholm 1986 for literature review). Isotopic studies on human skeletal material have challenged these notions. These studies have demonstrated that marine protein constituted almost 90% of the diet of pre-contact Coastal peoples (Chisholm 1986; Chisholm et al. 1983: 397).

The above discussion has illustrated that in just a few years, techniques of analysis have become more and more sophisticated, and less invasive. Although the methods of today are useful for obtaining and preserving osteological information for future analysis, the improvement of these techniques depends upon the continued availability of skeletal material to researchers. The reburial of remains may have profound negative impacts on the future of this kind of research. The communication of this information to individuals advocating reburial is of utmost importance.

It appears that the employment of specific techniques of analysis (especially those that are destructive) has often been influenced, or even largely determined by local First Nations groups. For example, one source at Boundary Bay (Ball 1979: 99), as mentioned above, has indicated that radiocarbon dating was conducted on a skeleton "at the request

of the Tsawwassen band". First Nations may often take an interest in and allow for certain skeletal analyses if they have a better understanding of what they stand to gain from the process. This point is critical for the future of osteo-archaeology in B. C. and Canada. The onus is on skeletal researchers to communicate the value and results of their work to local groups in order to maintain their interest and obtain their permission. A potentially valuable compromise in the reburial issue would be if archaeologists could take small samples of human bone (for radiocarbon, isotopic and perhaps currently unknown kinds of future analyses), prior to reburial.

It is clear that all of the historical trends (outlined in chapter three) for the South Coast region as a whole ring true for the specific Boundary Bay locality. Internal theoretical and methodological, as well as external socio-political factors have shaped the nature of research. Since the present is a product of the past, this historical analysis will conclude with a look at two recent reburial case studies from the Boundary Bay locality in order to illustrate the present socio-political climate of skeletal research there. The special emphasis here will be the involvement of local First Nations (the Semiahmoo and Tsawwassen) in decisions concerning archaeological human burials.

REBURIAL CASE STUDIES

Two recent salvage archaeology projects undertaken in the Boundary Bay locality are briefly described here in order to illustrate, for the most part, current examples of the active role taken by First Nations in the excavation, analysis, and disposition of ancient human skeletal remains. In March, 1995, salvage excavations were undertaken in response

to development activities at the Beach Grove site (DgRs-1) by Arcas Consulting Archeologists Ltd. with the full agreement of the Chiefs and Councils of both the Semiahmoo and Tsawwassen bands. The author participated in this project which took place over a three to four week period. Three Semiahmoo band members, including the Cultural Resource Manager, fully participated in both screening and excavation activities, including the recovery of human remains. Two Tsawwassen band members, as well, participated as field assistants in the excavations.

This excavation project yielded a small amount of scattered human remains, but no intact burials were recovered. Both bands had previously agreed to mitigative measures including excavation and minimal analysis of human remains by Arcas, but insisted that any remains be repatriated for reburial following analysis. The scattered human remains recovered in March were subsequently transferred to the Arcas laboratory facility for cleaning, cataloguing, analysis and temporary storage. The final day of excavations at the Beach Grove site included a visit from three Semiahmoo elders who conducted a ritual smudge or cleansing ceremony.

Subsequent archaeological monitoring of the construction activities in November, 1995, at Beach Grove revealed the presence of additional human remains, including substantially intact burials. The Semiahmoo and Tsawwassen bands were notified immediately by Arcas and upon request by the bands, development activities were temporarily halted. A few remains were salvaged by the archaeologists, until the presence of articulated remains was established. At that point, the Semiahmoo band insisted that the archaeologists refrain from recovering any further remains and, instead arranged for

Semiahmoo representatives, including the Chief, elders, and a ritually trained individual from Lummi, to travel to the site to retrieve the exposed remains themselves. At the request of the elders, *in situ* osteological analyses of the remains were not undertaken.

In February, 1996, the Semiahmoo requested transfer of the human remains held at the Arcas laboratory in order to rebury them along with those intact burials that the Band had already removed themselves. Unfortunately, agreement/ permission from the Tsawwassen First Nation for the return of the remains could not be obtained by Arcas before the deadline set by the Semiahmoo. Written permission was required from both bands before Arcas could return the remains to Semiahmoo (permit holders are legally liable for disposition of human remains as enforced by the Archaeology Branch). In any case, the remains are to be transferred as soon as possible (March 1996).

It appears that the involvement of the elders in the recovery events may have influenced other band members to opt for reburial rather than analysis, as previously negotiated with Arcas Consultants. Despite the change, the archaeologists, while concerned with the loss of scientific information, agreed to respect the wishes of the elders on this matter.

The second case discussed here is referred to as the Tsawwassen (DgRs-2) reburial case study. In October 1990, the Tsawwassen band was involved in a major reburial event, undoubtedly the largest ever to take place on the southern coast of British Columbia. Again, Arcas Consulting Archeologists (Arcas 1991) conducted salvage archaeological investigations between 1989 and 1990 in response to highways development. An impact assessment concluded that the construction of a beach access road (to service a Band

initiated resort/casino) was to also directly impact the Tsawwassen site (likely including a number of human burials). Avoidance was strongly recommended by Arcas (1988) in the initial impact assessment. Nevertheless, the Tsawwassen Chief supported the construction of the highway and requested that mitigation, including excavation of the site and any human remains, be undertaken (pers. comm. G. Howe, Arcas, 1995).

A total of eighty-seven human skeletons, and additional fragmentary remains were uncovered and analyzed (Curtin 1991) with the full consent of the Tsawwassen Chief and band Council. Several members of the Tsawwassen band participated directly in these excavations. It appears that there is still some concern by band members over the fact that there were no spiritual or cleansing rituals carried out at the site during excavation (due to either the unavailability or lack of consent by local elders)(pers. comm. D. Dort, Tsawwassen Band, 1995). According to the archaeologists, relevant spiritual ceremonies were certainly welcomed in any case.

Once excavated, the remains were removed to the Arcas laboratory facility to undergo the agreed upon scientific analysis. After a ten month period, an unexpected sudden request for the return of all human remains from the site was brought forth by the Chief and two elders (Curtin 1991). Strong spiritual concerns are reportedly responsible for the early request of the human remains by the Tsawwassen band, though it is not my intention to attempt to outline these highly personal, spiritual concerns here. Three days later, and after round-the-clock efforts by Arcas archaeologists to complete analysis and radiograph the materials, the remains were returned to the Tsawwassen band. The early return of the remains was reported to have had an effect on the completeness of the

osteological analysis, especially with respect to documenting various observed pathologies (Curtin 1991: 91). The archaeologists involved acted in full consultation with the Chief and Council and they "never contested their [the band's] rights to determine the disposition of the burials" (pers. comm., A.J. Curtin, 1995). Reinterment of the remains (accompanied by ritual ceremony) subsequently took place at Tsawwassen, though no archaeologists were present.

In both cases discussed above where reburial occurred, the recovery of skeletal remains by archaeologists was carried out strictly in response to development activities, and neither of the projects were initiated for scientific research purposes. The purpose of the work was to mitigate the destruction of the sites caused by development and to recover and protect human burials as required under the *Heritage Conservation Act* (1979). In both of these cases, both the archaeologists and the local First Nations demonstrated a willingness to work together and to accommodate particular needs on both sides.

Major steps forward have been taken in recent years to increase the involvement of First Nations in cultural resource management and archaeology in general. The current B.C. Archaeology Branch Operational Procedures (n.d.) regarding human remains insists upon contact and consultation with First Nations to determine the final disposition of remains. Any final decisions, however, still ultimately remain in the hands of the province (unless they were recovered from reserve land). First Nations' concerns are now directly solicited prior to the issuance of every archaeological permit in the province, and current

criteria require applicants to state specifically the nature of the final disposition of any recovered human remains.

A recent Code of Ethics outlined by the Society for American Archaeology (SAA 1995) addresses the issue of accountability:

Responsible archaeological research... requires an acknowledgement of public accountability and a commitment by the archaeologist to make every reasonable effort, in good faith, to consult actively with affected group(s), with the goal of establishing a working relationship that can be beneficial to the discipline and to all parties involved (SAA 1995:23).

In recent years, the Canadian Archaeological Association (CAA) has likewise made substantial efforts to address the need for increased dialogue and understanding between archaeologists and First Nations peoples. Nearly every year at the annual meetings, at least one session is devoted to addressing Native concerns in archaeology/heritage studies. In 1992, the CAA struck an Archaeology and Aboriginal Heritage Committee whose mandate was to produce a set of operating principles or guidelines covering the relationships between Aboriginal Peoples and Professional Archaeologists.

The resultant CAA Statement of Principles for Ethical Conduct (CAA 1996), emphasizes the importance of consultation, involvement, communication and interpretation of results to aboriginal groups. Pertaining to sacred sites and places, the guidelines emphasize the need to "acknowledge the cultural significance of human remains" and to "respect protocols governing the investigation, removal, curation, and re-burial of human remains and associated objects" (CAA 1996: 2). Despite progressive

steps recently in incorporating First Nations directly into heritage management decisions, much work on increasing communication and understanding is still needed.

Both the critical analysis and the case studies above have illuminated the recent active role played by local First Nations in determining the nature and disposition of archaeologically recovered human remains in the Boundary Bay locality. In these cases, the bands largely determined whether or not skeletal remains were to be excavated, whether *in situ* or laboratory analyses were allowed to be conducted, the length of time they were to be retained for analysis and so on. It is clearer now how external socio-political factors (along with internal, theoretical and technical factors) can and have played a vital role in shaping current scientific research in British Columbia archaeology. The case studies from Boundary Bay testify to what I believe will surely become the more dominant trend in the future.

CHAPTER 5: SUMMARY AND CONCLUSIONS

This thesis has offered perspectives on both sides of the reburial issue in order to evaluate critically past human skeletal research from a more balanced standpoint. Chapter one introduced the problems, goals, and theoretical orientation, and provided background information on the reburial issue and study area focused on in this work.

In chapter two, an examination of the relationship between the living and the dead in Salish culture has revealed that the dead continue to live along side the living despite the departure of the former from the land of the living. Also, the living bear the constant responsibility of caring for the remains and the spirits of the dead. Failure to do so, for instance, by making contact without proper ritual, may have serious, often fatal, repercussions. Tolerance and understanding of these cultural values by archaeologists is essential in resolving disputes over reburial.

Chapter three, on the other hand, examined the value, contributions, and history of skeletal studies on the Coast of British Columbia, with particular emphasis on the Strait of Georgia Region. It was revealed that human skeletal research can make important contributions to general human knowledge, but also more specifically to contemporary First Nations communities. Whether or not those contributions are deemed more valuable than the cultural values which prevent disturbance and study of skeletal remains is left entirely up to the individual. No effort is made here to place one group's cultural/ scientific values above those of another.

Chapter four provided the critical analysis which elucidated aspects of the nature and context of past human skeletal research at Boundary Bay. Archaeological and

osteological reports were scrutinized both in terms of their context and content. Criteria investigated included: the number and type of sources generated, the nature of burial recovery, extent of First Nations involvement, the kinds of information addressed in research, and the kinds of techniques utilized. These were scored in terms of presence or absence. The results of the critical analysis can be summarized as follows:

- 1) There has been an increase in the number of skeletal reports at Boundary Bay through time, especially since the 1960s.
- 2) The majority of skeletal reports have been unpublished reports derived from salvaged skeletal material.
- 3) Salvage excavations produced the vast majority of skeletal collections available for study in the region, especially in recent times.
- 4) The sources reporting on research-excavated remains are virtually all unpublished.
- 5) More comprehensive analyses addressing holistic questions about prehistoric demography, health and lifeways replace earlier studies preoccupied with crania/population identification.
- 6) Increasingly sophisticated techniques of analysis have been employed in recent skeletal studies enabling researchers to document/acquire heretofore unattainable skeletal information.
- 7) There has been an increase in participation and control by local First Nations groups in the excavation and analyses of pre-contact skeletal remains, including requests for specific kinds of analyses.
- 8) Instances of repatriation and reburial have taken place within the Boundary Bay locality in recent years, and this trend will likely continue in the future.

The historical and critical analysis has also revealed information on the internal and external dynamics which have influenced physical anthropologists to pursue particular kinds of knowledge through time. The work of the earlier researchers at Boundary Bay

and on the South Coast in general differ dramatically from more recent works, where methods and theory has extended the research into more holistic, and diverse sorts of endeavours. While internal development has helped to shape the current nature of human skeletal research, external factors have played an equally important role. Recent spiritual- as well as political- concerns of local groups, has perhaps had the greatest impact on the work, since, for the most part, they pose a threat to our 'resource base'.

Finally, in order to elucidate aspects of the current socio-political context of burial excavation and analysis at Boundary Bay, two recent reburial case studies were documented. These case studies illustrated the active role played by First Nations in this type of work in the study region, including highlighting some of the limitations set forth by their demands. Exploration of both the past and the present of human skeletal research has revealed important information concerning the future of osteo-archaeology in British Columbia.

It is virtually certain that the trend toward increasing control by local bands over the disposition of human skeletal remains will continue to grow in the future. Many native organizations within B.C. and Canada have hired their own anthropologists, archaeologists and heritage consultants and have initiated regional heritage resource management programmes (Mohs 1987: 150). Some examples in B.C. include the Coqualeetza Education Training Centre and the Secwepemc Cultural Education Society. Many groups have endorsed heritage policy statements (Mohs 1987: 150). Policies for the most part call for reburial. I believe it is foreseeable that automatic reburial of any human remains may become the norm in B.C. archaeology.

Scholars must come to accept the fact that they alone do not possess exclusive rights to ancient skeletal material. They may have to accept the loss of scientific data in the face of (equally valid) conflicting cultural values and political agendas of other members of contemporary society. They may have to adapt research strategies to conform to the wishes of particular bands. For example, osteologists may have less time to conduct research in the lab, they may be required to conduct *in situ* analyses, or they may be ordered not to conduct any kind of analyses at all. Bands may denounce the use of particular techniques of analysis especially if they are destructive of human bone tissue, or require lengthy curation in a laboratory. On the other hand, bands may desire that certain lines of inquiry are pursued, especially if they are relevant to contemporary issues. For example, stable isotope studies suggesting a 90% reliance on marine resources in the diet of pre-contact peoples may be useful to First Nations in B.C. today involved in struggles over traditional vs. commercial fishing rights.

Whatever the case, archaeologists and osteologists must make every effort to include First Nations ideas, interests, and related concerns into their project designs, as suggested by Mohs (1987), Spurling (1986) Trigger (1980), and Winter (1980, 1984). Lack of communication and consultation with local bands can only lead to further mistrust and negative attitudes towards archaeology and osteology. This in turn will lead to increasing efforts for immediate reburial of any disturbed remains. Human skeletal research and researchers must be flexible in their work.

While flexibility and adaptability are necessary to the future of skeletal work, researchers have a professional responsibility to the scientific integrity of their discipline,

and a responsibility to future generations who will build upon the information gleaned from studies of today. While it appears that access to skeletal material may become increasingly unpredictable (if not totally random) in the future, skeletal biologists must work together to determine in what ways they can ensure that a maximum amount of information will be collected from a skeletal sample in the most efficient manner possible.

Steps have already been taken by the physical anthropological community to specifically deal with these concerns. Several publications designed to regulate the standards by which scholars collect skeletal data on remains destined for reburial have already been assembled. The Palaeopathology Association's, *Skeletal Database Committee Recommendations* (Rose et al. 1991) and more recently, the *Standards for Data Collection from Human Skeletal Remains* (Buikstra and Ubelaker 1994) are attempts to minimize the loss of data in the face of decreasing accessibility to skeletal data. Other important standards which could be worked out are minimum requirements specifically designed for *in situ* as opposed to laboratory analyses.

Other efforts to preserve skeletal data which may be lost through reburial have commenced using sophisticated technological innovations. Computer tomography techniques, for example, may provide exactly what is needed to substantially resolve issues concerning reburial. Incredibly accurate imaging of skeletal material may be produced using this technique.

Several compromises in the reburial conflict have been offered in the literature (e.g. see Ubelaker and Grant 1989). For instance, archaeologists should negotiate the removal and study of any newly discovered human remains with local First Nations, with

the understanding that the remains will be eventually returned and reburied by the band. Also, bands might accept securing transferred remains in a vault or underground sealed container, wherein access to the material would remain completely in the hands of the band. This way, the skeletal material will be preserved, and scholars may study particular remains, if given permission by the band. Likewise, as more and more bands construct and operate their own tribal/band museums, perhaps these could act as suitable repositories. It is possible that further 'solutions' may continue to develop in the future.

The future of osteo-archaeology in British Columbia may prove to have its share of challenges with respect to reconciling scientific values and the status quo, with, on the other hand, the social concerns and political frameworks (ie: permitting systems/ policies) of First Nations' communities. However, these challenges are not debilitating as long as scientific perspectives and values are "kept in check" and not deemed to automatically override those values of other members of the greater society. The successful merging of these two frameworks depends upon mutual respect, consideration and a willingness to work within and respect each other's cultural values.

Suggestions for future research in related areas include conducting similar kinds of analyses on past skeletal research for the larger Gulf of Georgia region, the central coast, the north coast of B.C., and other parts of Canada in order to gain a better understanding of historical development on a larger scale. This work provides a mere glimpse into the history of such studies, but may prove to be a useful starting point.

Guidelines for the future include increasing the education, awareness, and/or training of archaeologists in dealing with aspects of Native spirituality, particularly those

aspects which involve cultural or physical remains uncovered at archaeological sites. Native run training sessions or workshops specifically for archaeologists and anthropologists could greatly improve understanding and tolerance. Familiarity of traditional native culture and spirituality is essential in order to promote sensitivity toward the concerns of those local communities. Archaeologists must not forget that native skeletal remains have meaning beyond those scientific in nature. Ancient burials and burial grounds are spiritually-invoking, potentially powerful entities in contemporary First Nations society, and must be accorded appropriate respect.

On the other hand, training and educational programs for First Nations in cultural resource management, further participation of First Nations (including elders) in research and excavation, and encouragement of First Nations' individuals to pursue undergraduate and graduate degrees in archaeology and physical anthropology may prove to ensure that lines of communication and compromise remain open between both sides. Working together, sharing the past, is the only real solution to the reburial issue. By consulting directly with First Nations individuals, archaeologists may be able to determine the level of general knowledge about archaeology and physical anthropology and determine which kinds of research questions/ lines of inquiry they may be interested in. Once scholars have a better idea about First Nations' scientific/cultural interests, they may more easily be able to tailor their research in ways which will make it more appealing to First Nations' peoples.

Scientific excavation and analysis of human skeletal remains in British Columbia and Canada in general may be toned down in the future as control over ancestral remains

is reverted to indigenous peoples, but it will not likely cease altogether. While repatriation and reburial will surely continue, there are thousands of skeletons in collections that will not be the subject of any band's repatriation requests. Scholars interested in skeletal research should focus on those remains. There is still much to be learned. Also, remains will undoubtedly continue to be uncovered by future development activities and during archaeological research excavations. Perhaps permanent curation of skeletal remains will no longer be an option, but useful information can still be attained through *in situ* analyses.

Skeletal studies in British Columbia and elsewhere will continue in the future to adapt to modern situations and contemporary ethical standards. Skeletal research, though it may differ from one hundred years ago, when researchers were able to dig indiscriminately to satisfy scientific curiosity without concern for the wishes of local bands, will foster in new directions. Archaeologists and First Nations' peoples must work together to protect the province's cultural resources, while at the same time ensure that the living are able to carry out their cultural/spiritual responsibilities of caring for the dead.

APPENDIX A: History and Description of Burial Excavation by Site

Whalen Farm Site (DgRs-14/DirRs-3)

All of the very earliest archaeological investigations at Boundary Bay were focused on the Whalen Farm site located on the eastern shore of the Point Roberts peninsula. This site straddles the United States-Canada border and thus is referred to as more than one Borden designation -- DgRs 14 and DirRs 3. This site contains several shell middens which extend from the U.S. side of the border at the southeastern shore of the peninsula, northwards along the eastern shoreline for about a mile until it reaches the Canadian side of the border. These midden ridges run roughly parallel to the shore and generally follow the contours of Boundary Bay. The site has largely been damaged or destroyed by urban developments since the mid 1950s (Thom 1992: 3).

H.I. Smith (Smith 1907; Smith & Fowke 1901), under the auspices of the Jesup North Pacific Expedition, first recorded the presence of large shell-heaps containing human skeletons "on Point Roberts" at the beginning of this century. He described the "cairn-like sepulchres...[that left] pits which contained human skeletons" at Point Roberts (at both the Beach Grove and Whalen Farm sites) (1907: 362-3). Formal archaeological excavation techniques were clearly not in place at this early time. Only in Smith (1901: 60-1) does he provide a brief description of the skeletons from Whalen. He is primarily concerned with the contexts within which the skeletons were found, namely that bones were found disarranged in what once were wooden boxes, buried in pits, and covered with boulders (1901: 61). He was not interested in estimating age, sex, stature, skeletal or dental pathology, although he was aware of the presence of cranial deformation (1901: 60).

Later, two trephined skulls from part of a 'large shell-heap along the western edge of Boundary Bay' (Washington side of the boundary) were dug out by road builders in 1922 (Smith 1924). None of the remains were formally excavated by Smith. Osteological analyses were conducted by A. Hrdlicka on the two skulls and yielded the conclusion that one was 'decidedly' the rare, 'narrow' type, and the other seemed to be the more common 'wide' type of the region. At that time, these remains "extend[ed] our knowledge of the distribution of trephined aboriginal skulls and also of a narrow type of skull in British Columbia and Washington" (Smith 1924: 447). Hrdlicka's analyses included determination of sex, age, race, but mostly concentrated on differences in cranial shape and evidence of trephination. The primary question was whether or not the apertures evident in both skulls took place during the individual's life, or post mortem. Hrdlicka concluded that trephination of these skulls occurred in the living (1924: 449-450).

In the summers of 1949-1950, Charles Borden, at the University of British Columbia, conducted excavations at the Whalen site. He recovered thirteen individuals at that time, which were later reported on by Rodger Heglar in his Masters thesis (1957). He conducted a racial analysis of skeletal material mostly from the Columbia River valley, with a few comparative samples from the BC Coast. The following year (1958c), he completed a more comprehensive analysis of the same thirteen individuals paying attention to metrics, pathology, and anomalies.

During a casual visit to the Whalen site in 1956, Duff (1956) encountered human remains being disturbed by a bulldozer preparing land for sub-divisions. He promptly excavated the remains (without even proper excavating tools) in order to protect them from 'looters' who were noted to be in the area. The remains included an "adult male, lying on its right side, facing east, with arms and legs fully flexed" (1956: 67). Of particular emphasis in the article is a description of grave goods, including suggestions of links with the Interior. He associates this burial with the Whalen II phase because of similarities in burial orientation to those individuals recovered by Borden just 100 yards away, which were also attributed to that phase.

In the early 1970's, salvage excavations (Seymour 1976) at Whalen were undertaken on an undisturbed midden deposit at Maple Beach, over the border in Washington State (DirRs-3). Standard archaeological excavations yielded human remains from at least three individuals. The site represented a

Marpole phase occupation. The most intact burial represented a 12-14 year old male, buried tightly flexed on its back. Several large boulders were in association with the burial and were interpreted as representing a possible burial cairn, similar to those noted by Smith and Fowke (1901:61) earlier in the century. Other remains recovered included two fragmented human innominates representing an adult male, and finally, various dissociated remains including cranial fragments and a femur shaft were also collected. Due to the highly fragmentary nature of these scattered remains, an approximation of the number of individuals represented was not considered justifiable (Seymour 1976: 87). It was reported that there were no artifacts associated with the skeletal remains.

In 1985, Hammon (1986) conducted research excavations at DgRs 14, (the Canadian part of the larger Whalen Farm site). The intention of the excavations was to recover detailed faunal material in order to yield information about subsistence and settlement patterns, and also to look for possible cultural manifestations of the joining of the island of Point Roberts to the mainland between c. 3000-1500 years ago. Her excavations showed that the site was briefly occupied at c. 2000 B.P. as a food processing and dumping area. These excavations also yielded human osteological material. Lazenby (in Hammon 1986) conducted analyses on the recovered human remains. Two individual burials, as well as considerable amounts of scattered human bone and bone fragments were studied. Analysis indicates that the scattered fragments represent a minimum of eight (mostly adult) individuals. The two discrete burials represent a "probable" male, mid-adult in age (Burial 1), and an infant of undetermined sex, aged six months (Burial 2). Both burials were reported to be fully flexed, and one burial showed evidence of "incidental charring of bones" (1986: 113). Observations of skeletal pathology include degenerative changes to the vertebrae as well as pronounced dental wear in the adult male. Besides a possible associated dog cranium, no grave goods were discovered. Lazenby states that the considerable scattering and incidental burning of the remains impeded further identification and analysis (Hammon 1986: 114). It was suggested that the considerable amount of scattered human remains may indicate the presence of simple subsurface interments which may have been disturbed by carnivores. He also concluded that children and infants may not have normally resided at the site based on the relatively small proportion of sub-adults (2/10) represented in the skeletal sample.

In 1992, Thom (1992) completed a re-evaluation of Borden's earlier work at the Whalen site in his Honours thesis. Thom tests the hypothesis (and concludes) that the Whalen II component is actually a variant of the Marpole phase of culture history. In his thesis, he provides the original burial forms and scale drawings as recorded by Borden and his crew. The original burial information is included in his work in order to provide as complete a picture as possible of the site/ excavations, but essentially Thom is interested in artifact assemblages and culture history. He does discuss burial positions briefly, but does not attempt any (new) osteological investigations himself. He also notes that the 13 individuals are essentially not all presently accounted for in the Laboratory of Archaeology at UBC (1992: 31).

Tsawwassen Site (DgRs 2)

The Tsawwassen site consists of a coastal midden which is located on the west shore of Point Roberts on the Tsawwassen Indian Reserve located south of the city of Vancouver. Harlan I. Smith first recorded the Tsawwassen site in 1921 and sketched it in 1922 (Arcas 1991). Skeletal remains of at least three individuals were collected from the Tsawwassen area in the 1950s and early 1960s, and are held at the Archaeology Laboratory at the University of British Columbia (Arcas 1991: 22), though no other documentation could be located.

Major and minor archaeological salvage excavations at the Tsawwassen site (DgRs 2) were conducted between 1987 and 1991 by Arcas Consulting Archeologists Ltd. (1988, 1989, 1991) which collectively produced "one of the largest skeletal samples recovered in recent years from a single site on the South Coast" (Curtin 1991: 121). Arcas (1988) provided the results of a detailed impact assessment, and later (1989) provided the results of a small-scale burial recovery project. Both field archaeologists and trained physical anthropologists recovered the remains using standard archaeological techniques. Burial recovery took

place in a variety of contexts including a) initial backhoe trenching, b) controlled excavations, c) emergency burial recovery (Arcas 1991: 54). Most of the burials from the Tsawwassen site in this analysis date to the Marpole/Stselax Transition, but three Marpole Phase and seven St. Mungo Phase skeletons were also included.

Perhaps because of the large sample size, and considerable time depth, individual burials were observed in a variety of contexts at this site. The majority of burials were tightly flexed, primary inhumations in shallow pits (some rock lined). Some examples of multiple burials, wooden box burials, and cairns were also seen. A few graves showed fire-broken rocks and charcoal chunks, possibly suggesting mortuary rituals involving the burning of food (dated to Gulf of Georgia). Grave goods appear with many of the burials at this site. Fragmentary, scattered human remains were extremely abundant but this is probably accounted for mostly by backhoe disturbances.

Extensive osteological analyses were conducted by Curtin (Curtin 1991) on the eighty-seven human burials recovered from these investigations. She includes in the 1991 report a reanalysis of the eight skeletons recovered in the two earlier projects (Arcas 1988, 1989). Standard morphological and osteometric analyses were conducted, and an age/sex breakdown was put forth (see Table 3, Curtin 1991: 16). Detailed information about palaeodemographics were offered, such as: life expectancy was approximately thirty years of age, and adult mortality peaks at late middle age. Detailed skeletal and dental pathology was outlined, as well as cultural modifications such as the presence of labret wear on teeth. Cranial deformation was discovered to have been present in many but not all of the specimens (Curtin 1991: 50). In a related sense, the presence of three slaves (or at least cultural outsiders) were inferred from osteological and archaeological contexts. A number of incidences of skeletal pathology were also identified in the sample, the most predominant one being degenerative joint disease or osteoarthritis. The most common dental pathology was pulp exposure and periapical abscessing associated with extreme tooth wear. Specific information on burial contexts was provided for each individual, including whether grave goods were found in association. Unfortunately, early request by the native band for return of the skeletal material inhibited more complete analyses of many of the remains.

Beach Grove Site (DgRs-1)

The Beach Grove site (DgRs-1), consisting of a one-half mile long shell midden and several surficial features, is located at the NE corner of Point Roberts, at the base of the Uplands. The site is north of the Whalen Farm site in the Municipality of Delta, and like Whalen, faces Boundary Bay to the east. The midden runs in a southwesterly direction and continues from the present day Recreation center in the north extremity on to land owned by the Beach Grove Golf Club at the southern end. Most of the site has been greatly disturbed by roads and other urban developments. The earliest recording of the Beach Grove site was by H.I. Smith (1903, 1907: 363) in the early part of this century. In the early 1950s, C. E. Borden, led a series of excavations and surface collections there by the University of British Columbia Archaeology Club. Field notes, photographs, artifacts, and "associated materials" were deposited at the Archaeology Laboratory at UBC (Abbott 1962: 26). Since Borden's work, several archaeological excavations, mostly salvage work conducted prior to housing development, has taken place in various locations at this site.

In 1961, formal salvage excavations were carried out by Abbott (1962) at the Provincial Museum for the British Columbia Archaeological Sites Advisory Board. Eighteen human burials were discovered in 1961 during emergency excavations prior to housing development. Excavations and reporting of burials was reported to have taken place at a hurried pace due to impending bulldozing activities, but it was noted that significant information was not likely to have been lost. Exceptions were some burials that were discovered by bulldozers outside of the gridded area and had to be exposed and recorded even more rapidly. Abbott (1962) reports both deliberate interment in shallow pits in the middens at Beach Grove, as well as highly fragmented scattered human remains which may represent decomposed tree or house burials. The presence of grave goods, notably copper and dentalia, were reported to be associated with an infant burial. Abbott (1962) made noteworthy the presence of these objects due to their relatively rare occurrence in prehistoric midden burials in the southern Gulf of Georgia region known at that time (he notes Duff's (1956) midden burial at Whalen Farm

as having associated grave goods). Abbott notes that "no thorough osteological study has yet been made" (1962: 48), though the remains were looked at by a physical anthropologist. Attempts at general aging and sexing of the skeletons were undertaken where possible, and one observation of trephination in the cranium of an adult male was reported (Abbott 1962: 51). Although the report does not mention the whereabouts of the remains, they are currently curated at the Archaeology Dept. at Simon Fraser University.

The following summer, in 1962, D.G. Smith (1963, 1964) conducted further salvage excavations on the same property as D. Abbott, in the extreme southern portion of the site. D. Smith encountered five individuals during excavations at Beach Grove. All of the remains were highly fragmentary in nature and poorly preserved. Smith reports, "it seems highly unlikely that any physical anthropological data can be recovered from the remains" (1963: 56). However, identification as *adult* or *infant* was attempted in some cases. The location and pattern of each burial was reported, indicating flexed burials with most of the individuals lying on their left sides with their chests facing upwards, and one double burial. The presence of grave goods, such as steatite and clam-shell beads and dentalia, were also reported for all the burials from this part of the site.

In 1979, Ball (1979) conducted salvage test excavations at the northern portion of the Beach Grove site. Backhoe trenching and test excavation by both the salvage crew and field school students was undertaken. K. Smith (in Ball 1979) provides a brief analysis of three burials encountered. Determination of biological profiles for each individual was incomplete primarily due to the fragmentary nature of the remains, caused by backhoe disruption during recovery. Three individuals were represented from the remains, two of which were most likely in a flexed burial position. No grave goods were unequivocally associated with the burials, although a labret, adze blade and two bone points were found in the back dirt. K. Smith reports that at the time of discovery of a humerus and some other bones in the backhoe backdirt pile at the site, the remains were immediately reburied while discussion with the Tsawwassen band was undertaken. After receiving permission from the band, Burial No. 1 (along with Burial 3) was removed and taken to SFU for further study. Radiocarbon dating and C-13 analysis was also undertaken on the remains. The remains, it was reported, were sent to either SFU or the Vancouver Community College Laboratory for identification and analysis. Ball (1979) concludes that this part of the site pre-dates Marpole to the Locarno phase.

In 1979, Lawhead (1980) test excavated a portion of the Beach Grove site where burials had been unearthed by bulldozers clearing. The remains of over fifteen individuals were exposed, mostly at the surface but also buried in the ground. Analyses of these burials included the determination of age and sex and were described in terms of their location, condition, physical characteristics, position, and orientation. They were photographed and illustrated. Many of the remains were burnt. Lawhead reported the presence of ground shell and stone beads, and dentalia beads associated with the burials. These and other artifacts uncovered were considered to be Marpole-like, though the burials, especially those near the surface could be a much later event.

Crescent Beach Site (DgRr-1)

The Crescent Beach site is located on the eastern shore of Boundary Bay within the Municipality of Surrey, British Columbia. It is situated on a small promontory of land which separates Mud Bay to the north from Semiahmoo Bay to the south. Over the past few decades, extensive archaeological excavations, both salvage and research in nature, have been undertaken at Crescent Beach. Research has indicated at least five thousand years of continuous occupation at this site. Burials discovered at the site have been assigned to the Mayne Phase (3000-1000 B.C.), Locarno Beach Phase (1000-400 B.C.), and Marpole Phase (400 B.C.-A.D. 400) (Percy 1974). The following will review the various excavations/ analyses which have been conducted in an historical framework.

Percy (1974) conducted the first salvage archaeological excavations at Crescent Beach in the Spring of 1972 which became his M.A. thesis. Excavation and recovery techniques were largely determined by the

limitations set forth by the plans and concerns of the sewer line construction crew. During the excavations, a total of eighteen burials were discovered at the site. Percy (1974) notes that "only those interments directly threatened with destruction by machinery, relic seekers and vandals were rescued" (p. 33). Percy presents details of the burial patterns and attributes each burial to the respective component in which it was found. He also includes age and sex estimations and skeletal pathology, as identified by Beattie (1974 -- not included in this study's sample). A detailed table exhibiting the presence of grave goods, such as flakes, points, awls, and beads is also included in Percy's work (1974: 39). Detailed analysis of the remains was not essential to Percy's goal of delineating the cultural sequence at the site, so Beattie (1980) included these burials in his PhD thesis.

Ham and Broderick (1976) reported the results of the 1977 salvage test pit excavations conducted at the Crescent Beach site. Four burials were encountered during excavation "in the vicinity of test unit B [which] appears to have been extensively used as a burial ground" (1976: 6). Age, sex, burial position, and associated grave goods were reported briefly. A complete analysis of the remains was reported to be carried out at a later date, although no such report could be located by the author.

Trace (1981) conducted excavations at the Crescent Beach site in 1976 and 1977, which yielded a total of thirteen burials. Osteological analyses were again undertaken by Beattie, and his results are included in Trace's M.A. thesis (1981). Age estimation and sex determination was attempted for each individual, although the remains were often incomplete and in poor condition. Burial patterns and presence of grave goods were reported. Those individuals complete enough were seen to have been interred in a flexed manner, and several burials were reported to have had beads near them (Trace 1981: 6).

Ham (1982) conducted archaeological excavations at Crescent Beach (DgRr-1) as part of his doctoral dissertation research. He was primarily concerned with the recovery and analysis of shell midden layers in order to determine prehistoric subsistence activities. He encountered human remains in six layers, however, only one complete interment was recovered. A series of incomplete, disarticulated and scattered remains comprised the majority of the sample from his work. Basic demographic information was provided by Beattie where possible, as well as evidence for skeletal pathology and cranial deformation. Burial patterns reported include the practice of box burials in trees which accounted for the scattered condition of many of the remains, and possibly one "impromptu interment of a body on the beach" (Ham 1982: 321).

In 1983, Conaty & Curtin (1984) monitored the construction of waterworks at Crescent Beach. The excavation of trenches for water mains yielded many osteological and archaeological remains. The authors report that "at all times the [excavation] procedure was expedited as quickly as possible to minimize the delay to construction activities" (p.29). Many human remains were recovered but some (at the base of the trench) were reburied at a safe distance from machinery due to time constraints. The authors provide a thorough preliminary osteological analysis of the twenty-five human burials recovered. Curtin employed standard anthropomorphic methods to determine age, sex, and pathological conditions. The latter analyses revealed degenerative osteoarthritis and dental disease as the most common, as well as evidence of trauma, infections, sinusitis, one case of an hematopoietic disorder, and three cases of spondylolysis. Cultural modification to human bone tissue, such as cranial deformation, labret wear, and cut marks on a long bone (similar to those at Hesquiart Harbour, Cybulski 1978), were also observable on the remains. The presence of four immature individuals was noted as the most significant discovery since they are quite rare in sites in the region. The 'typical' prehistoric burial pattern for Crescent Beach was reported as a single individual interred in a flexed position (Conaty and Curtin 1984: 61), but a multiple burial (spoon fashion) was also discovered. Some grave goods were associated, including projectile points, dentalia, and shell disc-beads.

Finally, Matson, Pratt, and Rankin (1991) report on the 1989-90 archaeological excavations at Crescent Beach which produced one set of human remains, described and analyzed by Cybulski (1992b). The goal of these research excavations was to shed light upon the relationship between the Mainland Locarno Beach phase and its contingent phases (St. Mungo and Marpole). Cybulski's analysis of the burial remains, conducted at UBC and later at the Canadian Museum of Civilization, revealed the individual to be a juvenile

which dates to the Locarno Beach phase. Metrical, morphological, and dental analyses/observations were conducted revealing a nearly complete skeleton, of undeterminable sex, with no gross evidence for pathology or cranial deformation.

APPENDIX B: Data Tables

Table 2: Boundary Bay Osteological/Archaeological Reports: Context Data

Source	Site	Year Excavated	Cultural Affiliation	No. of Burials	Reanalysis	Osteological	Archaeological	Published	Unpublished	Article	Consulting Report	Monograph	Manuscript	Found Human Remains	Thesis	Salvage Recovery	Research Recovery	Reported FN Involvement	Reported Reburial	Other Repository	Illustrations	Catalogue	Photographs
Smith & Powke 1901	WF	1899	undet	undet		X	X	X			X												X
Smith 1924	WF	1922	undet	2 skull		X	X	X								X							X
Duff 1956	WF	1955	Whalen II	1		X	X	X								X							X
Heglar 1957	WF	1949	undet	13		X	X	X								X							X
Heglar 1958c	WF	1949	undet	13	X	X	X	X								X							X
Abbott 1962	BG	1961	Marpole	18		X	X	X								X							X
D. Smith 1963	BG	1962	recent?	5		X	X	X								X							X
D. Smith 1964	BG	1962	Marpole	5	X	X	X	X								X							X
Perry 1974	CB	1972	Mayne-Marpole	18		X	X	X								X							X
Seymour 1976	WF	1972	Marpole	3		X	X	X								X							X
Beattie 1976	CB	1972	Mayne-Marpole	18	X	X	X	X								X							X
Hamm & Brudeřick 1976	CB	1976	Marpole	4		X	X	X								X							X
Bull 1979	IIG	1979	Locarno	3		X	X	X								X							X
Beattie 1980	IIG/CB	77-8/72	Marp/May-Loe	19/18	X	X	X	X								X							X
Lawhead 1980	BG	1979	intrusive Marp	13		X	X	X								X							X
Trace 1981	CB	1976-77	Locarno	13		X	X	X								X							X
Hani 1982	CB	1977	intrusive DCS	1		X	X	X								X							X
Chisholm et. al. 1983	CB/BG	unavail	Mayne-Marpole	n/a	X	X	X	X								X							X
Conaty & Curtin 1984	CB	1983	Locarno	24		X	X	X								X							X
Chisholm 1986	CB/BG	1972	5350-1770 BP	n/a	X	X	X	X								X							X
Lazenby 1986b	WR	1985	undet	1		X	X	X								X							X
Hamm 1986	WF	1985	Marpole	2		X	X	X								X							X
Oliver & Skinner 1987	WR	1986	DCS	1		X	X	X								X							X
Arca Associates 1988	TS	1988	Marpole/Gulf	5		X	X	X								X							X
Kausel 1989	BG	1989	Marpole	1		X	X	X								X							X
Arca Associates 1989	TS	1988	Marpole/Gulf	4		X	X	X								X							X
Mont/Skinner '90	CB	1987	Marpole	1		X	X	X								X							X
Oliver 1990	TW	1990	undet	2 + shr		X	X	X								X							X
Skinner/Waddell 1990	CB	1988	Marpole	1		X	X	X								X							X
Curtin 1991	TW	1988-90	St. Mung-MarStl	87		X	X	X								X							X
Cybulski 1991	CB/WR	72-87	Locarno/undet	89	X	X	X	X								X							X
Cybulski 1992b	CB	1989-90	Locarno	1		X	X	X								X							X
Oliver 1992a	TW	1992	undet	1 mand		X	X	X								X							X
Oliver 1992b	CB	1992	undet	3		X	X	X								X							X
Oliver 1992c	WF	1949	WHII (Marpole)	13	X	X	X	X								X							X
Thom 1992	TW	1993	undet	1 skull		X	X	X								X							X
Oliver 1993	TW	unknown	undet	unknown		X	X	X								X							X
Oliver 1994	TW	unknown	undet	unknown		X	X	X								X							X

Table 3: Boundary Bay Osteological/Archaeological Reports Content Data: Lines of Inquiry

Source	MNI	Age at Death	Sex	Ancestry	Stature	Skeletal Pathology	Dental Pathology	Cranial Deformation	Cultural Modification	Palaeodemography	Diet/Nutrition	Social Status	Burial Context	Burial Position	Grave Goods	Craniometrics	Post-Cranial Metrics	Site Integrity	Condition of Bone
Smith & Fowke 1901								X					X	X	X			X	
Smith 1924	X2	X	X	X		X		X	X			X	X	X	X	X		X	X
Duff 1956	X1	X	X					X					X	X	X			X	X
Heglar 1957	X13	X	X	X	X	X	X	X	X	X						X	X		X
Heglar 1958c	X13	X	X	X	X	X	X			X			X	X		X	X	X	X
Abbott 1962		X	X			X		X	X				X	X	X			X	X
D. Smith 1963		X											X	X	X			X	X
D. Smith 1964		X											X	X	X			X	X
Percy 1974		X	X			X	X	X					X	X	X			X	X
Seymour 1976	X3	X	X										X	X	X			X	X
Beattie 1976	X18	X	X			X	X			X									X
Ham & Broderick 1976		X	X											X	X			X	
Ball 1979	X3	X	X							X			X	X	X			X	X
Beattie 1980	X	X	X			X	X	X	X	X						X	X		X
Lawhead 1980	X15	X	X			X	X	X					X	X	X	X	X	X	X
Trace 1981		X	X											X	X				X
Ham 1982	X	X	X			X		X					X	X	X			X	X
Chisholm et al. 1983										X									
Conaty & Curtin 1984		X	X			X	X	X	X	X			X	X	X			X	X
Chisholm 1986		X	X							X									
Lazenby 1986b	X1	X	X			X	X	X	X	X			X		X	X	X	X	X
Hammon 1986	X10	X	X			X	X			X			X	X	X			X	X
Oliver & Skinner 1987	X1	X	X	X	X	X	X	X	X	X			X	X	X			X	X
Arcas Associates 1988	X5	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X
Krusel 1989	X1	X	X			X	X	X	X				X	X	X	X	X	X	X
Arcas Associates 1989	X4	X	X			X	X	X	X	X			X	X	X	X	X	X	X
Montgomery/Skinner'90	X1	X	X	X	X	X	X	X	X	X			X		X	X	X		X
Oliver 1990		X	X	X		X	X						X	X	X			X	X
Skinner & Waddell 1990	X1	X	X	X	X	X	X	X					X	X				X	X
Curtin 1991	X111	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cybulski 1991	X	X	X			X	X	X	X	X		X			X			X	
Cybulski 1992b	X1	X	X			X	X	X										X	X
Oliver 1992a	X1	X	X			X													X
Oliver 1992b	X3	X	X			X	X	X	X	X			X	X	X	X	X	X	X
Thom 1992	X13	X	X			X							X	X	X			X	X
Oliver 1993	X1	X	X			X	X	X										X	
Oliver 1994	X2	X																	X

Table 4: Boundary Bay Osteological/Archaeological Reports Content Data: Techniques of Analysis

Source	Macroscopic	Radiography	C14 Dating	Isotopic Analyses	Metricral	Morphological	Microscopy
Smith & Fowke 1901	X					X	
Smith 1924	X				X	X	
Duff 1956	X				X	X	
Heglar 1957	X	X			X	X	
Heglar 1958c	X				X	X	
Abbott 1962	X						
D. Smith 1963	X					X	
D. Smith 1964	X						
Percy 1974	X						
Seymour 1976	X						
Beattie 1976	X	X		X		X	
Ham & Broderick 1976	X						
Ball 1979	X		X	X		X	
Beattie 1980	X				X	X	
Lawhead 1980	X				X	X	
Trace 1981	X				X	X	
Hain 1982	X					X	
Chisholm et al. 1983				X			
Conaty & Curtin 1984	X					X	
Clusholm 1986				X			
Lazenby 1986b	X		X	X	X	X	
Hammon 1986	X					X	
Oliver & Skinner 1987	X	X	X		X	X	
Arcas Associates 1988	X	X	X		X	X	
Knusel 1989	X	X			X	X	
Arcas Associates 1989	X	X			X	X	
Montgomery/Skinner '90	X	X			X	X	
Oliver 1990	X					X	
Skinner & Waddell 1990	X				X	X	
Curtin 1991	X	X	X	X	X	X	
Cybulski 1991	X					X	
Cybulski 1992b	X				X	X	
Oliver 1992a	X	X				X	
Oliver 1992b	X	X			X	X	
Thom 1992	X						
Oliver 1993	X					X	
Oliver 1994	X					X	

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